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NORMAN GERALD HORNER, M.D., F.R.C.P., F.R.C.S.

Assisted by

HUGH CLEGG, M.B., M.R.C.P.

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THE TREATMENT OF SCABIES

BY

KENNETH MELLANBY, Ph.D., Major C. G. JOHNSON, R.A.M.C., and W. C. BARTLEY

A great deal of confusion exists concerning the best methods of treating scabies.* Every method has its advocates or detractors. Much of this confusion is caused by inaccuracies in diagnosis of infection and inaccuracies in assessment of cures. At the present time the disease is in the public eye, and many irritating skin conditions unconnected with *Sarcoptes* are apt to be diagnosed and treated as scabies, though, on the other hand, mild cases are often overlooked. Scabies can only be diagnosed with certainty when the mite *Sarcoptes scabiei* can be demonstrated or, at least, an unmistakable burrow seen. Another difficulty arises in assessment of cure. Many treated cases still show signs of extensive secondary impetigo or eczema even though the primary scabies has been cured. In such cases mild applications may cure the secondary complications and thus get the credit of curing scabies, which they are quite incapable of doing.

It is commonly believed that a long soak in a hot bath, followed by vigorous scrubbing, is an essential part of any scabies treatment and that this soaking and scrubbing will in itself often cure the disease. Results given below show that almost 100% of cases of scabies can be cured if efficient medicaments are used without any bath or scrubbing at all. If a well-established burrow is soaked and scrubbed, the brush can be applied vigorously to the lesion for as long as ten minutes without dislodging the parasite, and unless the scrubbing is severe enough to draw blood it is unlikely that many of the mites will be removed in this way. Really thorough scrubbing, often repeated, may sometimes cure scabies (Dixon, 1941), but this does not appear to be a practicable method for general use. Gordon and Seaton (1942a), from their work on *Notoëdres*, suggest that scrubbing may be an important preliminary part of scabies treatment. Their view is in part based on an examination of the lesions produced by *Notoëdres*; these are covered with scabs and dry exudate, whereas in human scabies live mites are seldom so protected. In spite of this, however, it is desirable that before applying a parasiticide the body should be soaked in a hot bath and rubbed well with soap, as this may enable the medicament to penetrate the skin more readily.

It is dangerous to assume that a patient has, or has not, been cured mainly because of the disappearance or otherwise of symptoms such as irritation. Some patients continue to itch for weeks after all parasites have been killed, while in other cases methods which we know to have practically no effect on the parasites will give at least temporary relief from irritation, especially if the patient believes they are efficacious. Many writers state that the methods they advocate will cure "resistant" cases which have not responded to other treatments. We have found no indication that the parasites are much more difficult to kill in some individuals than in others. There are, however, as stated above, considerable differences in the rapidity with which symptoms such as itching disappear; but a more potent acaricide does nothing to allay these symptoms—it may easily have the opposite effect.

In our experiments on the treatment of scabies we have assessed our cure primarily by an examination of the adult female mites removed from treated cases. We have developed methods by which we believe that over 90% of the ovigerous females can be detected. Samples totalling 1,200 mites removed from 441 cases suggest that about 90% of the ovigerous females seen on examining the skin are alive, the remaining 10% having died *in situ*. If only dead mites are found after treatment this suggests that the method is likely to be successful, but such results must be confirmed by a study of the relapse rate. Of 1,500 cases treated by us, approximately 1.7% had a recurrence of scabies; but as only three individuals relapsed within ten weeks we are probably safe in assuming that the recurrences were mainly reinfections. (Incidentally, a further 2.6% of patients returned apparently uncured a few days after treatment, but these were found to have no living *Sarcoptes* and merely a persistent itching, which gradually disappeared without further scabies treatment.) If, on the other hand, it is possible to find any live mites 24 hours after completing a treatment, this leaves no shadow of doubt that the treatment has not been successful. It should be noted that if even one live mite is left a recurrence of the disease is likely. It may take several weeks before the recurrence manifests itself fully, for this time must elapse before a reasonably large mite population can be built up again. Our results are based mainly on examination of the ovigerous females, but preliminary experiments suggest that the medicaments which kill these are also reasonably effective against the eggs. Incidentally, eggs killed with benzyl benzoate or sulphur seem to be "fixed" and remain normal in appearance when incubated; we therefore find it difficult to interpret Gordon and Seaton's (1942b) results, for they assessed the potency of drugs against *Notoëdres* by the percentage of eggs which degenerated after treatment. Nymphs, larvae, and adult males occur more superficially than females, and it seems unlikely that they will escape more easily. Timoney (1924) finds, with the *Sarcoptes* attacking the buffalo, that eggs are only slightly more resistant than adult females; all other stages are less resistant. We have also found that there is a very high mortality during development; if a proportion of live eggs are left deliberately they seldom give a reinfection. The chances of a reinfection where, say, 5% of the eggs survive are exceedingly remote in all but those cases with abnormally high populations of *Sarcoptes*.

Several times the advocates of a new method have suggested that it is much simpler than the old one because fewer applications of medicament are needed or because the bath and scrubbing can be omitted. These statements have been made without testing the old method to see whether it might also work under the simpler conditions. The main errors in assessment of scabies treatment have thus often led to an under-estimation of the efficacy of old methods, while at the same time the efficacy of certain new methods has been greatly over-estimated.

Details are given below of tests with most of the treatments in common use. In many cases the methods have been tried with and without baths and with and without any scrubbing of the usual sites of election. In all cases the whole body, from the neck down, has been treated with the medicament. The results are summarized in the Table. The numbers of mites found may require some explanation. We hope to publish elsewhere particulars of the numbers of parasites observed in cases of scabies, but may state here that on an average there were only 12 adult females. The majority of cases have less than this number, and a very small minority have over 50. The percentage of mites killed by any method is approximately the same whether only a few parasites are found on many patients or whether a large number of parasites are found on a single patient. During the later part of the experiments certain substances which we knew to be effective—e.g., sulphur ointment—were frequently used on cases irrespective of the parasite population, so that only rather small numbers of mites could be removed after treatment. With other methods of less-well-established efficacy, cases with high parasite count were chosen in order to obtain results quickly and to avoid a mass of work in treating or re-treating cases. All patients studied were adult males, but observations made on children and females do not suggest any considerable differences.

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* A full summary of recent literature concerning treatment is given by Gordon and Seaton (1942a).

A Comparison of Different Methods used in the Treatment of Scabies. All Results obtained 24 Hours after the First Application unless Otherwise Stated

Method	Bath	Scrub	Cases	Cure %	Mites Dead	Mites Alive	% Mites Killed
A. Sulphur							
(1) Sulphur ointment B P 10% ..	+	+	57	97	269	2	99·5
,, ,, ,,	+	–	64	90	331	9	97
,, ,, ,,	–	–	26	88	335	8	98
(2) Marcussen's ointment (kathiolan) .	+	–	7	100	169	0	100
(3) Flowers of sulphur							
Day 1 ..	+	–	2	0	4	22	15
,, 2 ..	+	–	2	0	26	12	33
,, 3 .	+	–	2	0	29	14	67
(4) Thiosulphate; HCl							
Day 1 .	+	–	6	0	11	33	25
,, 2 .	+	–	3	0	31	31	50
,, 3 .	+	–	3	66	13	5	72
(5) Sulfomil							
Day 1	+	+	5	0	20	96	17
,, 2 .	+	+	5	0	22	63	26
,, 3 .	+	+	4	0	42	46	48
(6) Internal sulphur (10 days) ..	–	–	4	0	0	50	0
B. Rotenone							
(1) Derris root lotion							
Day 1 .	+	–	13	15	121	44	73
,, 3 .	+	–	13	46	81	22	79
(2) Rotenone emulsion 2% (sarevan) ..	+	–	4	25	559	171	76
C. Benzyl Benzoate							
(1) 5% in spirit ..	+	–	5	40	225	23	91
(2) 10% ,, ,, ..	–	–	38	95	307	2	99
(3) ,, ,, ,,	+	–	64	94	737	6	99
(4) 20% ,, ,,	–	–	43	97·5	291	2	99·3
(5) ,, ,, ,,	+	–	52	98	301	1	99·6
(6) 25% ,, ,, .	+	–	37	97	175	2	99
(7) Lotion (25% benz. benzoate, 35% soft soap, 40% spirit) ..	+	+	32	100	210	0	100
(8) ,, ,, ,,	+	–	9	100	30	0	100
(9) 10% emulsion . .	+	–	12	43	128	16	89
(10) ,, ,,	–	–	12	75	63	5	93
(11) 20% ,, (L.W.)	–	–	41	97·5	281	1	99·6
(12) ,, ,,	+	–	50	98	368	1	99·7
(13) ,, ,, (S T.)	–	–	41	100	474	0	100
(14) ,, ,,	+	–	24	100	190	0	100
(15) ,, ,, (W.F Z.)	–	–	48	100	415	0	100
(16) ,, ,, ,,	+	–	21	100	106	0	100
(17) All 20% emulsions	+	–	225	99	1,834	2	99·9
D. Dimethyl-diphenylene Disulphide							
(1) Undiluted ..	–	–	6	100	178	0	100
(2) 10% in paraffin .	–	–	3	100	81	0	100
(3) 5% ,, ,, .	–	–	5	80	79	1	98·5
(4) 2% ,, ,,	–	–	2	50	62	47	57
(5) 0·5% ,, ,, ..	–	–	1	0	44	21	67
E. Pyrethrum							
(1) A.200 (extract in paraffin)	+	–	3	33	32	2	94
(2) Emulsion in water (2% total pyrethrins) ..	+	–	4	75	41	6	87
(3) Solution in paraffin (1% pyrethrin I, approx. 1·75% total pyrethrins)							
(*a*) Sprayed	+	–	9	22	91	28	71
(*b*) Painted ..	+	–	3	0	93	65	59

Sulphur Preparations

Sulphur Ointment (10% *Sulphur*).—Sulphur has been used since ancient times (see Hebra, 1868, for details) for the treatment of scabies, and sulphur ointment is a sarcopticide of proved efficacy. It has gained some notoriety because, when over-applied, a severe itching dermatitis is produced which is often thought to be due to a continuation of the parasitic infection. More ointment is then applied, with a further aggravation of the condition and, finally, disastrous results. The standard treatment consists in making three applications of the ointment, the first (and sometimes the second and third also) following a hot bath and scrubbing. Before our investigation reached the present stage, in which we can locate and extract most of the parasites, about 200 cases were treated by the above method without a single relapse being detected. In 147 cases since treated, the mites have been extracted after treatment. The results given in the Table show that a very high proportion of the mites were killed by one application, using approximately 3 oz. of sulphur ointment per patient. There is some indication here that the efficacy of the treatment is slightly enhanced by bathing and scrubbing, although the difference between the results (% killed) from the two types of treatment is not statistically significant. Even without bathing and scrubbing, very few mites survive, and two applications of the ointment have cured 100% of the cases. When skilled orderlies are available the disadvantage of the messiness of the treatment often outweighs the ease with which the medicament can be applied. We are of the opinion that sulphur ointment is likely to give more satisfactory results than other methods when used by the unskilled, for even if the ointment is carelessly applied there are chances of its spreading over a wider area than was originally covered. Adequate warning should be given against over-treatment. We have seen cases which have not been cured after using sulphur ointment for many days; these patients have been applying the ointment locally on the irritating areas. It cannot be too strongly stressed that the whole of the body except the head must be covered.

Sulphur Vanishing Cream.—In order to avoid the messiness of sulphur ointment and to economize in the paraffin base, vanishing creams containing sulphur, obtained through the kindness of the Cooper Technical Bureau, have been tried. The creams are very pleasant to use and do not soil the garments unduly. One containing 10% of sulphur appears to be as effective as the ordinary ointment. Further research is in progress to try to decrease the sulphur content; in 12 cases treated with a 0.5% sulphur vanishing cream the majority of the parasites were killed.

Marcussen's Ointment.—A commercial preparation of Marcussen's ointment called "kathiolan" was received through the kindness of Messrs. C. Zimmerman. It is claimed that this preparation will cure scabies within 24 hours, a contention which our experiments support. If applied as thickly as advised by the manufacturers, this ointment is even more objectionable in use than ordinary sulphur ointment, but if employed more sparingly it is equally effective and no more messy than the latter.

Flowers of Sulphur.—Flowers of sulphur dusted over a patient are said to give a simple and effective cure. The Table shows that though this treatment does kill some of the parasites it is relatively ineffective; for after 24 hours very few mites have been killed, and even after 3 days one-third of them are still alive. It should be noted that our patients have remained in bed in contact with the powder, 60 g. of which was used for each case. It seems likely that treatments of this kind result in a race between the production of a dermatitis and the extermination of the parasite. There is a real danger that the dermatitis may develop first.

Sodium Thiosulphate and Hydrochloric Acid.—It has been thought that if the sulphur could be released in nascent form it might be particularly effective. In this method the patient is first painted with a strong solution of hypo, which is allowed to dry. Some acid (i.e., hydrochloric) is then applied to the body; sulphur is released and conditions very harmful to *Sarcoptes* are alleged to arise. It should be noted that a patient who has been treated in this way is covered with yellow powder. This shows that the sulphur is deposited in rather coarse granules and not in a finely divided state, for in the latter condition the deposit would be white and not yellow. We find that one application of these solutions is hardly more effective than dusting with flowers of sulphur, and even after three applications a substantial proportion of the parasites remain alive. This method is troublesome to use, and the results are so unsatisfactory that we can see no reason for continuing with it. Moreover, it lends itself to zealous over-treatment.

Sulphur Lather Tablets.—Sulphur lather preparations have been used with apparent success in America (Nolan, 1938), and samples of a similar preparation ("sulfomil") were received through the kindness of Messrs. Glaxo Laboratories Ltd. In preliminary tests these appeared to give favourable results, for patients stated that the itching was greatly relieved and no sign of any dermatitis was produced. When, however, the effect of this preparation on the parasites was assessed with greater accuracy it was not found to be more effective in killing the *Sarcoptes* than the other medicaments which deposited sulphur powder on the skin. Even after three daily applications a substantial proportion (about 50%) of the parasites were still alive.

Sulphur taken Internally.—One of us has already reported (Mellanby, 1941) that sulphur taken internally appears to have no effect on *Sarcoptes* in the skin. Even if sulphur is taken in as large a dose as can be consumed without causing severe physical discomfort (10 g. daily for 10 days) the parasites appear to be entirely unharmed at the end of the period, and fresh mites can be induced to burrow normally.

Derris Root Preparations

Derris Root Lotion.—Rotenone, which is one of the active insecticidal products from derris root and some other plants, is known to be very effective in killing many species of insects. We are informed by the Cooper Technical Bureau that tests of rotenone-containing preparations against scabies in animals have given unsatisfactory results, although these products are highly effective against insect parasites on the same animal. Further, derris is notorious for causing dermatitis in man, and unless it has substantial advantages in the treatment of scabies its use is not one which recommends itself. The derris root lotion is essentially a suspension of derris root in water (4 oz. of derris root, 1 gallon of water, a small quantity of soap flakes). The results show that it is fairly toxic to *Sarcoptes*, but even after three days 21% of the mites survived and about 50% of the patients still harboured living *Sarcoptes*. This result is much inferior to that obtained by one application of sulphur ointment. Incidentally, we obtained derris root of known rotenone content through the Cooper Technical Bureau; samples bought in the ordinary way show considerable variations in strength.

Rotenone Emulsion.—A 2% emulsion of rotenone called "sarevan" advocated for the treatment of scabies was obtained through the kindness of Messrs. Evans Sons Lescher and Webb Ltd. It is interesting to compare the proportion of rotenone in this product with that found in other medicaments. The usual strength used in animal dips in veterinary practice is 1 in 16,000; the derris root lotion mentioned above contains approximately 1 part in 1,000; sarevan contains 1 part in 50! Notwithstanding this relatively enormous concentration we have not found sarevan outstandingly successful. A number of patients were treated with 4 applications, as recommended by the manufacturers, and a satisfactory cure was obtained, but some of them developed an intractable scrotal dermatitis. One application of sarevan still left about a quarter of the mites alive, so this method also was found to be much less effective than sulphur ointment.

Benzyl Benzoate

Benzyl benzoate is by no means a new treatment for scabies. It is the main active ingredient in balsam of Peru, which has been used for a very long time. Benzyl benzoate itself, in the form of "pernol," was advocated by Sachs and Juliusberg as long ago as 1900. This medicament was, however, first popularized by Kissmeyer, who in 1937 reported very favourable results from its use. Our conclusions support Kissmeyer's results, but we find that in unskilled hands, with insufficient supervision, benzyl benzoate lotion may be applied in such a way that some burrows are missed and relapses are apt to occur.

Benzyl benzoate lotion (25% benzyl benzoate, 35% soft soap, 40% spirit), the usual form in which this compound is applied, was found to be 100% effective, and equally satisfactory cures were obtained whether or not the patient was scrubbed. As there is some difficulty in obtaining soft soap and spirit, other benzyl benzoate preparations have been tried. A simple solution in methylated or industrial spirit was very effective, even as low a concentration as 10% benzyl benzoate killing 99% of the parasites. A solution containing only 5% proved less satisfactory, though more efficient than any other anti-scabies treatment except sulphur ointment. A solution in spirit is more difficult to use than the benzyl benzoate lotion as it is not easy to distinguish which parts of the body have been covered.

Results of benzyl benzoate emulsions in water have also been tried. Several different emulsifying agents, including lanette wax S.X., cellofas, and stearic acid with triethanolamine, have been found equally effective. An emulsion containing 10% of benzyl benzoate appears to be on the weak side, giving results closely resembling those obtained with a 5% solution in spirit. It should be noted that the emulsion goes considerably further than the spirit solution, only 2 fl. oz. being required to cover the body, as against 3¼ oz. of spirit solution. This means that approximately the same amount of benzyl benzoate is applied to the body with a 10% emulsion as with a 5% solution. A 20% emulsion appears to be completely satisfactory.

The National War Formulary gives a benzyl benzoate emulsion containing 25% of benzyl benzoate and 2% lanette wax S.X. The formula in the Appendix to this paper seems to us as efficient, and if many cases have to be treated it will effect important economies.

Other Sarcopticides

Dimethyl-diphenylene Disulphide (Dimethylthianthrene).—This substance, which was formerly marketed by Messrs. Bayer under the name of "mitigal," was obtained through the kindness of Imperial Chemical Industries Ltd. It is normally used undiluted on the body; it does not seem to produce any dermatitis or discomfort, and kills 100% *Sarcoptes* after one application. Unfortunately the substance is expensive in normal times, and at present is practically unobtainable. Preliminary experiments suggest that even when diluted down to 5% in medicinal paraffin it is still efficient. Work on dimethyl-diphenylene disulphide emulsions in water is now in progress.

Lethane.—Organic thiocyanates, such as lethane, are very effective against lice, and it has been suggested that they will also kill *Sarcoptes*. A 2% solution of lethane in medicinal paraffin appears to kill only about two-thirds of the mites after one application. Stronger solutions (i.e., 10%) cause the patient very considerable discomfort, and still are less efficient than benzyl benzoate or sulphur ointment.

Pyrethrum.—Various pyrethrin-containing substances have been tested. A commercial preparation containing pyrethrum extract in a petroleum jelly ("A.200") was obtained through the kindness of Messrs. Mitchell Cotts and Co. Later, substances of accurately determined pyrethrin content were prepared by Dr. J. T. Martin of the Department of Insecticides, Rothamsted Experimental Station, Harpenden. These tests do not suggest that pyrethrum extracts are particularly valuable against human scabies.

Betanaphthol.—Only two cases were treated with 10% betanaphthol ointment. Twenty-four hours after treatment 27 mites were removed; of these, 5 (18.5%) were alive. As only 2 live mites were removed from the 225 cases treated with 20% benzyl benzoate emulsion, it is clear that betanaphthol is a much less satisfactory medicament.

Discussion

The experiments described above indicate that of the treatments of scabies in common use two only, sulphur ointment and benzyl benzoate, are satisfactory. It is interesting to compare the *in vitro* reactions of *Sarcoptes* to these preparations. It is well known that the mite will survive for several days when stuck in sulphur ointment on a glass slide; we have confirmed this observation. Sulphur ointment appears to be effective only when some active products due to the interaction of the sulphur and the human body are liberated. Benzyl benzoate, on the other hand, is rapidly lethal to the mites, which are killed within five minutes of contact away from the body.

It should be noted that it is almost impossible for a patient to apply either liquid preparations or creams satisfactorily to himself; therefore, if it is not possible to get another person (preferably trained for the purpose) to apply these remedies, it is better to use sulphur ointment treatment.

APPENDIX: DIRECTIONS FOR PREPARATION OF BENZYL BENZOATE EMULSIONS

The following three emulsions containing 20% of benzyl benzoate have been found satisfactory. If a 25% emulsion is preferred this can be made by increasing the benzyl benzoate and decreasing the water in the appropriate quantities.

Benzyl benzoate	200 mils
Lanette wax S.X.	10 g
Water	800 mils

Melt the lanette wax on a water-bath, add the benzyl benzoate, and heat the mixture to a temperature of between 60° and 70° C Pour the mixture into the water, previously heated to the same temperature, and stir until cold.

Benzyl benzoate	200 mils
Stearic acid	20 g
Triethanolamine	5 mils
Water to produce	1,000 mils

Melt the stearic acid with the benzyl benzoate on a water-bath. Mix the triethanolamine with half the quantity required of warm water, and pour into the stearic acid–benzyl benzoate mixture cooled to about 30° C. Shake to form an emulsion Add enough water to produce the required volume.

Benzyl benzoate	200 mils
1% solution of cellofas W.F.Z.	800 mils

Shake together to form an emulsion. Put through a cream-making machine or homogenizer.

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NARCO-ANALYSIS IN THE TREATMENT OF WAR NEUROSES

BY

J. F. WILDE, M.D., D.P.M.
Major, R.A.M.C.; Psychiatric Specialist

Many and diverse are the methods that have been used in exploring the meanderings of the neurotic mind. In the early days of psycho-analysis Freud (Breuer and Freud, 1893) employed hypnosis in overcoming the resistance of his patients, and, later on, in his dream analysis utilized the recurrent narcosis of natural sleep. However, the methods of psycho-analysis and all its derivatives are intricate and require considerable skill, time, and special training. In war the problem of having to deal with greater numbers of neurotics in the Services compels the profession to improvise less intricate and more rapid techniques. During the war of 1914-18 Hadfield's (1920) technique of hypno-analysis was most effective. Since 1929, research in the use of drugs as an aid to gaining insight into and rapport with patients suffering from mental and nervous illness has been in progress.

The drugs which are most useful for this purpose are the barbiturates. Bleckwenn (Lorenz, 1930) of Wisconsin, in 1929, was the first to use sodium amytal in an endeavour to gain closer rapport with his psychotic and psychoneurotic patients. Nembutal appeared in 1930, evipan in 1932, and pentothal in 1934, and these drugs have since been freely used. Other drugs that have been experimented with include cocaine, hashish, and mescaline (Lindemann and Malamud, 1934), alcohol, and medinal and paraldehyde (Hauptmann, 1934). Workers in this field also include Stungo (1938) and Campbell (1938), who employed evipan, Mallinson (1940), who has published an account of its use in the Royal Navy, and Dicks and Stungo (1940) and Sargant and Slater (1940), who have reported their experiences in the E.M.S.

The term "narco-analysis" was first devised by J. S. Horsley (1936) for the technique which utilizes a narcosis artificially induced by a barbiturate for the express purpose of facilitating the analysis of a patient's mental content. The barbiturates employed are those which have proved so useful as intravenous anaesthetics. When used as narcotics the dose is of course much smaller. In this respect it is of interest to note that hypnosis, which is the essential preliminary to hypno-analysis, was first employed in orthodox medicine as an anaesthetic by Elliotson, Esdaile, and Braid (Bramwell, 1913) for surgical operations before the discovery of chloroform or ether.

The Present Investigation

Fifty soldiers suffering from neuroses were treated by this method. The drug used was pentothal sodium—sodium ethyl (1-methyl butyl) thio-barbituric acid. It is similar in action to sodium amytal and nembutal, but safer in that it is less toxic and more readily eliminated. It is a respiratory depressant and lowers blood pressure temporarily, and is detoxicated by the liver, but has no effect upon the kidneys, so the only physical contraindications to its use are respiratory disease, low blood pressure, and liver embarrassment. These were rarely met with in healthy young neurotic soldiers. It should not be used in varicose veins if this can be avoided, because of the probability of delayed phlebitis.

Indications for Narco-analysis.—When a neurotic is admitted to hospital it is first of all essential to take a complete psychiatric history. Next a physical examination is conducted and any necessary physical treatment given. Although this has usually been done before the soldier reaches a psychological unit, it is surprising how physical signs are sometimes missed by physicians and surgeons of repute, doubtless because during their examinations the display of some gross functional symptoms by the patient has biased their judgment against a physical diagnosis. Next follow several psychological interviews in which one endeavours to explore the motives behind the symptoms. It is important to be in possession of all the facts of which the patient is consciously aware. If an impasse is reached in which the patient, though trying his best, cannot honestly remember the painful matters that have been repressed, and if this repression remains impervious to all psychotherapeutic efforts quickly applied, then one resorts to narco-analysis. It is explained to the patient simply that he will be given an injection to help him to get better. It will make him sleepy, but will have no untoward after-effects. Soldiers are at liberty to refuse injection, so it is necessary to win their approval by persuasion. At times all sorts of wild rumours have been current in the wards to the effect that (*a*) the injection will weaken the patient's will power, (*b*) under it they will be forced to say everything they wish to keep secret, and (*c*) every word uttered will be taken down by a stenographer and afterwards used in evidence against them. At times such rumours have prevented me from having a case to treat in this way for months on end, and then a few successful cases make the technique popular again.

I have found intravenous sodium pentothal of assistance in (1) hysteria in its various manifestations; (2) anxiety states; (3) the after-effects of head and spine injuries; (4) borderline psychoses, mental deficiency, and epilepsy when the diagnosis was in doubt; and (5) simulation and malingering.

Administration of the Drug.—The time chosen for injection is about 2 hours after a meal. The patient is made comfortable on a couch or bed in a quiet room and is reassured. The collar and belt are loosened and the median basilic vein is prepared for venepuncture. An ampoule containing 0.5 g. (7.5 gr.) of sodium pentothal is opened and dissolved in the barrel of a

TABLE I.—*Patients in whom the Hysterical Reaction was Predominant*

Case No.	Symptoms	Effect of Pentothal	Result
1	Amnesia, dyspepsia, vomiting	No euphoria. Dramatic abreaction of war experience Revelation of unrequited love affair prior to service	Duty
3	Vague pains left shoulder, hip, and leg	No euphoria Very depressed reaction, though talkative	Invalided
4	Deafness and aphonia	Marked euphoria. Relief of deafness and aphonia, revelation of detailed history	Duty
5	Anxious about eyesight	No euphoria. Depressed and lacrimose Revealed that the symptom complained of was not real trouble	"
8	Amnesia	Not euphoric, but loquacious. Memory recovered Motive underlying fugue revealed to be domestic worries	"
9	Pain in back and insomnia	No euphoria. Maniacal reaction to physical injury received nine years ago	"
10	Sequelae of head injury	No euphoria. Unemotional account of war experiences. No head injury actually occurred. Later wept bitterly	"
13	Pain in back	Euphoric and talkative. Revealed domestic situation in civil life as root of his trouble	Invalided
18	Amnesia following head injury	Euphoric; spoke freely, but in French Revealed that no actual head injury occurred	Duty
22	Vague rheumatic pains	No euphoria. Vivid revelation of war experiences	"
23	Depression with suicidal impulses	No euphoria. Unemotional revelation of domestic situation When fully conscious, convulsive sobbing	Invalided
24	Head-wagging tic	Not euphoric; serious. Revelation of fear of which he was unaware before	Duty
26	Head injury, amnesia, war dreams	Euphoric. Memory restored. Sequelae relieved	"
27	Constant headaches	Not euphoric; lacrimose. Personal problems revealed	"
28	Recurrent fugues	Not euphoric. Resistance not overcome	Invalided
30	Amnesia	Not euphoric, but uninhibited. A temperamentally unstable subject simulating amnesia	Duty
32	Anxious about eyesight. Depressed and apathetic	Not euphoric, but emotional. Family troubles revealed. Eyesight not improved, but depression relieved	"
35	Amnesia	Not euphoric, but emotional. Memory restored	"
36	Head injury. Persistent headaches, amnesia	Not euphoric. Memory restored. Symptoms relieved	"
38	Violent nightmares	Not euphoric. Traumatic episode revealed	"
41	Hysterical tic	Euphoric. Domestic situation associated with tic brought to light	"
42	Hysterical fugue	Mere suggestion that injection could restore his memory caused him to reveal that injury was consciously self-inflicted	"
49	Anaesthetic corneae	No euphoria. Psychotic, but sensation of corneae restored	Invalided

TABLE II.—*Cases in which Anxiety Predominated*

Case No.	Symptoms	Effect of Pentothal	Result
2	Insomnia, anorexia, trembling	Euphoric, aggressive, communicative. Revealed important personal and family secrets	Duty
12	Multiple healed wounds and stammer	Euphoric and loquacious. Speech clear. Revealed important nuclear incident	"
14	Morose and reticent	Not euphoric; emotional and agitated. No new revelations	Invalided
16	Trembling and emotional	Not euphoric. Revealed a strong maternal attachment from childhood	"
19	Palpitations. Pain in back	Not euphoric. Communicative about Quetta earthquake and instability at home	"
25	Confused, irritable, unable to concentrate	Not euphoric, but agitated and expressed great feeling of guilt for shooting up enemy	Duty
29	General pains. Poor memory and lack of concentration	Not euphoric. Amnesia recovered	Invalided
31	Insomnia, anorexia, amnesia	Not euphoric. Memory recovered. Revealed a fear of showing fear	Duty
33	Insomnia, war dreams, anorexia	Not euphoric. Recorded all experiences for the first time	"
40	Fears loss of vision. Amnesia	Not euphoric. Revealed that real trouble was domestic worry	"
43	Frequency of micturition	Not euphoric. Disclosed factors underlying origin of symptom 10 years ago and repeated now	"
44	Nightmares and nervousness	Not euphoric. Disclosed unsuspected emotional reaction to earlier incident and a fear of showing fear	Invalided
45	Faints and palpitations	Not euphoric. Conditions causing his anxiety shown to be unconnected with war trauma	Duty
47	Headaches and insomnia	Not euphoric. Emotional and abusive, but freely informative about his war experiences	"
48	Diarrhoea, blood in stools. Flatulence	Not euphoric. Related with marked emotion important personal experiences prior to his war trauma	"
50	Enuresis	Not euphoric. Personal experiences prior to war revealed as chief worries	"

TABLE III.—*Cases in which there was a History of Head Injury*

Case No.	Symptoms	Effect of Pentothal	Result
10	Chronic headaches, nervousness, irritability	Not euphoric. Unemotional account of war experience. No head injury actually occurred	Duty
18	Amnesia	Euphoric; spoke freely in French. Revealed that no actual head injury occurred	"
26	Amnesia, war dreams	Euphoric. Memory restored. Sequelae relieved	"
34	Depression, dizziness, trembling	Not euphoric; displayed fear and anger. Seemed to be relieved of his fear of pain	"
35	Headaches, lassitude, tremors, palpitations, depression	Not euphoric. Memory restored. Revealed fear of showing fear	"
36	Headaches, amnesia	Not euphoric. Memory restored. Symptoms relieved	"
39	Headaches, dizziness, general lassitude, amnesia	Not euphoric. Memory for events immediately following head injury recovered and later corroborated. Symptoms relieved	"

TABLE IV.—*Illnesses Predominantly Physical*

Case No.	Symptoms	Effect of Pentothal	Result
11	Complete bilateral deafness	Deafness quite unaltered by pentothal	Invalided
15	Deafness	Deafness not relieved under pentothal. E.N.T. specialist decided it was nerve deafness	"
20	Hysterical reaction to spinal injury	Memory recovered under pentothal. Further treatment refused because of its implications	"
46	Excessive reaction to physical injury	Was able to re-experience the emotions associated with original injury	Duty

TABLE V.—*Miscellaneous Group*

Case No.	Symptoms	Effect of Pentothal	Result
6	Amblyopia right eye, blepharospasm left	Euphoric. Blepharospasm relieved. Diagnosis of mental deficiency established	Invalided
7	Severe stammer	Not euphoric. History obtained only by means of pentothal	Transferred
17	Epilepsy ?	Evidence of maternal attachments revealed. Suspected that he was making the most of his symptoms to obtain discharge from the Army	Duty
21	Deafness (functional)	Not euphoric, but revealed a history of depression with family history of suicide on both sides	Invalided
37	No symptoms	Not euphoric. Story of war injury revealed to be false Psychopathic personality	"

10-c.cm. syringe in chemically pure water that has been specially supplied in a sealed ampoule. This makes a 5% solution. The injection is then administered very slowly, giving only 1 c.cm. per minute (checked by the second hand of a watch). The patient is asked to count from the very first, and when he reaches 100 and is getting drowsy he is asked to count back. Very few patients have required the full 10 c.cm. This is in marked contrast with the amount required for anaesthesia, in which the dosage ranges from 0.1 to 3.4 g. for operations varying in duration from 5 minutes to 4 hours or more. In no case have I used more than 0.5 g. In the earlier cases of this series my aim was to produce a very short period of unconsciousness. However, I soon found it preferable to give a much smaller dose, so that the patient did not get so far as unconsciousness, but was drowsy and had not quite reached the stage of incoherence. Anything from 0.25 to 0.4 g. was sufficient for my purpose, depending on the individual response of the patient.

Complications.—Central respiratory paralysis with subsequent circulatory failure, if threatened, should be dealt with by artificial respiration, oxygen and CO_2 inhalation, and the administration of coramine or picrotoxin.

Results

The mortality and morbidity in my series of 50 cases was *nil*. Tovell records 6 fatalities out of 4,000 anaesthetic cases. Cameron had one fatal case in 225—that of a very fat diabetic negress who required amputation of a toe for gangrene. Our group, which was unselected, included every soldier that came under my care over a period of 13 months whose investigation was held up by resistance and who, at the same time, was fit physically to receive pentothal and could be persuaded to submit to the treatment.

Of these patients 35 showed predisposition to neurosis prior to service; 31 had suffered actual war trauma. Of the 50 patients treated in this way 33 were rendered fit for duty and 17 were invalided. About half those invalided were fit to return to good posts in civil life. In fact, in some the pronounced secondary advantage of having a good position in civil life to which to return was a factor mitigating against successful removal of the neurotic symptom.

Illustrative Case

Case 26.—A soldier, aged 33, who had been in the service for 18 months, was admitted to hospital complaining of frequent nightmares associated with war dreams and general nervousness. Four months previously he had been exposed to bomb blast and had been rendered "unconscious" for 36 hours. Amnesia for those 36 hours was complete. He had had a normal school and work record, was the second son in a family of 6 boys and girls, was happily married, and happy in his unit. No family history of mental or nervous illness was elicited. On clinical examination there were no physical signs of disease apart from coarse tremor of the limbs and somewhat exaggerated reflexes. He was considered to be a case of hysterical amnesia and suitable for narco-analysis. It was thought essential first to relieve his amnesia. He reacted extremely well to a small injection of pentothal (5 c.cm.), and became euphoric and excessively loquacious. Amongst other things he related how he had been on the verge of "a sensual indiscretion," about which he felt extremely guilty, immediately before the air raids in which he was injured. He recalled the bombing and recounted how he was thrown down violently and covered with mud, how his friends came and had him admitted to hospital, and all the details of the way the nurses and doctors dealt with him on admission. All this was confirmed later. He made an immediate improvement; he was able to recall all these experiences when he came round from the influence of the drug, and seemed to fear them no longer. For the remainder of his stay in hospital he was symptom-free and a good advertisement for other similar patients, persuading them to submit to the same therapy. He returned to duty.

The cases are presented in tabular form. Table I deals with the patients in whom the hysterical reaction predominated. Table II summarizes the cases in which anxiety states predominated. Table III deals with 7 cases with a history of head injury. Table IV deals with 4 patients whose illness was predominantly physical. Table V contains details of a miscellaneous group. The number in the first column refers to the chronological order in which they were treated. In many of the cases accurate diagnosis has been difficult, because it was found that for the most part they did not fit clinically the classical descriptions—e.g., patients predominantly hysterical in their reactions showed anxiety symptoms, and obvious anxiety neurotics at times displayed hysterical features. Again, apparent neurotics under narco-analysis revealed themselves as psychotics, and certain sufferers from physical injury displayed superimposed neurotic features.

Discussion

The advantages of this simple physical approach to the intricacies of psychological mechanisms are that it is safe, rapid, and sure: the mortality, inside the wide limits imposed by contraindications and using the small doses of pentothal advocated, is *nil*. It is a much more rapid approach to the factors hidden behind neurotic symptoms than any other form of psychotherapy except hypno-analysis, and the necessity for the services of a skilled hypnotist is eliminated. It is a sure method of getting a patient into a narcotic state without unpleasant after-effects, and the required degree of narcosis can be achieved to a nicety with very little practice by giving the injection extremely slowly, as described, and conversing with the patient all the while.

One disadvantage is that it is technically an operation: in the Army a soldier can refuse any injection or operation, and very often exercises this privilege. Rumours about the mysteries and dangers of narco-analysis are reminiscent of former outcries against the use of hypnotism and anaesthetics. Another disadvantage of making a physical approach to a neurotic patient is that he may revert to the belief that some physical defect is still responsible for the illness and persist in avoiding the psychological issue in spite of all physical examinations having proved negative.

Narco-analysis with intravenous barbiturates is not a method which at present is universally successful in overcoming resistance. There has been a good deal of irresponsible Press publicity, principally in the United States, about the use of intravenous barbiturates as "truth serum," but I have been able to trace only one scientific article on the subject in the medical literature. In this Lorenz (1932) refers to the undue Press publicity, and states that the medical profession, in its contact with the public, should seek to correct the misinformation that prevails. In the 3 cases he quotes the patients who were suspected of murder were, under the influence of sodium amytal, able to establish their innocence.

Dr. Emanuel Miller in a private communication has informed me that he was called upon to give evidence before a court martial in defence of a soldier whom he had treated for a hysterical fugue. He had used evipan narcosis in his treatment, and the material obtained from the accused by this means was accepted as evidence by the court. It is debatable whether material so obtained should ever be accepted as evidence *against* any accused person. Though memory was restored under pentothal narcosis in a number of my patients suffering from amnesia, and the material thus recovered was corroborated independently afterwards, I am not prepared to say that the truth is always revealed. The patients with whom I had success were co-operative so far as they could be, and had something to gain by being communicative when assisted by injection. No doubt, in time, this technique may be perfected so that one can be sure whether the truth is being revealed or not, and this will be a great medico-legal advance, but from the psychotherapeutic standpoint it is not so important to be sure that the repressed material is absolutely true. The hidden fears of the neurotic may be sheer fantasy and the wildest confabulations of imagination. They are none the less terrifying, perhaps more so than real dangers. Yet these fantasies are the phenomena with which we as therapists have to deal in helping our patients to adjust themselves to themselves and to their hidden fears.

The phenomena observed in the 7 cases with a history of head injury give rise to interesting speculation. Two of these, under investigation, revealed that no head injury had ever occurred; but, even in those in which there was no doubt about physical injury, restoration of memory and abreaction was followed by relief of the sequelae. It may be that in these cases there was no real brain injury and that they were similar to cases of other bodily injury followed by hysterically exaggerated symptoms. It is a type of injury which would repay further exploration by this method. All these men were returned to duty.

It will have been noted that a great number of these so-called war neuroses when subjected to narco-analysis revealed hitherto unsuspected data. In many of them the hidden worries brought to light had nothing whatever to do with the war, the trauma experienced in fighting being only the precipitating factor in predisposed subjects. Patients are often more ready to talk of their war experiences than they are to confide their personal and domestic worries. But it is usually the revelation of the things they least want to talk about that brings relief of neurotic symptoms. The clinical study of these soldiers suffering from neuroses has exemplified that the factors underlying both war and civilian neuroses are similar. But the war has precipitated these neuroses, and we are faced with the problem of having to deal with great numbers of psychoneuroses in the Army, in which saving of time in treatment is very important.

All sufferers from neuroses find it difficult to confide entirely in their doctors. For those in civil life who can choose their own doctor this difficulty may be somewhat diminished, but for the hospital out-patient and the soldier faced with a medical officer in uniform there is virtually no choice, and thus treatment in the ordinary way tends to be either prolonged or ineffectual. The progress made in the Services towards perfecting the technique of narco-analysis during the war will be invaluable when tackling the problem of civilian neuroses in the period of post-war reconstruction.

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POSTURING IN BRONCHOGRAPHY

BY

F. DUDLEY HART, M.D., M.R.C.P.

Medical Officer, E.M.S.; Medical Registrar, Westminster Hospital

In a study of the literature on bronchography one is struck by two things: first that methods of introduction of lipiodol into the bronchial tract are discussed at great length though little detail is given of posturing the patient to fill different areas of the lung; secondly, that the radiographs illustrated often show large areas unfilled. If one is demonstrating a basal bronchiectasis it is essential to exclude the same disease elsewhere if operation is contemplated. The right, middle, or left lingular lobe is also frequently unfilled, and, though all zones appear on rapid inspection of an A.-P. film to be filled, closer inspection will show that the middle-lobe bronchi are empty of oil, a fact brought out readily in a lateral view. As bronchography is primarily an investigation to locate lesions and to define their extent exactly, it is as important to know what areas are normal as to know what areas are abnormal. To outline the bronchial tree completely on one side of the chest is therefore essential, and to do this with certainty proper posturing is required as described by Erwin (1936).

Technique

It was found best to adopt a standard technique and vary it hardly at all. Assistant and radiographer should be well acquainted with the different stages so that the investigation can be performed without any waiting periods. The patient should be prepared by posturing and/or premedication if necessary, and should have been tested for iodine and cocaine sensitivity.

The Two-stage Method

By this method only one side of the chest is outlined at one sitting. The patient lies on the *x*-ray couch, with head and shoulders raised approximately 30 degrees on several pillows, the chin elevated, and the head thrown back. A bleb of 2% procaine is produced in the skin over the crico-thyroid membrane: only a few minims (6 to 12) of local anaesthetic are required, as more tends to cause haematoma formation. If cocaine is necessary some 5 minims of 5% cocaine hydrochloride is injected rapidly into the trachea, the needle being rapidly withdrawn. The patient sits up, coughs several times, then returns to exactly the same position as before. He is cautioned not to swallow or cough from this time until the radiographs have been seen and approved. The iodized oil—lipiodol (Lafay) or neohydriol (May and Baker)—is then injected through the anaesthetized area after heating it to just above blood heat in a water bath, the patient being rotated so that the opposite shoulder is raised several inches. This prevents the oil from running into the opposite main bronchus. After some 8 to 10 c.cm. has been injected the patient places his two hands on the investigator's shoulders, lifts himself to a sitting position, still leaning over to the affected side, and leans forwards and sideways so that his body is almost parallel with the floor. The investigator is now kneeling by the side of the couch, the patient's hands on his shoulders, the patient's face looking down into his. In this position 6 to 8 c.cm. of oil is run into the middle lobe. After 1 to 2 minutes the rest of the oil (6 to 8 c.cm.) is injected. The needle withdrawn, the patient quickly lies on the affected side, and the foot of the table is rapidly elevated. As his head sinks below his heels he moves half over on to his face, still lying on the affected side.

In this way the lung has been filled in all its zones, the bronchi of the "four fundamental lobes"—dorsal, middle, upper, and lower—being outlined on the affected side. If successfully done no oil has spilled over on to the opposite side and none has regurgitated into the mouth (though this cannot be prevented in all cases). Radiographs, A.-P. and lateral, are now taken. If the upper zone is mainly under suspicion the patient is kept in this position, with the head low, and radiographed. If the middle lobes are suspected particularly, the foot of the table is depressed so that the feet are a little lower than the head. A lateral picture is taken in this position, the patient lying on the affected side, and a P.-A. film with the patient on his face. If it is required to outline the basal bronchi particularly, lateral and A.-P. pictures are taken with the patient erect. In all cases he is kept in the same position until the films have been seen and passed, further views being taken as found necessary. Screening is then performed with the patient in the erect position. The opposite side of the chest is filled in the same manner some 7 to 10 days later.

One-stage Methods

If it is required to outline both sides at one session one of the following methods may be adopted.

1. Technique as above, using rather less oil; so that instead of a total of 20 to 25 c.cm. only some 14 c.cm. is introduced into the side under suspicion. Films are taken in the required position as described above. The remaining 8 to 12 c.cm. of oil is then introduced into the opposite lung with identical posturing, A.-P. and oblique views being taken. The disadvantage here lies in the reintroduction of the needle into the neck.

2. Technique as above, one side being completely filled and films taken A.-P. and lateral in the required position. If the patient has had the left side filled he turns on to the right, and the head of the couch is lowered for one or two minutes. The oil now runs from the left base into the right upper lobe bronchus. The couch is returned to its first horizontal position and the patient leans over the right side of the couch, with his body almost parallel with the floor, to fill the middle-lobe bronchus as described previously. In so doing some oil runs also into the lower-lobe bronchus. He then sits upright again, leaning slightly over to the right side, and more oil runs down into the basal bronchi. Screening is now performed, erect or prone, and if sufficient oil has not passed over into the second

side the posturing is repeated. It is necessary, however, to perform the whole manœuvre with as little delay as possible, as the oil becomes rather more viscid as it cools. Alternatively, the oil may be rendered thinner by the addition of olive oil (4 to 6 c.cm. of olive oil to 20 c.cm. of neohydriol or lipiodol), it being introduced without any preliminary heating. This, however, does not always give satisfactory results, as the thinner oil runs in the smaller bronchi and is there retained. By this posturing the patient is spared reintroduction of the needle into the neck, and excellent pictures can be obtained (Figs. 1 and 2) —A.-P. and lateral of the side first filled, A.-P. and oblique after filling of the second side.

Subsequently, whatever method is used, the patient is told to expectorate as much as possible and not to swallow any sputum. If necessary he should posture to get rid of iodized oil from any cavities where it may have lodged. Oil seen on screening in an iodine-sensitive patient's stomach should be removed by stomach wash-out or administration of emetics. A patient who has received cocaine should be warned not to eat or drink for three hours subsequently.

Discussion

The crico-thyroid route has been used merely because I get the best results with it, and because cocainization can be cut down to a minimum in all patients and omitted in many. Sensitivity below the vocal cords to injections seems to vary greatly, and many patients can control their cough reflex without cocaine anaesthetization (Jewesbury, 1939). Be that as it may, transnasal, translingual, or other routes may be used if preferred. The importance is stressed not of the site of introduction of the oil but of the areas reached after introduction. A lateral view of the affected side is essential, and, if posturing be faulty, oil on the opposite side will render this view confused, one bronchial tree being superimposed on the other in the film. To fill the middle lobe properly is also essential, and lateral views are again necessary. The hard-pressed radiologist should be spared the pain of reporting yet again: "Those few basal bronchi outlined are normal."

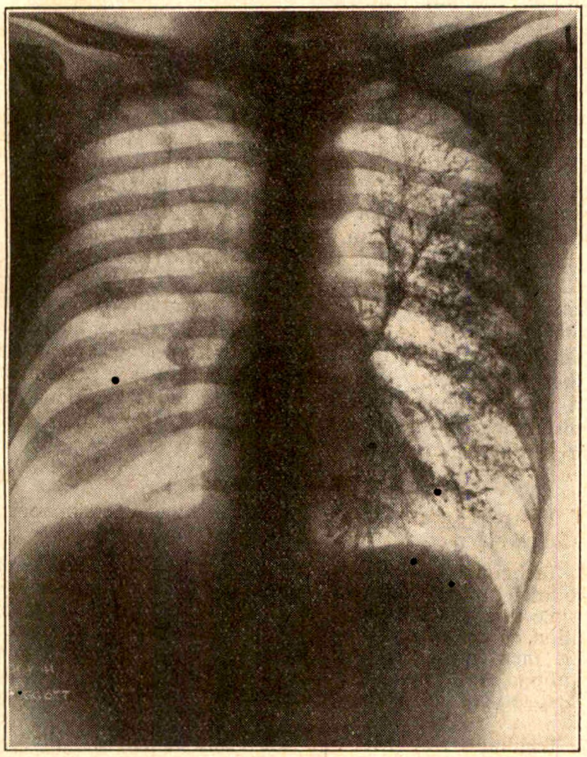

FIG. 1.—Radiograph showing outlines of the left side of chest.

Summary

The importance of adequate posturing on bronchography is stressed, and a standard technique is described which allows delineation of all parts of the bronchial tree. Without such technique, imperfect filling of the bronchial tree will be the rule instead of the exception.

My thanks are due to Drs. W. E. Lloyd and W. H. Coldwell for their kindness and help, and to the Sister and staff of the *x*-ray department, Westminster Hospital.

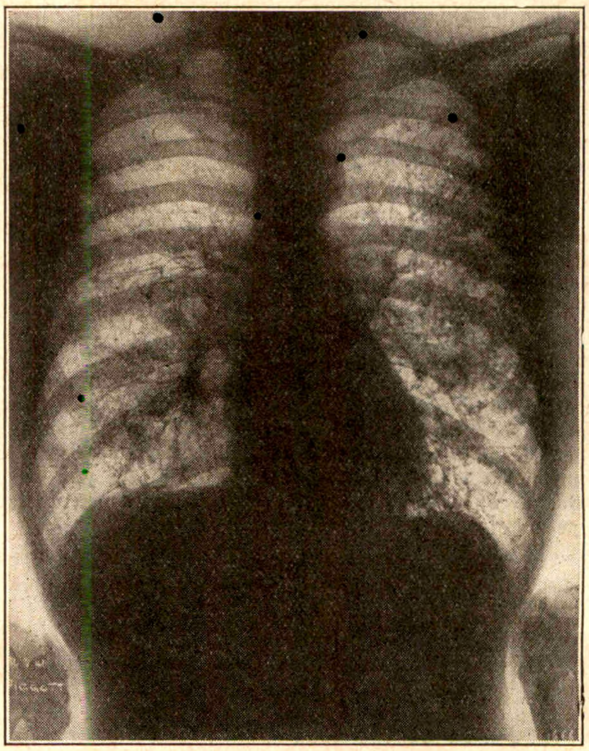

FIG. 2.—Right side outlined by posturing the patient. The oil from the left side has been made to run over and outline the right.

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THE EFFECT OF BLEEDING ON THE BLOOD-SUGAR LEVEL IN BLOOD DONORS*

BY

B. J. LAWRENCE, M.B., Ch.B.

AND

G. PLAUT, M.D.

The object of the present investigation was to determine whether the level of the blood sugar is related to the incidence of "fainting" in blood donors. The clinical characteristics of such faints have been previously described by Brown and McCormack (1942). Certain factors responsible have been analysed by a statistical survey (Greenbury, 1942). In the latter it was suggested that lack of food might be a predisposing cause. If a constant low blood-sugar level occurred in donors who fainted, as opposed to those who did not, it would favour such a hypothesis.

Method

In a series of 50 unselected donors blood-sugar estimations were made upon samples of capillary blood obtained from the ear immediately before and immediately after the withdrawal of between 400 and 450 c.cm. of blood by the Medical Research Council technique (Brown and McCormack, 1942). In a second series of 46 unselected donors blood-sugar estimations were made upon venous blood taken at the end of a routine bleeding from the antecubital vein. In these cases a pressure of between

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* A report to the Medical Research Council from the N.W. London Blood Supply Depot.

60 and 80 mm. Hg had been maintained by a sphygmomanometer cuff on the arm for 3 to 5 minutes before the sample was obtained. During this period, in order to facilitate the blood flow, the donor had continuously clasped and unclasped a rolled bandage held in the palm of the hand. All samples were collected in small bottles containing dried oxalate (equivalent to 1 c.cm. of a mixture of 1.2% ammonium oxalate and 0.8% potassium oxalate). Owing to the nature of the transfusion service it was not possible to standardize conditions of temperature, previous exercise, or the time of the last meal. The majority of donors had had a meal within 3 hours of venesection.

The method used for the estimation of glucose was Harding's modification of the Schaffer-Hartmann method as described by King, Haslewood, and Delory (1937).

Results

In the series of 50 unselected donors examined before and after bleeding only 2 fainted. Their blood-sugar levels were 85.8 mg. and 98.6 mg. per 100 c.cm. before and 85.8 and 100.92 after bleeding. The findings in the other 48 donors are summarized in Table I. No change in blood-sugar level was found in 13 instances; in 27 there was a slight increase after bleeding, the average figure being 16.34 mg., while in 10 there was a decrease of the same order. In the second series of 46 unselected donors in whom the level of the blood sugar in venous blood obtained at the end of bleeding was determined, 16 fainted either while being bled, so that the full amount could not be withdrawn, or immediately afterwards. The results are summarized in Table II. Again the figures recorded reveal no significant difference in the blood-sugar level of donors who faint and those who do not.

TABLE I.—*Capillary Blood-sugar Values*

Time	No. of Donors	Blood-sugar Values in mg. per 100 c.cm.	
		Range	Mean
Before bleeding ..	48	60·32 to 100·40	94·91 ± 6·12
After bleeding ..	48	67·30 to 147·32	100·67 ± 6·56

TABLE II.—*Venous Blood-sugar Values*

Donors	No. of Donors	Blood-sugar Values in mg. per 100 c.cm.	
		Range	Mean
Group 1 (normals)	30	28·01 to 106·42	66·14 ± 7·14
Group 2 (faints) ..	16	50·11 to 100·33	77·27 ± 5·90

There was no apparent relation between the age of the donor and the blood-sugar level. One extremely low figure of 28.01 mg. occurred in an old man of 73 who had had a good breakfast about 2½ hours before bleeding and who felt perfectly well. No correlation could be established between the time that had elapsed since the last meal, the blood-sugar level, and the incidence of fainting.

Discussion

The figures for the blood-sugar level recorded in the present investigation suggest that a low blood sugar is not a factor associated with fainting in blood donors, and that withdrawal of 500 c.cm. of blood does not result in any definite change in the blood-sugar level. The level in the first series, made upon capillary blood, was higher than that in the second series, made upon venous blood—a finding in agreement with that of other workers (Jonas, 1933; Himsworth, 1933; Shoji *et al.*, 1938). Shoji and his co-workers found that the contraction of the forearm muscles decreased the sugar content of venous blood considerably in non-fasting subjects. Such contraction of muscles occurs in all donors, as they are asked to clasp and unclasp their hands during the bleeding procedure in order to facilitate the blood flow. It is probably responsible for the rather wide difference observed.

Summary

The blood sugar was estimated in 96 donors, 18 of whom fainted. No significant difference was found in the level of the blood sugar after bleeding. This level was without effect upon the incidence of fainting.

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CONDITION OF RETAILED RAW MILK IN AN URBAN AREA

BY

C. A. GREEN, M.D., Ph.D., D.P.H.
Surgeon Commander, R.N.V.R.

The incidence of tuberculosis of the bovine type in the human subject is regrettably high in this country. Bendixen *et al.* (1937) recorded aggregate figures which showed that the percentage frequency of this type in cervical gland infections at all ages was 46.2 and 52.3 in England and Scotland respectively. The corresponding figures in bone and joint infections were 22 and 29.8; in lung infections, 0.9 and 5.5; in lupus, 48.6 and 53.8; in meningeal infection, 25.7 and 29.8. Lesions due to the bovine type in the human subject result, in the majority of instances, from the ingestion of milk from infected cattle. It is difficult to obtain exact figures as to the incidence of infection in dairy cattle, but approximately 40% react to the tuberculin test and about the same proportion of cattle are found infected on slaughter in abattoirs. That raw milk should suffer as a result is a natural consequence. Thus Brownlie (1933) found that 10% of churn samples of retail milk in urban areas in Scotland contained tubercle bacilli.

Contamination of milk supplies by an organism such as the tubercle bacillus, whose virulence is capable of easy demonstration both in the experimental animal and in the unfortunate human patient, rightly has greater claim to attention than the general cleanliness of the milk, by which term is meant freedom from bacterial contamination, irrespective of the type of organism present. Nevertheless, questions of both economic and public health importance depend upon this latter quality.

The following data were recorded as the result of an investigation into the raw milk supplies of an urban community in which it was estimated that 50% of retailed milk was of this type.

Methods

A sample of milk measuring 300 c.cm. was taken into a sterile container from the raw milk exposed for sale in the retailer's premises on the morning of delivery and brought immediately to the laboratory for examination. Three tests for cleanliness were then applied. Two of these were the plate-count and presumptive *B. coli* tests, recommended in the Milk Special Designations Order, 1936, Scotland. The third test was the methylene-blue reductase test, introduced under the Milk Order, 1936, England and Wales, as a substitute for the plate-count test. In addition, many of the milks were examined for the presence of tubercle bacilli. The methods used are, in brief, as follows:

1. *Plate-count Test.*—Decimal dilutions of milk in 90 c.cm. of diluent were prepared. From the 1/100 and 1/1000 dilutions three separate 1-c.cm. volumes were plated in Wilson's (1935) yeastrel agar medium. After incubation at 37° C. for 48 hours colonies were counted by means of a hand lens and tally counter.

2. *Presumptive B. coli Test.*—Three tubes of MacConkey's fluid medium were each inoculated with 1 c.cm. from the 1/1000 dilution of milk. The presence of acid and gas after 48 hours' incubation at 37° C. was noted.

The standard upon which the quality of samples was judged by the above tests was that demanded of standard milk by the

Scottish Order, 1936—i.e., fewer than 200,000 viable bacteria per c.cm. and no *B. coli* in 0.01 c.cm.

3. *Methylene-blue Reductase Test.*—The modified test described Wilson (1935) was adopted. To 10 c.cm. of milk in a standard sterile test-tube, 1 c.cm. of methylene-blue solution was added. The tube was fitted with a rubber bung, placed in a water bath at 37° C., and inverted at intervals of 30 minutes.

The standard upon which the quality of the milk was judged was that demanded of "accredited milk" under the English Order, 1936—i.e., the milk must not decolorize methylene-blue within 4½ hours if the sample is taken at any time from May 31 to Oct. 31; or within 5½ hours if taken at any time from Nov. 1 to April 30.

4. *Examination for Tubercle Bacilli.*—100 c.cm. of each sample was centrifuged for 30 minutes at 3,000 r.p.m. The resulting deposit was then resuspended in 5 c.cm. of the supernatant fluid, and the entire bulk injected without further treatment into the inguinal region of a guinea-pig. Eight weeks later, if not already dead, the animal was killed. The macroscopic appearances of any tuberculous lesions present were confirmed by the examination of stained films. All animals were kept in separate cages, and in no instance were lesions of tuberculosis noted other than those resulting from the injection of the milk samples.

Results

Examination for Gross Bacterial Contamination.—The completed examinations by all three tests for cleanliness are summarized in Table I. It will be seen that, irrespective of the test used, approximately half the specimens failed to reach the desired standard. The highest proportion of failures—namely 53%—was obtained by means of the presumptive *B. coli* test, which was included as an indication of excretal contamination. Of the 116 specimens examined, 60 were taken during the winter months and 56 in the following summer period. The influence of climatic factors on the condition of the retailed milk is indicated in Table II. Thus during the colder period the percentages of failures in the plate-count, presumptive *B. coli*, and reductase tests were 20, 28, and 30 respectively. In the summer period these figures rose to 76, 78, and 66. The quality of raw milk could not be correlated with the amount handled by individual retailers.

Table I.—*Examination of* 116 *Samples of Retailed Raw Milk by Various Tests for Cleanliness*

Test	Result	
	Passed	Failed
37° C. plate-count	61 (53%)	55 (47%)
Presumptive B. coli	55 (47%)	61 (53%)
Methylene-blue reductase	61 (53%)	55 (47%)

Table II.—*Comparative Results of Tests for Cleanliness in* 60 *Winter and* 56 *Summer Samples of Retailed Raw Milk*

	Winter Samples	Summer Samples
1. Failing 37° C. plate-count test	12 (20%)	43 (76%)
2. ,, presumptive B. coli test ..	17 (28%)	44 (78%)
3. ,, methylene-blue reductase test ..	18 (30%)	37 (66%)

Examination for Tubercle Bacilli.—In all, 93 of the specimens of raw milk were also examined for the presence of tubercle bacilli, and 19 (20%) were found positive. For interest, it may be noted that 5 of the positive specimens passed all three tests for general cleanliness, 11 failed all three tests, while the remaining 4 failed in one or more test. During the investigation 16 retail shops were visited.

Commentary

These results serve to indicate the continued unsatisfactory condition of raw milk supplies. The proportion of retailed milk of this class varies greatly in different centres, but in the larger towns and cities the tendency is towards a gradual reduction. Nevertheless the untreated product is still widely used in rural areas and in smaller townships. As Griffith and Smith (1935) have shown, it is in such areas that the incidence of bovine tuberculosis is highest. Little comment is necessary in regard to the demonstration of tubercle bacilli in one of every five specimens in the series examined, save to mention a popular quasi-scientific criticism that pasteurization, resulting in the destruction of any tubercle bacilli present, may remove the stimulus to an acquired immunity. Apart from the absence of any satisfactory scientific demonstration of this possibility, one may quote Bendixen *et al.* (1937), who ask, in referring to the fact that in 1931 about 2,600 persons died from tuberculosis of bovine origin in Great Britain, "What other method of vaccination would be tolerated that exacted such a sacrifice?"

The gross bacterial contamination found in so many of the specimens beyond the limits recognized for the lowest grade of milk under the Milk Orders, 1936, also requires serious consideration. The question at once arises, To what extent has legislation influenced methods of production and distribution? No doubt much has been accomplished by these means, but there is still room for vast improvement. In fact, it must be considered whether the situation can be met only by the immediate institution of compulsory pasteurization. For a reasoned summary of the possible effect of the adoption of this measure the report by Bendixen *et al.* should be consulted. In this report the advantages of efficient pasteurization are adjudged to outweigh any possible disadvantages. A further criticism has been that pasteurization may result in the loss of certain growth-promoting properties of raw milk. Wilson, Minett, and Carling (1937) in a controlled experimental study found nothing to suggest that, for calves, the nutritive value of holder-pasteurized milk was in any way inferior to that of the raw product.

Conclusions

Of 116 specimens of retailed raw milk, the percentage failing the standard plate-count, presumptive *B. coli*, and methylene-blue reductase tests were 47, 53, and 47 respectively; during the summer months the corresponding percentages rose to 76, 78, and 66, respectively.

20% of these specimens contained virulent tubercle bacilli.

Compulsory pasteurization of milk is considered an essential measure.

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Medical Memoranda

Obstructed Labour due to Conjoined Twins

The following case report may be considered interesting enough to warrant publication.

Case History

A primigravida aged 25 was admitted to hospital at 5.15 a.m. on Sept. 8, 1941, as an emergency case. The history was that of a normal pregnancy, with an estimated duration of approximately 38 to 39 weeks. Her general health was good. Onset of labour occurred at 2 p.m. on Sept. 6 with slight pains; spontaneous rupture of the membranes took place at 6 p.m. on the 7th. Two vaginal examinations were made at the patient's home by the midwife, the second one at time of rupture of the membranes. The doctor called in on account of delay in the second stage ordered the patient into hospital with a provisional diagnosis of persistent occipito-posterior position.

On admission to hospital her general condition was good, and the blood pressure 128/84. She was a healthy-looking woman of rather robust build. The uterus corresponded in size to that of a normal full-term single pregnancy. Pains were strong and very frequent, and the caput was well visible during pains. The foetal heart was regular: rate 132 per minute.

Progress after Admission and Manner of Delivery.—In view of the normal size of the uterus and also (apparently) of the head distending the perineum, the possibility of twins was not at first considered. Preparations were immediately made for conducting delivery, which seemed to be about to occur forthwith. One hour after admission, however, the woman was still undelivered, in spite of the fact that the head appeared almost "crowned" during pains. The pains were now very strong, and came on in rapid succession. The foetal heart could be auscultated only with difficulty, but was evidently becoming slower. At this stage the perineum was infiltrated with local anaesthetic and an episiotomy was performed. No further advance resulting from this, Wrigley's short forceps were slipped on and the head delivered (in the occipito-anterior position). The head did not, however, come down fully, and the chin was freed with difficulty. The appearance was as if something were pulling the head back again into the vagina. There was no sign of respiration. By employing head traction and pressure on the fundus the arms were eventually and with great difficulty delivered. The trunk had not advanced during this manœuvre, and, the head and shoulders being born, it was clear that some uncommon cause of obstruction must be present. The uterine contractions by this time were becoming dangerously tetanic, so that a speedy delivery was imperative.

General anaesthesia having been started, a hand was passed into the vagina to determine the cause of the obstruction. Foetal limbs were felt in the region of the pelvic brim, tightly gripped by the lower uterine segment. Amyl nitrate was administered—effecting a slight degree of relaxation—but attempts to deliver the trunk again proved unsuccessful. The thorax was now opened and eviscerated. Exploration being thus rendered less difficult, the presence of twins was established by the discovery of a third arm. A little later it was realized that some kind of double monster must be present, as foetal parts could be palpated without a break in continuity from the arm of the second twin on to the trunk of the first. After this, delivery of what proved to be a double monster of the thoracopagous type was effected in a few seconds. The third arm, mentioned above, was pulled down, and after it the fourth, then all four legs in succession. Traction on the legs brought out the buttocks, and lastly came the trunk, shoulders, and head of the second half of the monster.

The third stage was completed in a normal manner. The uterus was well contracted afterwards, and the general condition of the mother was good. The puerperium was quite normal, and the patient was discharged home on the 12th day.

The Specimen.—The two halves of the thoracopagus were approximately equal in size, each having a normally developed head and limbs (see accompanying photographs). They were joined face to face, by soft tissues only, down the front of chest and upper abdomen. The placenta was single, and there was a large common exomphalos, into which ran the single umbilical cord and inside which coils of intestine were visible. The monster weighed 8 lb. 7 oz., and the length of each half was approximately 19 in.

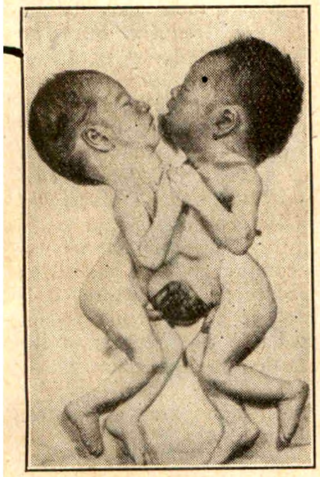

FIG. 1

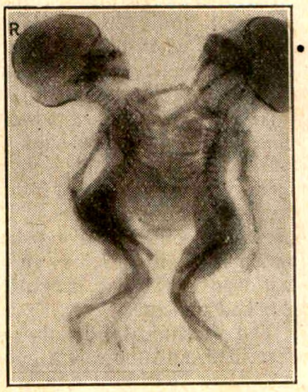

FIG. 2

COMMENTARY

Delivery was not difficult after crushing of the thorax of the first twin had allowed adequate access for exploration and diagnosis. Had the monster been larger it would doubtless have needed dividing into its two halves to make delivery possible. The ventral connecting portion, being of soft tissues only, was lax enough to permit some movement of one twin relative to the other. At one point during the manipulations the two heads were stretched out so as to constitute the opposite extremities of the monster, with the two trunks and all the limbs between them.

In this connexion the following description from Whitridge Williams's *Obstetrics* may be quoted: "Thoracopagi are frequently so loosely connected with one another that considerable motility is possible. Indeed, it is not unusual for the two children to present in a different manner. When possible, it is advisable to bring down all four feet at the same time and to effect extraction in such a way that the posterior head is first delivered. In cephalic presentations the head and body of the first child is expelled and the second child is then born very much as in an ordinary twin pregnancy. If, however, the latter presents transversely, its delivery can be effected only by version and extraction."

I am indebted to Dr. James Clark, medical superintendent, and Dr. W. J. Clancy, senior obstetrician, for permission to publish this case.

EDWARD RIDEHALGH, B.Sc., M.B., Ch.B.

City General Hospital,
Sheffield.

A Case of Polyradiculoneuritis

The following case seems to be interesting enough to merit publication.

CASE REPORT

The patient, a ham-curer aged 50, was admitted to the Victoria Infirmary, Glasgow, on Sept. 1, 1941, suffering from symptoms of polyneuritis which conformed very closely to the syndrome first described by Guillain, Barré, and Strohl (1916). The symptoms also closely resembled those described by H. Stuart Barber (1940).

For some weeks before the onset of paralysis he had felt pain in the lumbar region. This was not very severe but was constant, and his doctor had given him some medicine for it. For a few days previous to the paralysis his urine was highly coloured; he described it as being "red." On Aug. 25 he had gone to work and had done his job as usual. The next morning he could not stand. He had no other complaints, apart from the slight pain in his back. He became very restless during that day, and did not sleep on the following night, an irritation of the skin causing him to scratch himself to the point of drawing blood. On Aug. 27 he had palsy of the left side of the face and some twitching of the muscles of the right side of the face.

On admission there was double facial palsy, with inability to close his eyes, definite muscular weakness of both arms, and complete paralysis of both legs. The biceps and triceps reflexes were weak. Abdominal reflexes, knee-jerks, and ankle-jerks were absent. There was no loss of sensation either to superficial or deep tactile stimuli or to pain. Pronounced nuchal rigidity and Kernig's sign were present. Sleeplessness was a marked feature of the acute stage of his illness, but headache was not complained of. The temperature was normal; there was some tachycardia, the pulse rate being about 100 during his first week in hospital, later falling to 80. The urine was normal and contained no blood. Lumbar puncture revealed a normal fluid pressure. The cell count was 4 per c.mm.; protein, 122 mg. per 100 ml.; chlorides, 733 mg. NaCl per 100 ml.; sugar, 84 mg. per 100 ml. The blood leucocyte count was 19,300 per c.mm.; the sedimentation rate was not estimated; the Wassermann reaction was negative.

Dr. Conway, ophthalmic surgeon to the hospital, reported on Sept. 4 that the edges of the left optic disk were blurred, but that the condition was short of true swelling of the disk. The right optic disk was well defined but showed definite nasal pallor. There was no paralysis of the external muscles of the eye.

The patient's condition became worse for a few days after admission, and he was incontinent of urine on several occasions. After a week improvement was noticed and he was able to move the legs slightly. The improvement continued without interruption, and eight weeks after the onset recovery was almost complete, except for slight paresis on the left side of the face, and he was able to walk with assistance. The knee-jerks and ankle-jerks were still absent.

Comment.—The features of this case are: the sudden onset of paralysis affecting the legs, arms, and facial muscles, distribution being symmetrical; the comparatively rapid and complete recovery; the normal temperature throughout; the tachycardia; and the cerebrospinal fluid under normal pressure, with normal cell count but high protein content. These features are so similar to those described by H. Stuart Barber and others as to suggest that a specific virus might be the cause of this condition.

ALEX. GLEN, M.D.,
Visiting Physician, Victoria Infirmary, Glasgow.

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Reviews

PSYCHOTHERAPY

The Therapy of the Neuroses and Psychoses. By Samuel Henry Kraines, M.D. (Pp. 512. 25s.) London: Henry Kimpton. 1941.

This book has the merit of concentrating on what most books tend to put into a secondary place—namely, treatment—and for this reason it should appeal especially to the practitioner and the student. The accounts of treatment with which it is mainly concerned are such as might, with a reasonable amount of time at his disposal, be used by the family doctor. The author's chief methods might even be described as those of common sense.

For a variety of reasons psychotherapy has tended to depart in recent years from the obvious. Much has been hoped for from psycho-analytic methods, and a good deal if not all that has been hoped has been fulfilled. To the uninitiated there is a promise in psycho-analytic methods of something like magic in the removal of symptoms by a performance akin to a surgical operation, with the minimum onus on the patient, and perhaps not demanding much more of the doctor than a capacity for sustained attention and some intellectual dexterity. They have the appearance of taking responsibility away from the patient and leaving the cure to the efforts of the doctor, or at any rate to Nature, with the doctor acting as a kind of psychological midwife. But the unique success of the Freudian method in certain cases, as well as the vast panorama of psycho-analytic observation and theory generally, has caused the influence of factors other than complexes and the like in producing breakdown to go out of fashion. The effects of pernicious upbringing, of misguided types of education for life, and of the accumulation of faulty habits are unsensational, but they are probably more often the cause of psychoneurotic illness than is nowadays suspected.

Dr. Kraines undertakes the task of treating his patients from this point of view, and seeks to retrain them in their habits and attitudes by teaching them to observe themselves, to control their more selfish or more primitive impulses, to adopt a rational rather than an emotional attitude, and to reorganize their lives in the light of an analysis of their character and behaviour. Conscious rather than unconscious factors are stressed throughout, although there is a purely descriptive chapter on Freudian theory appearing rather uneasily at the end of the book. Emphasis is laid on the need for control rather than on emancipation through recapitulation and catharsis. It is true that some of the advice seems very obvious, almost distressingly so in the section headed. "Therapy of Stress by Removal: Financial Assistance the Best Therapy, especially in the Case of Actual Want." How often has even the novice had this glimpse!

LEUKAEMIA IN ANIMALS

Spontaneous and Experimental Leukaemia in Animals. By Julius Engelbreth-Holm, M.D. (Pp. 245; illustrated. 15s.) Edinburgh and London: Oliver and Boyd. 1942.

The monograph on *Spontaneous and Experimental Leukaemia in Animals* by Engelbreth-Holm has been written at the request of the scientific advisory committee of the Lady Tata Memorial Trust and is published under the Trust's authority. The translator and the scientific committee are to be congratulated on the lucid style of the English, while the Trust and the publishers are to be congratulated on the production of so well-printed and well-illustrated a book at so reasonable a price. Its appearance at the present time is peculiarly appropriate because in more senses than one it marks the end of a period. It summarizes research which had gained a fresh impetus since the inception of the Trust's work in 1932, and it is characteristic of the truly international outlook of the Trustees that the book should have been written by a Dane and produced in England with the support of a Trust founded by an Indian. That international outlook is for the moment obscured, but when it clears again this monograph will serve as an indispensable guide for the resumption of research on the leukaemias. It describes the occurrence and morbid appearances of leukaemia in a great number of birds and mammals. It is not generally known that leukaemia occurs with sufficient frequency in fowls and cattle to constitute at times a serious economic problem. Transmission experiments have shown that certain varieties of fowl leukaemia can be transmitted by a virus, and there is suggestive evidence that one and the same virus may under different conditions produce leukaemia or sarcoma. In mammals leukaemia can be transmitted only by transplantation of cells, but in the mouse pure strains can be bred in which the incidence of spontaneous leukaemia is 90%. Leukaemia may also be initiated by carcinogenic agents. Thus the same factors are of importance in leukaemia as in neoplasia—virus, heredity, and chronic irritation. It is probable that research on leukaemia would have taken a more chemical trend under the stimulus of recent work on the chemistry of the viruses and the genes. For this we may now have to wait till after the war, but veterinarians, haematologists, and experimental pathologists will be permanently indebted to Engelbreth-Holm for his able record of the progress to date.

TREATMENT OF SHOCK

The Treatment of Shock. By R. W. Raven, Major, R.A.M.C. Oxford War Manuals. (Pp. 96. 5s.) London: Oxford University Press. 1942.

Shock in its various forms is a central problem of war medicine and surgery. The intense interest of practical surgeons and the zealous investigations of research workers in all branches of medical science have done much to advance our knowledge of this complex subject, both in the last and in the present war. It is eminently desirable that accurate and up-to-date information be made readily available to medical men serving on our various war fronts. Had this manual fulfilled these requirements it was assured of a warm welcome. Unfortunately these hopes are disappointed.

Following a satisfactory introductory chapter in which Blalock's excellent classification of shock into neurogenic, haematogenic, vasogenic, and cardiogenic is quoted, the author lapses into the old unsatisfactory subdivision of primary and secondary varieties. The clinical description of shock is poor —e.g., the mental state is described as follows (p. 14): "There is apathy, stupor, delirium, and unconsciousness." Many incomprehensible statements occur such as, "Excessive preoperative medication, especially in aged patients, may precipitate a condition of shock from which there may be no recovery" (p. 8). Misstatements are frequent even on important and crucial matters. To say that losses of 4.5 or 5.1% of the total blood volume cause death (p. 20) is obviously incorrect, and even Keith's finding that the patient's condition was grave when blood volume was reduced to 85% (p. 22) has been completely upset by recent work: Wallace and Schafer showed that blood loss in man of 1,200 c.cm. (25% of the total blood volume) was well tolerated. Brennan's claim that plasma transfusion washes side-tracked corpuscles into circulation again is accepted uncritically. The section on oxygen therapy is confused by failure to comprehend the underlying physiological principles. Haemoconcentration, which only occurs in burns and crush injuries, is given undue prominence in discussion. Even the available case reports of the last war show that haemoconcentration rarely occurs in the shocked patient.

The technical details of transfusion are adequately described, and there is a good bibliography.

BORSTAL THROUGH AMERICAN EYES

Criminal Youth and the Borstal System. By William Healy, M.D., and Benedict S. Alper. (Pp. 251. 8s. 6d. net.) New York: The Commonwealth Fund; London: Oxford University Press. 1941.

It takes a foreigner to appreciate our institutions to the full, and one of the best existing books on the Borstal system has now been written by two Americans, both with long experience of practical criminology. It seems that the methods used in the United States for dealing with youthful offenders leave a good deal to be desired. Although in theory reformatory treatment is provided for younger criminals, American reformatories are only prisons under another name, and the system has shown no appreciable success. Dr. Healy was convinced of the value of the Borstal system by an observation of it which he made in 1929. In 1938 he made a second study for the American Law Institute, and the war cut short a third intensive study financed by Mr. J. D. Rockefeller, in which Mr. Alper took part. The authors are therefore well qualified to write on the work of the Borstal institutions. They trace the history of the system from its inception in a wing of Bedford Prison, through its establishment as a recognized part of the penal system after the passing of the Prevention of Crime Act in 1908, to the latest developments, a few years before the war, of North Sea Camp and Prescoed. They summarize the law and practice which govern committal to Borstal, and the system of allocation, and they go on to describe the general principles of the training, and especially its flexibility, so that the length of time each offender shall spend in an institution and that which he shall spend on licence to the Borstal Association are made to correspond with his individual requirements.

The house system, the steady balanced life, and the personal relationship, with the other essentials of this valuable discipline, are appreciated in detail. A chapter describes the recruitment of the staff from men of very varied types, having in common initiative, strength of character, and experience of life. Staff-inmate relationships, the training programme, and home and community relationships are studied in equally precise detail, and the special features of the different institutions are described. The authors' remarks on weaknesses in the system are worth special attention, and the first which they indicate is the absence of any consistent attempt to apply psychological knowledge to the treatment of abnormal personalities. They also criticize gravely the existence of a legal maximum period of four years after which an offender may not be held. While they do not advocate a completely indeterminate sentence, they agree with those governors who would have, for some youths, a longer time in an institution and a much longer time on parole. Their final chapter on the possible application of the system to American needs is rather for their own countrymen, but their masterly analysis will greatly assist English penologists and, no doubt, reformers in other countries.

Notes on Books

Prof. A. **MUIR CRAWFORD** of Glasgow has now produced a fifth edition of his little book *Materia Medica for Nurses* (H. K. Lewis, 4s. 6d.). Many changes have been made in the text, and the scope of the work has been enlarged to include descriptions of some of the newer drugs. There are additional chapters—one on the sulphonamide group and one on the Dangerous Drugs Acts and the Pharmacy and Poisons Act.

An illustrated pamphlet entitled *Some Emergency Anti-Malarial Measures*, by Sir **MALCOLM WATSON**, director of the Ross Institute of Tropical Hygiene, has been issued by its industrial advisory committee. Copies may be obtained on application to the organizing secretary of the Ross Institute, Keppel Street, London, W.C.1.

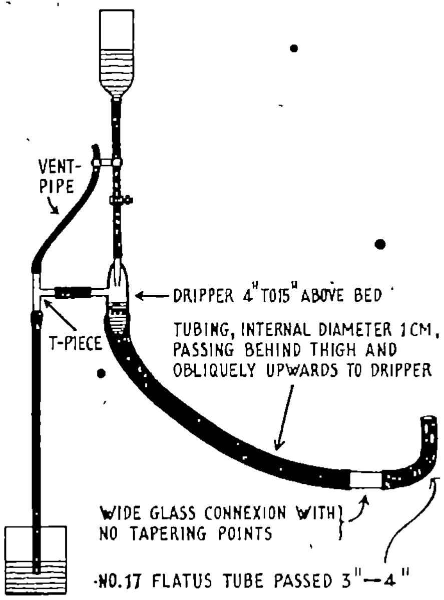
Preparations and Appliances

RECTAL ADMINISTRATION OF FLUID

Mr. D. C. **CORRY**, M.D., F.R.C.S., Surgeon to the Radcliffe Infirmary, Oxford, writes:

After the mouth the rectum is the most physiological route for giving fluid. J. B. Murphy (1909) was the great advocate of this method, and reported that he very often gave 15 pints of fluid a day by this route. The points he stressed were: (1) that the tube in the rectum must be large enough for flatus to be passed; (2) that the column of fluid must not be higher than 4 to 15 inches; (3) that the tube to the reservoir must have an internal diameter of at least 3/8 in. (1 cm.); (4) that the fluid be given intermittently. He achieved this originally by a flat pan reservoir, and into this flatus and faeces were regurgitated.

For the last year I have been giving rectal fluids, using the same principles but utilizing a dripper with a side arm. By this method 2 to 8 pints can be given in 24 hours. Even if the patient takes only 2 pints this is a useful addition to his body fluids, and is an improvement on the cases we used to meet of which we were told, "He will not retain any rectal fluids." The side arm on the dripper allows flatus and fluid to escape, so that the patient is comfortable with the tube in the rectum. A glass T-piece is attached with one branch going upwards. This serves two purposes: it prevents a siphon effect from developing when the fluid from the dripper escapes out of the side arm, and acts as a vent-pipe for the flatus. A foot of rubber tubing is fitted to this upper limb of the T-piece and is strapped to the adjacent tube. This prevents the ejection of faecal fluid from the top of the tube. The lower end of the T-piece goes into a receiver. A flatus-tube (No. 17 English catheter gauge) with end and side openings is used in the rectum. This is joined by a wide-bore glass connexion with 2 ft. 6 in. of wide-bore tubing the internal diameter of which is 1 cm. This is connected to the dripper, which must not have too tapering a lower end. With a wide-bore tube and wide-bore connexion, flatus can escape freely back and the patient is comfortable. The height of the dripper above the bed is 10 in. It may be necessary to increase the height to 15 in. For acute appendicitis, when it is thought desirable to give fluid, I limit the height to 8 in. out of respect for the appendix stump. Before inserting the flatus-tube, fill the tubing below the dripper with fluid and then pass the flatus-tube below the thigh and 3 in. to 4 in. into the rectum. Strap the flatus-tube to both buttocks.


VENT-PIPE
DRIPPER 4" TO 15" ABOVE BED
T-PIECE
TUBING, INTERNAL DIAMETER 1 CM, PASSING BEHIND THIGH AND OBLIQUELY UPWARDS TO DRIPPER
WIDE GLASS CONNEXION WITH NO TAPERING POINTS
NO. 17 FLATUS TUBE PASSED 3"—4"

For rectal drip, usually tap-water and 5% glucose is used as a routine post-operatively in any major case. I normally limit the fluid intake to 6 pints a day. On return from the theatre, while semi-conscious, the patient will tolerate rectal fluid given by any method better than when conscious. The drip is therefore started at a rate of 80 drips a minute (half a pint an hour) and slowed down to 40 drips after two hours. When the apparatus works unsatisfactorily it is usually due to air-locking, which may occur in spite of the tube to the dripper being 1 cm. in diameter. Pressing the tube where it passes under the thigh may expel the bubble. If this fails, take out the rectal tube, allow fluid to run through till the tube fills, and re-insert.

Apart from abdominal cases, it is useful in genito-urinary cases, especially after prostatectomy, in which it is desirable to keep the kidneys functioning adequately. In subtotal thyroidectomies it may help to lessen thyroid crises, as glucose and water are sometimes employed to treat these crises when they occur. It certainly helps to make these patients comfortable after thyroidectomy, saving the trouble of reaching out for frequent small drinks, which on account of the neck operation are painful to swallow.

In addition to making the patient so much more comfortable and fit the next day, I consider it is possible that by the use of the rectal drip (plus sulphanilamide in infected cases) the incidence of pulmonary embolism may be lessened

I wish to thank my house-surgeon, Mr. Peter Henderson, and Sister T. M. King for their help in the application of the apparatus.

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DOES HEALTH EDUCATION HELP?

Never perhaps has this country become so conscious of its health as in the months that have passed since September, 1939. A sick person means an inactive person, and the output of work of a man whose health is below par falls below that of which he is fully capable. After the fall of France we were brought face to face with the fact that this country was small and, compared with Germany and her satellites, numerically inferior in population. Each man and woman counted, and numerous agencies were set to work to keep the health of the country at as high a level as possible. In this the Ministry of Food has come out with flying colours, and its imaginative as well as its realistic handling of an activity that is more important than any other in maintaining and promoting health will, when the balance sheet comes to be added up after the war is over, be found to be very much to its credit. Food propaganda—instruction in food values and in cooking—is one aspect of health education. And the success of this is partly an answer to those who doubt the value of such education. Dr. Donald B. Armstrong, Vice-President of the Metropolitan Life Assurance Company of New York, observes[1] that in the U.S.A. "there are still those in public health who see little or no value or scope in health education." And what is true of the U.S.A. is probably true here. It is indeed a matter in which it is easy to lose perspective, and to attribute to health teaching, say, the decrease in droplet infection and the increase in immunization against diphtheria, and the decrease in respiratory tuberculosis to the control of arbitrary spitting.

Those who believe in the value of health education have been encouraged by the experience of the Metropolitan Life Assurance Company of New York, and it is this which makes Dr. Armstrong's observations of particular interest and value. His company has for years carried out an extensive health programme among its industrial policy-holders. It has employed every medium of propaganda, and those in this country who see the American weekly magazine *Time* have probably noticed with interest the advertisements of the Metropolitan Company in relation to health matters. The company has, of course, been able to follow up its general programme with the special educational efforts of its agents, who come into contact with the individual person in the home. That a large business concern should undertake such a wide measure of public health education is an interesting commentary on the times in which we live. The company itself would probably be the last to claim that it did this work from philanthropic motives or from the reaction of an acute social conscience. It started, and has continued, the work because it pays. Since 1911 the policy-holder group is estimated to have gained about 17 years in life expectation, as compared with about 10 years for the country's population in general. It has been calculated that in 1939 alone the lives saved were approximately 112,000 in excess of those that would have been saved if the policy-holders had experienced only the benefits shared by the general population of the country since 1911. Closer analysis shows that since 1911 there has been a 92% improvement in diphtheria mortality among the general population of the U.S.A., and a 95% improvement in the industrial-policy-holder group—a 3% gain. In pneumonia there has been a 7% gain, in tuberculosis a 10% gain, in puerperal diseases a 17% gain.

Both groups have shared the influences that have led to the general improvement in health. The insured group has been subjected to an intensive health education campaign. The matter is slightly complicated among this group by the facts that the Metropolitan Life Assurance Company provides a nursing service for its acutely ill policy-holders, and that in this nursing service special attention has been paid to diseases of the puerperal state and to communicable diseases such as diphtheria and pneumonia. So in attributing to health education any improvement in health and expectation of life among policy-holders this nursing factor is one that must obviously be taken into account. Dr. Armstrong believes that a more sensitive index of the value of health propaganda is afforded by the attack his company made upon the problem of appendicitis in 1934. The campaign was aimed at preventing unnecessary fatalities from this disease, and was carried out by means of pamphlets and articles, advertisements, posters, lectures, and news releases. During this period appendicitis mortality improved by more than 30%. This coincided with an improvement of 24% in the general population. During this period there were no important advances in the diagnosis or treatment of appendicitis, with the one exception of the quite recent use of sulphonamide drugs in the treatment of peritonitis resulting from perforation. It would, in fact, seem reasonable to attribute the improvement obtained to health education.

But Dr. Armstrong, from his wide and unique experience, utters what is in effect a warning to health educators—namely, that they should not take themselves too seriously. At the moment attention is being focused on the results of examining large numbers of entrants to the fighting Forces in the U.S.A., and enthusiastic health educators are anxiously wondering whether the results will reflect upon the efficiency of the teaching for which they have been responsible. Dr. Armstrong suggests that health education is not the only or the most important factor in any rise or fall in the rejection of recruits. In the first place the experience of the last war and the advances in medicine made since have led to an altered conception of what we mean by fitness and of the medical standards of entry into the Services. Then again, there have been big advances in diagnostic equipment, in hospital services, in treatment, in knowledge of normal standards of nutrition, and changes in such fundamental matters as standards of housing and living. Health instruction for the public at large has not been without effect upon the doctor himself. Dr. Armstrong in fact states unequivocally that some doctors first heard of the Schick test through "lay contacts or through the perusal of literature primarily intended for lay consumption." Some efforts have, in his view, been misdirected, and he cites the fanatical outburst of tooth-brushing that went on 20 years ago, when "whole schools and squads of children were mobilized in playgrounds and elsewhere and exposed to toothbrush drills, thus over-emphasizing this already exaggerated point." Parenthetically he observes that if the time and money that had been spent on this one aspect of health teaching had been devoted, for example, to research on the relation of dental caries to nutrition or to heredity, something more constructive might have emerged. Since then the toothbrush has been blamed for injuring gums and eroding teeth, and health educators perhaps had better be warned now not to swing over in the opposite direction of recommending no toothbrush at all.

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[1] *J. Amer. med. Ass.*, 1941, 117, 2060.

As a further corrective to an unbalanced attitude towards the virtues of health education, Dr. Armstrong describes the experience of Canada and the U.S.A. last year, when an "influenzal pneumonia outbreak" spread across those two countries from west to east. In most parts of both countries, in spite of an increase of influenza and its accompanying pneumonia, the death rate from the latter as compared with 1940 actually fell, but in Quebec there was a sharp rise in the mortality from pneumonia; this, he believes, was due to the fact that medical practice and public health procedures are backward there in comparison with other areas. The interesting point is that the Metropolitan Life Assurance Company insures a larger percentage of the population in Quebec Province than elsewhere, and it has there also concentrated on health teaching to the extent even of "preparing health education material in the native language." In an attempt to find the significance of health education in relation to the numerous medical, nursing, public health, and sanitary agencies, Dr. Armstrong likens it to an enzyme the function of which is to accelerate changes in a certain direction.

We believe that on the whole this country has been backward in enlightening the public in health matters, and also that in the future such teaching should play an important part in the new Britain which reformers do not altogether despair of seeing. But those who enter into this work must get the part they play in it into the right perspective. It is, for example, no good recommending what a well-known Hyde Park orator used to recommend every Sunday to an admiring audience—namely, duck and green peas three times a day—(1) if these delightful commodities are not available, (2) if people have not the money to buy them, and (3) if in practice one can have too much of a good thing. The health educator, in fact, must always be aware of the limits imposed on his work by social factors beyond his immediate control. His efforts may, too, be hindered by inefficient or inadequate medical services, or by a medical profession apathetic because of an educational system that still lays too great stress on the end-products of disease—morbid anatomy and morbid histology. But given every desideratum, there still remains one pernicious influence which will always work against health education, and that is the morbid interest in disease which is kept alive and inflamed by the advertisements of patent medicines.

FURTHER LIGHT ON HYPERTENSION

Goldblatt and his co-workers[1] showed that in experimental animals the artificial production of renal ischaemia by constriction of the renal arteries led to persistent hypertension. If the constriction was severe enough there was a clinical picture of malignant hypertension, and widespread pathological changes were found in the arterioles. The kidneys themselves, however, escaped this change, as they were the only organs in which the effects of the hypertension were not felt owing to the experimental conditions under which it was brought about. Wilson and Byrom[2] followed up Goldblatt's work and showed that in some animals, especially the rat, severe malignant hypertension could be produced by constriction of the renal artery on one side only, and in such cases the pathological changes were found not only throughout the body, but also in the kidney the blood supply of which had not been reduced. In some further work these same authors[3] describe the "vicious circle" in chronic Bright's disease—that is, hypertension caused by renal ischaemia leads to further changes in the blood vessels of the kidney itself; which in turn increase the ischaemia and therefore the degree of hypertension. When one renal artery is partially occluded by a clamp and hypertension thus brought about, removal of the clamped kidney causes a return of the blood pressure to normal in a proportion of the cases only. Where the hypertension has persisted after removal of the clamped kidney, vascular changes have always been found in the opposite kidney. Finally, evidence shows that the residual hypertension may itself give rise to further lesions in the remaining kidney, and so progressive renal destruction takes place.

The clinical implication of these experiments is that malignant hypertension in man may be looked upon as a syndrome which may result from any pathological condition of the kidney giving rise to ischaemia. This explains why in patients suffering from benign hypertension, chronic nephritis, or chronic pyelonephritis there may be a sudden aggravation of their hypertensive state with retinal changes and deterioration of renal efficiency. The same malignant termination may be seen in cases starting as toxaemia of pregnancy or as lead poisoning. This conception also explains the histological finding of acute fibrinoid necroses of arterioles and glomeruli superimposed upon a variety of more chronic renal lesions. Malignant hypertension with typical renal changes may also occur as a terminal stage in pituitary basophilism, in which the primary hypertension is probably not of renal origin at all.

A number of cases have now been recorded in which unilateral renal disease has been the cause of hypertension in the human subject. In some of these the hypertension disappeared when the faulty kidney was removed; but in others secondary vascular damage in the opposite kidney had already occurred and residual hypertension remained. In view of the experimental work of Wilson and Byrom it is important in such cases that the damaged or functionless kidney should be removed as early as possible. Derow and Altschule,[4] who come to the same conclusion about malignant hypertension as Wilson and Byrom, consider that the pathologists who in the past have thought it to be a specific disease have been misled by grouping together pathologically identical cases and finding that their clinical histories were similar. A more accurate characterization of malignant hypertension is obtained by the opposite process of examining the varied pathology of cases clinically identical in their final stages. These authors set out the conditions in which malignant hypertension has been known to occur, and include in their list essential hypertension, secondary hypertension due to renal disease of various types, and hypertension secondary to endocrine disease and to lead poisoning.

Whether primary essential hypertension is always, or even usually, due to ischaemia of the kidneys in the first place is by no means certain. It is an attractive hypothesis in view of Goldblatt's work and of the fact that in the majority of cases renal arterial changes can be found; but Raab,[5] in a recent article on the origin of essential hypertension, recalls the experimental studies which show that hypertension can be produced also by artificial impairment of the cerebral blood supply, especially if the arterioles to the vasomotor centres are affected. He also gives clinical evidence that this may be the cause of many cases of hypertension in man, and concludes that the problem is not a simple one, and that in most cases three factors—hormonal, central, and renal—are probably operating.

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[1] *J. exp. Med.*, 1934, 59, 347.

[2] *Lancet*, 1939, 1, 136.

[3] *Quart. J. Med.*, 1941, 10, 65.

[4] *Ann. intern. Med.*, 1941, 14, 1768.

[5] Ibid., 1941, 14, 1981.

SURGERY IN LIBYA

In dispatches from correspondents in Libya fitting mention has been made of the gallantry displayed by the different units of the armed Forces, but only rarely does one read of the part played by the medical services, which, in a campaign such as the recent disastrous one, must have been taxed to the utmost. In preparations for the fighting in the desert the D.M.S., Middle East, had obtained extra transport so that the light sections of certain C.C.S.s should be independently mobile, and the heavy sections at least more mobile than they had been in the past. Mobile operating theatres, each consisting of a sterilizer and an operating van, have proved suitable to desert conditions and "a great boon." In the offensive which began in November last year it was not found possible to keep in constant touch with the surgeon, and the difficulties of travel for ambulance cars was, to say the least of it, considerable. Many of the surgeons in the battle zone were under fire, and some even worked in captivity for varying periods of time. In Libya, we are informed, "the enemy appears to respect the Red Cross so long as it does not conflict with his interpretation of the needs of the tactical situation."

There were certain obvious difficulties in the working of the forward surgical service. Delay in communications led to loss of touch between headquarters and the various units. Transport was not always available when it was wanted, and rationing of water made sterilization and the washing of towels difficult. Lighting was another problem, some surgeons having to work in their operating tents with the aid of hurricane lamps. A familiar complaint is heard in the observation that records were bad and that "surgeons will not write legibly and print their names." Evacuation by air was a feature of the winter campaign, and over a thousand seriously wounded cases were comfortably transported by air from the battle zone either to forward aerodromes or to the base. Among the special centres there were five orthopaedic, two maxillo-facial, two neurosurgical, and two chest units with the Forces. There was apparently some opposition to the transfer of cases to special centres, but no doubt remains that the standard of treatment at them is very much better than at a general hospital. Cases not evacuated by air have taken as long as eight days or more to reach the base hospitals, and in spite of the increased mobility of the surgical units it took most of the wounded twenty-four hours or longer before they came under the care of a surgeon. But, in spite of these and other handicaps, results appear to have been highly satisfactory. By December 29, 1941, for example, there had been no case of tetanus.

Some observations from the base are of interest. "If," we are told, "the forward surgeons could see the big difference in the state of the excised wound as compared with that which had only sulphanilamide powder and dressing, they would realize how much the recovery time is shortened." Again there is a certain amount of complaint about record-keeping. For example, in several cases in which the wound had been enclosed in plaster, no mention was made either on the plaster itself or on the card whether the wound had been operated on or whether a tube had been put in. The dosage and times of administration of sulphonamide were not always stated. There was a high proportion of wounds of the lower limb, and a high proportion in which wounds were complicated by fracture. Many wounds were operated on in the forward area, débridement was carried out, the wounds were "saucerized," sulphanilamide was dusted on the surface, and the wounds covered with a vaseline dressing or loose pack. Cases treated in this way do "extremely well." With the exception of a very few cases, wounds which had been sutured were badly septic on arrival at the base, the sutures cutting out and the patient being in pain from suppuration under tension. It was observed that drainage tubes have been found put in "out of sight in the depths of wounds." Rubber tubes or tissue were found useless for drainage of wounds with established infection. When devitalized and infected muscle was excised, the wound was dusted with sulphanilamide, and a vaseline gauze pack provided drainage, the general condition of the patient improved and the infection did not spread. Another observation is that early amputation of a mangled limb was not only well tolerated but produced "a dramatic improvement in the general condition." Some points made about amputation were that the stumps were sutured far too often, and that cases in which complete skin closure had been done arrived at the base with the sutures cutting out and the skin sloughing. It is stressed that amputation under battle conditions should be planned to permit re-amputation at one of the sites of election, and that when possible some flap should be cut and allowed to fall over the end of the stump. A few loose sutures could be tied over a loose dressing after the stump has been dusted with sulphanilamide, and it is considered inadvisable to apply a plaster cover over the stump at a forward operation centre.

From experience at the special centres it appears that patients with uninfected haemothorax arrived in excellent condition, and that the condition of patients with open pneumothorax improved once closed drainage was established. It would be highly advantageous if some form of closed drainage during transport could be devised. The importance of the proper treatment of wounds is again emphasized by experience of workers at the head centres. Those wounds which healed by first intention had been "thoroughly treated by excision and wound toilet," and it is believed that if other cases which were badly infected had been so treated the incidence of infection would have been less. A brief report of a case in which a brain injury had been packed, followed by cerebral abscess and death, is accompanied by the injunction, "Head wounds should never be packed."

Two types of fracture of special interest are recorded. The first is compression fracture of the spine, which occurred largely in Naval ratings, who sustained the fracture by hitting their heels against the bilge rail when sliding down the side of a sinking ship. Compression fracture of a lower dorsal vertebra was also found in men swimming too near a depth charge, which blew them into the air. The second type is fracture of the os calcis, which occurred, for example, in men standing on the upper deck and receiving a severe impulse from below as the result of a bomb exploding between decks. This type of fracture has been severe, often bilateral, and sometimes compound.

DOCTORS AS POLITICIANS AND STRATEGISTS

If a group of Army officers, or even the 1922 Committee, were to come forward as advocates of the immunization of children against whooping-cough, the medical profession, whatever its opinion of the merits of the advocacy, would wonder with what authority and on the basis of what knowledge such groups of laymen might be presumed to act. The world would be a livelier place if associations of men expert in one branch of knowledge were every now and then to tell other associations how to manage their affairs. The Beekeepers' Association might like to be told how to look after their bees by, say, a group of Conservative engineers whose political views might impel them, for example, to protest against the premature extinction of queen bees. Just as good as these hypothetical examples is the actual and recent resolution of the Socialist Medical Association, passed unanimously, "indicating its desire for the immediate formation of a second front," and a further pronouncement that this body "would urge that steps be taken to give effect to this policy without any dangerous delay." Such ineptitude can perhaps be excused on the ground of naivety, but one would have thought that medical men had enough to do now in their own professional work and in matters concerning the organization of their profession, without wasting time in passing resolutions on matters about which they are neither more nor less informed than any other reader of the daily newspapers. Even in the matter of the supply of medical personnel and equipment for an expeditionary force, we doubt whether the Socialist Medical Association has any information that is not available to the man in the street. If, however, they are speaking not as doctors but as politicians, and as Socialists feel bound to echo a cry that might be supposed to be welcomed by Moscow, then surely the grim realists who are courageously directing Russian policy must, if they have the time to spare, feel mildly amused at the picture of the English doctor turned strategist.

Let us hope that the example of the no doubt earnest men who form the Socialist Medical Association will not be followed by other doctors who hold other political beliefs. The public, we fear, would lose faith in the doctor's good sense if, say, a Liberal Medical Association, a Conservative Medical Association, a Social Credit Medical Association, perhaps a Fascist Medical Association—or even an Independent Medical Association—followed the lead of their prototype by offering gratuitous advice to the Government of the day on extramedical matters. Apart from the slightly ridiculous aspect of such sectional organizations ranged on lines of party politics, we believe that they do a disservice to medicine by weakening the influence of the doctor in public affairs.

A PURE PROTEIN FROM THE POSTERIOR PITUITARY

Whereas the constitution of other hormones has been investigated with some success, that of the hormones of the posterior pituitary remains shrouded in mystery. Indeed, for many years it has been a matter of controversy whether the active principles were separate entities or represented different manifestations of the action of a single substance. In 1919 Dudley first achieved a partial separation of the vasopressor and oxytocic fractions. His observations were confirmed and extended by later workers, who, by using more drastic methods, achieved almost complete separation of the two fractions, though the commercial samples still lag behind somewhat in this respect. However, when reliable methods of assay were devised, it was found that in crude extracts the proportion of, for instance, vasopressor to oxytocic activity was approximately constant for any given species. This led naturally to the suggestion that while it might be possible to separate the active principles artificially, yet they existed in the first place as single components of a large molecule.

The work of van Dyke and his colleagues[1] has now furnished direct evidence of this hypothesis. They have extracted from the posterior lobes of frozen ox pituitaries a protein which contains all the active fractions and which they claim is pure, so far as their physico-chemical investigations allow. Its purity was demonstrated by its constant solubility, and by examination in the ultra-centrifuge and in the Tiselius electrophoresis apparatus. These methods and elementary chemical analysis agreed in giving the protein a molecular weight of about 30,000, and the active principles were present in about the same proportions as they are in crude extracts. This protein is by no means the most potent substance yet isolated. Thus, while 61 microgrammes of solid are equivalent to one U.S.P. unit, previous workers have already isolated an oxytocic fraction said to be thirty times more potent. The prosthetic groups which constitute the active principles must therefore be far smaller and simpler than the parent molecule, a fact which makes their ultimate chemical identification more hopeful.

It might be suggested that these observations could be explained by the adsorption of the active principles by some indifferent medium. The experimental evidence renders this very improbable. But though we may therefore visualize a single molecule which comprises all the active principles, it seems unlikely that it is released into the blood stream as such, though there is as yet no direct evidence either way. So this discovery must lead to speculation on the purpose of the association of vasopressor, oxytocic, and antidiuretic activities in the same molecule. Is it just chance that these three hormones are linked together in the posterior pituitary, for storage purposes perhaps? Or has the association some deeper significance which we have yet to learn?

GRAMICIDIN

Readers of this *Journal* have been given the opportunity of following the work of Dubos, who by a selective method of a tedious and ingenious nature bred out from soil a bacillus producing a substance highly toxic to certain other bacteria, mainly Gram-positive cocci. The crude extract from this bacillus is now known as tyrothricin, and is separable into two components: gramicidin, which acts powerfully but almost exclusively on Gram-positive bacteria, and tyrocidine, which acts similarly but less powerfully on certain both Gram-positive and Gram-negative species. Although known from an early stage to be more toxic than penicillin, these substances have such remarkable properties—and, it may be added, are so much easier to produce—that much more will evidently be heard of them. It is clear from papers now being published in the U.S.A. that the manufacture of gramicidin has been taken up commercially, and quantities are available to a number of workers for various types of study. Toxicity has been investigated further by H. J. Robinson and H. Molitor,[2] who confirm previous observations that, whereas local application and oral administration even in large doses are harmless, the intravenous minimum lethal dose is small. The site of the lethal effect is not clear from their studies, nor do they provide an answer to the question whether the haemolytic activity of gramicidin, recently restudied *in vitro* by D. Heilman and W. E. Herrell,[3] has its counterpart in the living body. This question is perhaps only of academic interest, because all authors seem agreed that local application is the only clinical use for which gramicidin is suited. Heilman and Herrell[4] elsewhere point out an interesting parallel between the action of gramicidin and that of detergents: their selectivity for different bacterial species is similar—even extending to a closer parallel between gramicidin and anionic detergents and tyrocidine and kationic—both are haemolytic, and both are relatively harmless to tissues. These authors have shown this parallel to be even closer by demonstrating that gramicidin and tyrocidine strongly reduce surface tension; this effect, however, persists after heating, whereas bactericidal activity is thus destroyed. In all these studies the very low solubility of gramicidin in water has presented difficulties; an alcoholic solution added to water produces a suspension, and it is in this unsatisfactory form that gramicidin has chiefly been used; how such a suspension will behave in contact with infected tissue is not altogether clear. Herrell and Heilman[5] have prepared a solution for clinical use by introducing glycerin in addition to alcohol as a solvent, and used it in ten miscellaneous cases as a local application. Several lesions due to haemolytic streptococci appear to have cleared up under its influence; staphylococcal infections, on the other hand, are evidently almost wholly resistant. A. E. Francis[6] also records the successful treatment of wound infection in which a sulphonamide-resistant streptococcus was concerned. Whether gramicidin or any other product of microbic origin will eventually be found to fulfil certain purposes better than either sulphonamides or any other class of antiseptic remains to be seen. That several classes of reagent should be competing for supremacy in different aspects of a task which not long ago was considered impossible of any real fulfilment is a truly remarkable position.

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[1] *J. Pharmacol. exp. Therap.*, 1942, **74**, 190.

[2] *J. Pharmacol. exp. Therap.*, 1942, **74**, 75

[3] *Proc. Soc. exp. Biol. Med.*, 1941, **46**, 182.

[4] Ibid., 1941, **47**, 480.

AIR DISINFECTION BY LIGHT

Only within the past few years have serious attempts been made to check the aerial spread of infection by disinfecting the air itself. Of the various methods by which this can undoubtedly be done chemical spraying has been most studied in this country, and an adequate basis for a practical campaign is afforded by existing data. In the U.S.A. more use has been made of ultra-violet light, and evidence is accumulating that where this method is employed continuously for long periods the incidence of air-borne infections diminishes. Burners can be installed in such a position as to irradiate only the upper layers of air in a room, and a non-reflecting ceiling ensures that persons in the room shall be unaffected, but convection currents bring the whole of the air within the light field. An exceptionally careful study of the effects of such an installation in a Philadelphia school is described by W. F. Wells, M. W. Wells, and T. S. Wilder.[7] Their observations covered a period of several years, during which irradiation was maintained in some class-rooms and not in others, and careful records were kept of all infectious disease. After detailed analysis the results are expressed as the percentage of susceptible children in each group who developed mumps, chicken-pox, or measles when cases occurred in the same room. The differences in some epidemics were very striking, particularly during an extensive outbreak of measles. In the "unirradiated" classes, consisting of older children, there were 141 (37.2% of the total) with no previous history of measles, among whom 88 cases occurred, an attack rate of 62.4%. Among the irradiated juniors there were 110 susceptible children (75.9% of the total), of whom only 24 developed measles, an attack rate of 21.8%: if home contacts were deducted from these total cases, the attack rates attributable to infection arising in school are 55.3% and 14.5% respectively. Although it has been claimed by others that radiant disinfection of air reduces the frequency of colds, no such reduction was observed in this study, probably because the investigation was made in a day school, and frequent opportunities of infection with the common cold occur at home. It is argued that if the infection were usually acquired in school, and the incubation period is assumed to be two days, the number of colds with onset on Wednesday, Thursday, or Friday would be more than three-sevenths of the total for the week; but records of many hundreds of colds show, on the contrary, that they amounted to slightly less than this fraction. This negative observation is nevertheless disappointing: colds and influenza—which may be expected to behave in the same way—are the chief scourges which air disinfection is designed to minimize. There have been several reports of success in preventing the spread of colds in residential institutions by ultra-violet light. The latest of them is by L. N. Sauer, L. D. Minsk, and J. Rosenstern,[8] who compared the effect of simple air-conditioning, a mechanical barrier, and an ultra-violet-light barrier, in an elaborately equipped hospital for infants. By mechanical barrier is meant that the infant was kept in a cubicle never entered by anyone, and attended to by a nurse through a sliding glass shutter. Either this form of isolation or the use of ultra-violet light clearly prevented cross-infection: the merits of the two systems are discussed. The mechanical barrier is expensive to install, and after a few weeks "a certain lack of stimulation of the infant is occasionally apparent." Ultra-violet light, on the other hand, although less costly to install, is much more so to run.

Direct ultra-violet irradiation of the operation field to ensure surgical asepsis is a proceeding of which much has been heard in the U.S.A., and D. Hart, who has been its chief advocate, has recently with S. E. Upchurch,[9] reported the results of five years' experience with it. His figures, which in sum are very large, give the frequency of infection in clean operation wounds of various types before and after adopting this method, and the improvement is remarkable. Whether it is due, as Hart contends, to the killing of atmospheric bacteria is another matter. In referring on earlier occasions to the work of Hart we have pointed out that his observations on the atmospheric flora of operating theatres are vitiated by failure to apply the coagulase test to staphylococci, and in conflict with those of Devenish and Miles,[10] who found the origin of staphylococcal infection in clean operation wounds to be glove perforations. Hart still makes no reference to these authors' work. So to criticize his argument is not to question his results or the value of his method; it is indeed possible that pyogenic cocci of whatever origin may be destroyed by ultra-violet light in the wound itself. Whether irradiation is capable of this effect is a question which could presumably be decided readily by animal experiment.

THE DRYING OF PLASMA AND SERUM

The Trustees of the late Sir Henry S. Wellcome have placed a sum of up to £20,000 at the disposal of the Medical Research Council for research into methods of drying blood plasma and blood serum to provide stable products for use in the transfusion of patients suffering from haemorrhage, shock, or other conditions calling for such treatment. By agreement between the Trustees and the Council, this gift is to be applied to the purchase, erection, and operation by the Council of a plant which will make it possible to test and develop these methods on a substantial scale. The need for the improvement of such methods is of particular importance at the present time, and the products will be made freely available for the treatment of sick and wounded at home, at sea, and abroad. The Medical Research Council has therefore expressed its appreciation of this timely and public-spirited action on the part of the Wellcome Trustees.

Sir Charles Sherrington, O.M., G.B.E., M.D., F.R.S., has been elected a Trustee of the British Museum.

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[5] *J. clin Invest*, 1941, **20**, 583.
[6] *Lancet*, 1942, **1**, 408
[7] *Amer J. Hyg*, 1942, **35**, 97
[8] *J. Amer. med. Ass.*, 1942, **118**, 1271.
[9] *Ann Surg*, 1941, **114**, 936
[10] *Lancet*, 1939, **1**, 1088.

War Surgery of the Extremities

This is one of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

BLOOD TRANSFUSION

BY

JANET VAUGHAN, D.M., F.R.C.P.

The problems of transfusion in wartime are inevitably different from those arising in peacetime. In wartime to a large extent we transfuse healthy individuals suffering from sudden severe injury. In peacetime we transfuse sick people. The following discussion applies to wartime transfusions only. It must be remembered, however, that knowledge of the pathology of haemorrhage and shock is extremely limited, and that the teaching of to-day must inevitably be revised as our understanding of the problems involved increases.

Transfusion Fluids

To-day the following fluids are available for transfusion: fresh blood, stored blood, plasma, serum, concentrated red cells.

Fresh Blood.—This has proved impracticable for use under air-raid conditions. In the chaos of modern air raids or warfare it is impossible to call up and bleed donors. Transfusion fluids must be ready in store for immediate use or be brought in from outside the danger area at short notice. Fresh blood is essential for only a small group of chronic cases that do not need immediate treatment.

Stored Blood.—Experience has shown that blood taken into a glucose-citrate mixture will store for fourteen to twenty-one days at low temperature (2° to 4° C.) without undue haemolysis taking place *in vitro*. The survival rate of transfused red cells is not appreciably lower than that of fresh blood. The reaction rate, provided the blood is warmed to 40° C. before use, is no higher than with fresh blood (Brewer, Maizels, Oliver, and Vaughan, 1940). The diluent at present in general use is 100 c.cm. of 3% sodium citrate in distilled water, to which is added 20 c.cm. of 15% glucose in distilled water. The resulting 120 c.cm. is mixed with 420 c.cm. of blood (M.R.C. War Memorandum No. 1).

Plasma.—This may be prepared in three different forms—unfiltered, filtered, and dried. Unfiltered plasma is prepared by siphoning the supernatant fluid off the red cells after sedimentation has occurred by standing or centrifugalization. It is a cloudy fluid which should be kept in the ice-chest. Filtered plasma is passed through a Seitz filter after separation. It is a clear fluid free from cell debris and the fatty content of unfiltered plasma. It must be kept at room temperature, as clotting will inevitably occur in the cold; unless great care is taken in filtration clotting is extremely likely to occur even at optimum temperatures. For the use of the Army, plasma is now being dried by a process similar to that employed for drying serum. The protein content of fluid plasma is only 4 to 5%, owing to the presence of glucose-citrate diluent. The protein content of reconstituted dried plasma depends upon the amount of fluid added.

Serum.—Serum is also available in three forms—filtered, liquid, dry—and as serum citrate prepared from recalcified plasma (Clegg and Dible, 1940). Filtered serum is passed through a Seitz filter after separation of the clots. It is a clear amber fluid with a protein content of approximately 7%. Dried serum is prepared by a modification of the method of Greaves and Adair (1939). It is reconstituted for use by the addition of either distilled water or normal saline, and may therefore be given in varying concentration, depending upon the amount of fluid added. Serum citrate is prepared by the addition of calcium to plasma and filtration of the resulting fluid through a Seitz filter.

Concentrated Red Cells.—This concentrated suspension is prepared by removing the supernatant plasma from the red cells so that double the usual amount of haemoglobin is given in the same volume of fluid. It is no more difficult to administer than whole blood, and is thought to give rise to fewer reactions (MacQuaide and Mollison, 1940).

Before discussing the relative values of blood, serum, and plasma it is necessary to consider the types of case that will need transfusion. They may be divided into acute and chronic conditions.

Transfusion in Acute Cases

The acute group may be roughly divided into three types: (1) patients with haemorrhage so severe as to result in anoxaemia; (2) patients suffering from shock rather than blood loss; and (3) patients with severe multiple injuries and considerable haemorrhage without obvious shock.

1. Severe Haemorrhage

In sudden severe haemorrhage there is a rapid fall in circulating haemoglobin, with resulting anoxaemia. It is then as essential to replace oxygen as it is to restore blood volume, and transfusions of whole blood are required. This type of case has proved rare as a result of air raids.

2. Shock

Shock is a term that includes a variety of conditions which are still poorly differentiated. I use it here to cover those states in which circulatory collapse, lowered body temperature, and pallor occur. It is usually considered to be associated with a fall in blood volume (Whitby, 1941). Treatment must therefore be directed to restoring blood volume. This can only be done by the use of liquids of high protein content. Saline is useless. Gum acacia was employed for this purpose in the last war, but it is difficult to prepare and is apt to cause liver damage. More recently it has been suggested that isinglass (fish gelatin) might be used (Taylor and Waters, 1941). Experimental work on the purification of animal proteins is in progress, but, so far, human plasma and serum have alone proved to be satisfactory for the purpose.

The evidence available suggests that fluid plasma, fluid serum, and dried serum are of equal therapeutic value in the treatment of shock (Vaughan and Brown, 1941). There are as yet few data available as to the effects of dried plasma. In this country no greater reaction rate has been recorded with serum and plasma than with blood. This observation is of some importance, as, with the exception of Levinson, Rubovits, and Necheles (1940), observers in the States regard serum as an almost lethal fluid. In this connexion it should be noted that, while we invariably pass serum through a Seitz filter, this is not done in the States. At the N.W. London Blood Supply Depot there are records of the administration of 147 pints of fluid serum with two mild reactions, and of 367 pints of filtered plasma, also with two mild reactions. Much larger quantities of both have been used in the area, but it is difficult to obtain accurate records under raid conditions. It appears reasonable, however, to conclude that if severe reactions had occurred they would have been reported. In addition to the cases already recorded by Brown and Mollison (1940) we have further details of thirty-four bottles of reconstituted dried serum given without reaction.

Serum would seem to have certain practical advantages over plasma. It is easy to keep sterile, while plasma becomes readily infected. Serum does not clot, but hitherto it has proved extremely difficult to prevent plasma clotting either during or after filtration. The protein content of serum is higher than that of plasma. Further, serum is easy to handle, store, and transport. Plasma has one advantage over serum—namely, that out-of-date blood can be used for its preparation. It therefore seems probable that there is a place for both plasma and serum in any transfusion service.

For the purpose of discussion, cases of "shock" may be divided into three arbitrary groups: shock associated with multiple injuries other than crush injuries; shock associated with crush injuries; and shock associated with burns.

Shock associated with Multiple Injuries other than Crush Injuries.—In this condition there appears invariably to be lowered blood pressure unassociated with haemoconcentration. The pulse may be either rapid or slow. The only reliable guide to the success of any therapeutic measure has proved to be a maintained rise of blood pressure. It is impossible to lay down any hard-and-fast rule as to the dosage required to produce such a rise in pressure. Every case must be treated on its merits. Enough fluid must be given to raise the pressure and to maintain it at a level above 100 mm. Hg. No patient should be allowed to go to the operating theatre with a pressure that is much below 100 mg. It should be remembered that three or four pints of fluid, or more, may raise the pressure when one or two have failed. It would seem from our own published figures that many cases of circulatory collapse may be satisfactorily treated by blood derivatives, but whether, alone, they are preferable to whole blood remains to be seen. We have been struck by the occurrence of relatively low haemoglobin readings in patients with traumatic shock resulting from enemy action who have had no gross and obvious source of haemorrhage. Also, patients who have been successfully treated with plasma or serum have on subsequent examination shown haemoglobin readings in the neighbourhood of 60%. Such preliminary observations suggest that the ideal treatment for a patient suffering from air-raid shock may be one or two bottles of plasma or serum followed by one or more bottles of blood, the treatment being controlled by repeated haemoglobin and blood-pressure readings. This procedure has been carried out successfully in a large number of recorded cases.

Shock associated with Crush Injury.—A series of cases of crush injuries associated with renal failure have recently been described (Bywaters and Beall, 1941; Beall, Bywaters, Belsey, and Miles, 1941; Mayon-White and Solandt, 1941) The pathology of this condition is not for discussion here The treatment still remains uncertain and, with few exceptions, unsatisfactory (Longland and Murray, 1941; Henderson, 1941). It is important to remember that haemoconcentration in this condition may be pronounced. Figures as high as 160% have been recorded (Bywaters and Beall, 1941). It is obvious that in such a case serum or plasma should be used instead of whole blood. The amount to be given must be decided afresh for each case, the blood pressure and haemoglobin being used as the guide to dosage. The gross waterlogging of the tissues found at necropsy in some of these cases after massive saline transfusions suggests that saline is to be avoided.

Shock associated with Burns.—Shock associated with severe burns is characterized by haemoconcentration, which may be severe. In a series of 13 cases of burns seen by Dr. Brown haemoconcentration was present in all those in which observations were possible, with one exception. In that case the patient was seen within twenty minutes of the injury. At this time both blood pressure and haemoglobin were within normal limits. Two pints of serum were given, and neither haemoconcentration nor fall of blood pressure occurred. It is, however, exceptional to see a patient so soon after injury. In burn shock, *par excellence,* there would seem to be a special call for the use of either plasma or serum, as fluid of a high protein content must be given to restore and maintain the blood pressure at a normal level. Repeated haemoglobin estimations may be impossible owing to the extent of the burnt area. If they can be done, however, they offer a valuable additional guide to dosage. Cases of burn, even if they have a normal pressure when first seen, should be immediately transfused; prevention is better than cure. Transfusions should begin before the patient is taken to the operating theatre to be cleaned up, and if the burnt area is extensive should be continued throughout this process and, if necessary, when he has returned to the ward. Subsequently intravenous therapy must be determined by the patient's condition.

3. Severe Multiple Injuries and Haemorrhage

Grant and Reeve (1941) described a group of cases in which there was normal blood pressure in spite of severe multiple injuries and haemorrhage. Out of a group of 100 cases 28 presented this picture, and of these only 6 did not finally receive transfusion. In 13 cases the blood pressure fell considerably and the pulse rose within four hours of admission. In most the collapse occurred before operation, in a few it was delayed until during or after it. Transfusion was followed by rapid improvement. In 9 of the patients transfusion was started soon after admission, though the blood pressure was not low, and the condition remained satisfactory except when further bleeding occurred. As with burns, early transfusion prevents later collapse in severely injured cases. In other words, our guide in resuscitation work should be in the severity of the injury sustained and not the blood pressure or pulse level. Patients with multiple injuries and severe burns must be transfused as an urgent method of resuscitation. It is wiser to prevent circulatory collapse than to treat it. Patients in this group respond well to serum or plasma as an initial dose, but probably should receive blood in addition when it is available.

Transfusion in Chronic Conditions

The following two groups of patients require transfusions in the later stages of treatment: (1) those with burns, and (2) those with septic wounds.

Burns.—Localized oedema often occurs in the neighbourhood of a burnt area twenty-four hours after injury. There is some evidence that this may be reduced by the administration of twice-concentrated or four-times-concentrated serum. It would appear wise to continue to give concentrated serum so long as oedema persists, unless the patient becomes intolerant of fluid by mouth; in such cases normal serum is preferable. In the late toxic stages, when sepsis has become an important factor, whole fresh blood should be given, if necessary, in large repeated doses by a drip technique. Satisfactory healing is dependent to a large extent upon maintaining an adequate haemoglobin level.

Septic Wounds.—Patients with infected wounds often show considerable anaemia. This is unaffected by the usual haemopoietic remedies (Vaughan and Saifi, 1939). Plasma proteins are also usually low. It is essential to raise both the haemoglobin and the plasma protein level in such patients if satisfactory wound-healing is to take place. This is done by repeated large transfusions of fresh whole blood. These transfusions should aim at raising the haemoglobin level to 100%. Several pints may be given by drip technique during twenty-four to forty-eight hours Having raised the haemoglobin it must be maintained at an optimum level. Concentrated suspensions of red cells are useful for this purpose, especially in elderly subjects in whom it is important not to increase the blood volume.

Some Technical Points in Transfusion

Temperature of Administration.—If circumstances permit it is wiser to warm blood, plasma, or serum to body temperature before administration. This can be done by standing the blood-bottle in water at 40° C. for twenty minutes and mixing it gently at intervals. Under air-raid conditions it is often necessary to give the first bottle cold, but while this is being done the second can be warmed.

Rate of Administration.—With a young patient it is probably safer to give large quantities of fluid rapidly than it is with an older patient, but again it is difficult in our present state of knowledge to lay down any hard-and-fast rules for guidance. When the patient fails to respond to two pints of fluid administered rapidly, a careful watch should be kept on the base of the lungs if further rapid transfusion is considered. In practice we give the first two pints rapidly, using a reversed Higginson syringe to apply pressure if necessary, and subsequent fluid more slowly by drip technique. It should be remembered, when it is necessary to use the veins in the leg, that these are likely to be extremely collapsed, especially in the badly shocked patient, and that pressure is essential to start a flow of fluid. After the first pint the flow can usually be maintained by simple gravity.

Filtration.—Stored blood and derivatives should always be passed through a filter before administration. The routine administering unit in this country is fitted with such a filter. A fatality has recently been recorded in the States from giving unfiltered plasma (Mayner, 1941). At necropsy fibrin plugs were found in the lung capillaries.

Cross-matching.—It is the usual practice in this country at present to issue universal donor blood only. Theoretically, therefore, it should not be necessary to cross-match the cells of the donor with the serum of the recipient. When possible, however, it is wise to do this, as errors in grouping cannot always be avoided and such a cross-match serves as a double check. In the case of serum and plasma no cross-matching is necessary. Both serum and plasma are prepared from pooled supplies, and it is found that as a result the agglutinin titre becomes either negative or so low as to be insignificant. Even in the early days of plasma transfusion in this country, before pooling was carried out, it was found that no ill effects followed the transfusion of a Group B donor, for instance, with large quantities of Group A plasma, and vice versa.

Transfusion Reactions

The ideal transfusion should have no effect on the patient beyond improvement; reactions may, however, occur. They take various forms, varying considerably in severity. The mildest type shows a slight rise in temperature; in others there is a severe rigor, often associated with a pain in the back, vomiting, and headache or generalized urticaria. In some instances in which incompatible or grossly haemolysed blood has been given there is a haemolytic crisis, resulting, unless promptly treated, in death. When a severe rigor occurs, the question at once arises whether the transfusion should be stopped. Every case must be decided on its merits; in a severely anaemic patient, or a shocked air-raid casualty it is wiser to continue the transfusion in spite of the rigor. In the less acute case the transfusion may be stopped

In the case of an incompatible transfusion, prompt measures must be taken if the patient's life is to be saved. It is essential to maintain an alkaline urine. Alkali should be given by mouth and, if necessary, by intravenous injection. The patient should be catheterized twice a day if there is retention. It should not be assumed that failure to pass urine means complete anuria. Fluids, especially glucose solution, should be given in large quantities, if necessary per rectum or intravenously.

Summary

The use and relative value of whole blood, serum, and plasma for transfusion purposes are discussed.

Whole blood is preferred in acute severe haemorrhage; plasma and serum in conditions associated with haemo-concentration—i.e., burns and certain cases of crush injury; and a combination of plasma and serum, with whole blood, in patients with severe multiple injuries.

In the case both of burns and of injuries the severity of the injury and the degree of blood loss rather than the blood pressure and pulse should indicate the necessity for transfusion.

No rules for the precise dosage of any transfusion fluid can be laid down. It is essential to raise and maintain the blood pressure over 100 mm. Hg. The dose required to do this is extremely variable.

Serum and plasma appear of equal clinical value, and both are non-toxic. Serum has certain practical advantages over plasma.

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ACCELERATED MEDICAL COURSE AT TORONTO

The acceleration of the medical course at the University of Toronto to meet the shortage of doctors for the armed Forces and for civilian needs was decided upon in the spring of 1941. The proposed curriculum consisted in lengthening the academic session from 7½ to 10 months in all years of the course but the first, which is made up of pre-medical subjects. This procedure will ensure that a class of students graduates every eight months instead of every twelve as at present. As it has been thought essential that each graduate should have a period of interneship in a hospital in order to round off his education, either to begin private practice or to become a medical officer in the Forces, the hospitals were asked if they would shorten the interneship period from 12 months to 8 months so that medical officers might be made available for military service as quickly as possible and at the same time provide for the co-ordination of the interneship period with the graduation of students every 8 months. Provincial licensing bodies were requested to permit the medical curriculum to be completed in a shorter time than their regulations required. Both the hospitals and the licensing bodies agreed to the proposed changes as a war measure.

University of Toronto Course: Graduation, Interneship, Military Service

1941–2	Graduation	Interneship	Available for Military Service	
			Speeded-up Course	Regular Course
6th Year ..	Apr. 30, 1942	May 1, 1942 to Dec. 31, 1942	Jan. 1, 1943	July 1, 1943
5th Year ..	Dec. 31, 1942	Jan. 1 to Aug. 31, 1943	Sept. 1, 1943	July 1, 1944
4th Year ..	July 30, 1943	Sept. 1, 1943, to Apr. 30, 1944	May 1, 1944	July 1, 1945
3rd Year .	Apr. 28, 1944	May 1 to Dec. 31, 1944	Jan. 1, 1945	July 1, 1946
2nd Year ..	Dec. 31, 1944	Jan. 1 to Aug. 31, 1945	Sept. 1, 1945	July 1, 1947

The accelerated curriculum at Toronto came into operation when the second- to sixth-year classes registered on Aug. 25, 1941, the effects of which are shown in the accompanying table. As the result of this speeded-up curriculum, the sixth-year class will take the place of the present class of internes in hospitals on May 1 instead of July 1, making them available for military service 2 months earlier than would ordinarily be the case. This present sixth-year class will be available for the Forces on Jan. 1, 1943, instead of July 1, or 6 months sooner; the fifth-year class will be available 10 months, the fourth-year 14 months, the third-year 18 months, and the second-year 22 months earlier. The curricular changes in the courses of each of the years have been only of a minor character, the time-tables in each year consisting of the three terms of the present course, to which has been added the first term of the next succeeding year, in the fourth term from April to June. The total length of the actual instruction is such that each student receives practically the same sound medical training as in the regular course, but in a shorter period.

Correspondence

Post-war Medical Reorganization

SIR,—There are few members of the medical profession who will not have read, with interest and profit, the Interim Report of the Medical Planning Commission, to which document you have so rightly given first place in your issue of June 20. Being an interim report, published for the purpose of stimulating discussion within the profession, it is not comprehensive, and, for the same reason, the proposals contained in it are capable of amendment.

Writing as a member of the public health service I should like to express the view that the fundamental principles underlying the report, such as central control by the Ministry of Health or a similar body, and administration by enlarged local authorities or *ad hoc* regional bodies, are sound and worthy of support by the profession as a whole, including those engaged in the public services. It is, however, important, when the scheme has been fully discussed by the profession and is presented in its final form, that we should make up our minds which of the various alternatives we wish to support. Should the scheme be administered centrally by the Ministry of Health or by a specially appointed body, and at the periphery by local authorities or by newly formed authorities created for this purpose only? These points are not matters of detail, as the success of any scheme involving such a complicated issue as the integration of all the present medical services into one complete system depends largely upon the suitability and competence of the bodies chosen to supervise and administer it.

The report itself suggests the answer to one of these questions when it emphasizes that "the system under which local authorities administer in detail a broad national policy decided by the central Government is deeply embedded in the social fabric of this country." This would seem to be a conclusive argument in favour of peripheral administration by enlarged local authorities appointed for all purposes, and there is the further reason that the present major authorities have already co-ordinated some of the medical services which are referred to in the report, including their hospitals, many of the personal health services, and the services concerned with environmental hygiene. Moreover, the influences favouring a satisfactory condition of health within the community are by no means wholly medical. Apart from questions of nutrition and standards of living, which are only slightly influenced by the action of local authorities, there are such matters as housing, education, the provision of baths and wash-houses, abattoirs, parks and recreation grounds, crematoria, etc., all of which in the hands of local authorities play a part in affecting favourably the health of individuals living in urban communities. On its merits the argument for allowing local authorities to take a share in the administration of the new medical service seems a sufficiently strong one; but, apart from this, it would seem to be politically wise to enlist the support of the powerful influence of the local authorities in favour of the profession's agreed scheme rather than to risk disaster by provoking their equally powerful opposition. On the whole the major local authorities, if of sufficient size and possessing adequate rateable value,

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are efficient administrative bodies within the limits of their legal powers; they possess other services, apart from those dealing with public health and hospitals, which are of great assistance to a medical department; and their members, becoming keenly interested in health problems, form committees which, as a rule, are just as efficient in discharging their duties as would be the theoretically more perfect regional councils suggested in the interim report as an alternative.

I would emphasize that the essential things are size and rateable value. A drastic reorganization of local government areas is long overdue, but if the Government after the war performs this essential task adequately the units thus formed should be perfectly capable of playing their part in the new medical organization. The medical services in each area would then, in some respects, be analogous to the education service of the present day. The local authority would provide, equip, and maintain health centres on the basis of a grant from the Exchequer just as it now provides schools on the same basis. It would possess a statutory committee, similar to the education committee or the public assistance committee, to which all questions relating to the public medical service would be referred. In the interests of the medical profession, arising out of the more important interests of the patient, the local authority would be strictly controlled by regulations made by the appropriate Government Department in regard to its relations with the medical personnel in its area. Under any scheme for improving the manifest inefficiencies of the present system some increased measure of State control is essential. If that control is directly exercised from Whitehall or indirectly maintained by regional offices under the Ministry there will ensue a full State Medical Service with all the manifold disadvantages in loss of freedom to the profession which such a system entails. If, on the other hand, a less rigid system of control, designed to make the system work but not to cramp initiative, were entrusted to enlarged local authorities under regulations framed to provide as large a measure of freedom as possible to the profession, the objective which the Medical Planning Commission has before it might be attained. Much would still have to be done by the central authority, and the interim report is by no means clear as to the machinery to be used by that body for the transfer of practitioners, including consultants, from one area to another, to ensure the provision of satisfactory hospitals in all parts of the country, to coerce backward or unsatisfactory local authorities, and to obtain consultation between neighbouring local authorities in regard to matters of common interest. It is certain, however, that the performance of functions of this kind, together with the control of the financial aspects of the new service, the issue of regulations, and the supervision of the activities of the major local authorities, would necessitate the formation of a strong division at the Ministry of Health administered by a principal assistant secretary and a chief medical officer.

In discussing or considering post-war medical reorganization one is always confronted by the problem of reconciling the increased measure of State control, which is essential if any comprehensive public medical service is introduced, with the freedom of the medical profession. Ordinary safeguards incorporated into a Medical Services Act might be gradually relaxed in amending Acts as time went on. A safeguard of a permanent character, unlikely to be weakened so long as our political system remains similar to what it is now, would be the placing of responsibility for the detailed administration of the co-ordinated medical services in the hands of enlarged major local authorities. Other but less effective safeguards would be the continuance of some voluntary hospitals and of a limited amount of private practice and the survival of the General Medical Council in something like its present form.—I am, etc.,

Liverpool W. M. FRAZER.

"Positive Health"

SIR,—In the Medical Planning Commission's Interim Report they put as a first aim of a medical service the "achievement of positive health." The phrase is a little unusual and it is essential to be perfectly clear what it means. I take it to mean a degree of health at or above the average, so that, for example, I may be said to be in a condition of "negative health" during the day following a night of hard work. If I am right in this surmise—and if I am not I hope some member of the Commission will correct me—the phrase amounts to the promotion of personal hygiene. If this be so I am sure everyone will support the aim, provided the idea is never carried to the length of any suggestion of Government interference with personal liberty as, for example, in the prohibition experiment in America.

But I would submit that the subject of personal hygiene is still in the pre-scientific stage. We all try to inculcate it on our patients, incidentally often on the lines of "Do as I say and not as I do," and it remains too true that in this respect "a man of 40 is either a fool or his own physician." Personal hygiene is the happy hunting-ground of faddists and fashions. It seems to me that before the aim becomes an achievement personal hygiene will have to be erected into something of a science by the old methods of long, laborious, and completely unprejudiced research.

Let us not lead the public to suppose that we can confer the great gift of exuberant health.—I am, etc.,

Dover. A. R. JORDAN.

The Pre-natal Clinic

SIR,—The war is sometimes blamed for conditions which might be more correctly ascribed, at any rate in part, to our lack of enterprise. Perhaps it was inevitable in 1939 that the educational side of our health services should largely go to the wall, but the time has come when it is more than ever necessary to resume our health teaching. Pending the introduction of mothercraft classes in schools, it is important to concentrate upon the teaching of mothercraft in our pre-natal clinics. The young expectant mother is an exceptionally receptive subject for this teaching and welcomes it when it is provided.

What is to be avoided is the "hospital atmosphere" still too often associated with the pre-natal clinic, and the handling of expectant mothers as though they were a pack of cards. What do we find but a long row of women waiting on benches "to see the doctor," whispering tales of complicated confinements to each other, and exchanging accounts of their own symptoms which each tries to make more sensational than the last. The influence of suggestion is marked; on some days there is an epidemic of pain in the legs, on another frequency of micturition, and on a third abdominal cramp. Nearly always the attention of the woman is focused on a physical symptom rather than on the proud expectancy of childbirth. And the visit to the clinic is synonymous to her with getting on a couch to have her abdomen palpated "in case anything is wrong."

Surely the psychological effect of a clinic run on the above lines cannot be right. Pregnancy is not a disease of nine months' standing. It is a physiological condition and should not be associated with the idea of illness. The expectant mother is not a case or a patient. From the moment the mother enters the clinic she should receive instruction combined with entertainment, the programme of training for her new role of motherhood being made as interesting as possible. Medical supervision is necessary and desirable, but should be carried out without ostentation and with a cheerfulness as far removed as possible from the "bottle of medicine" line of approach. The doctor must certainly examine to ensure that the mother is obstetrically fit; although, once the pregnancy is found to be normal and the date of confinement confirmed, the frequency of abdominal palpation, so often purposeless, now in vogue is unnecessary. The health visitor will help her to make arrangements for the confinement and the hospital sister will give the requisite instructions; but these will be sandwiched in with the dressmaking stall, the cookery demonstration, and the class for physical exercises, the rhythmical dance music from the latter pervading the clinic and proving an excellent antidote to any thoughts of backache.

Reformers are seldom appreciated in their lifetime, but we hope that an exception may be made, in the case of Dr. Kathleen Vaughan, whose book *Safe Childbirth* is such a valuable contribution. It is under Dr. Vaughan's personal supervision that physical exercises to train expectant mothers for childbirth have been conducted at Paddington (L.C.C.) Hospital since last September, and are proving very popular. The prospect of "radiant motherhood" shown by these girls, laughing together as they swing their limbs in unison to the gramophone, is one of the happiest sights imaginable. Further classes are now being established as ancillaries to the clinics of St. Mary Abbots (L.C.C.) Hospital and to those of the Kensington Borough Council.

It is submitted that these classes in physical exercises, including relaxation, mark a considerable forward advance in obstetrics. Hitherto there has been too much acquiescence in the increasing difficulty of labour. If our nation is to play a leading part in the world of the future, it is necessary to produce a healthy and prolific post-war generation. This is not likely to come about if childbirth is regarded in the same light as a surgical operation. Why not determine to bring it back to the normal event which it still is in races whose women lead less sedentary lives?

Physical exercises must, of course, be combined with proper feeding, and few would question the desirability of food advice bureaux at the pre-natal clinics. Here the expectant mother obtains advice on dietetics together with practical and topical hints on cookery. The pioneer of these bureaux was established at the Soho Hospital for Women in October last, where a cooking demonstration is held for the waiting out-patients. In the clinics of the Kensington Borough Council a trained dietitian of the London County Council working in co-operation with the Ministry of Food has kindly lent her services for this purpose and gives short demonstrations to the mothers, followed by an informal discussion. At Paddington and St. Mary Abbots (L.C.C.) Hospitals such bureaux have been started in the ante-natal departments and the mothers are very appreciative of this service. A third point on which useful advice can be given to the expectant mother is in the matter of baby clothes. Wool, bought at a reduced price and sold in the Kensington Welfare Centres, makes a useful opening for demonstration of the best types of infants' garments and often develops into a knitting or sewing class.

Clinics on such lines fill a definite need of the pregnant woman and afford the means of keeping her under unobtrusive medical supervision and guiding her into healthy ways of living. The health visitor and hospital almoner can help her in her troubles and get her into touch with any organization whose assistance she may need. And the society of other young mothers affords the opportunity of lasting friendships. It is undoubtedly more trouble to organize a clinic on such lines in wartime, but the wives of our men in the Services deserve the best we can give them. Those of us who perforce have to remain at home have a duty in this respect. And is it not the best way to keep up morale of those at the front to give their wives a fair deal? It is to be hoped that all clinics for the expectant mother of the future, whether at hospital or health centre, will be run in a way which emphasizes the ideal of health and not the idea of disease and in which constructive hygiene as preached and practised by Dr. J. S. Fairbairn is given foremost place. In this atmosphere the doctor escapes from what Prof. Charles McNeil (April 4, p. 479) has so aptly described as "the deadening effect of the treadmill of clinics."

The writers of this letter must add the usual disclaimer on behalf of their respective councils of any responsibility for their personal views. They would like to express their gratitude to Dr. W. Allen Daley, Medical Officer of Health of the L.C.C., for his interest and granting facilities, and to Dr. James Fenton, Medical Officer of Health of Kensington, for his help and encouragement.—We are, etc.,

WILLIAM C. W. NIXON.
London. VIOLET RUSSELL.

Medical Women in the Forces

SIR,—Referring to my previous letter (April 18, p. 505) regarding the status of women doctors serving with H.M. Forces, I stated that medical women volunteering for service under the Army Council were offered two alternatives: (*a*) relative rank with the R.A.M.C. without commission, or (*b*) a commission in the Women's Forces to serve with the R.A.M.C., and that in the circumstances the Medical Women's Federation considered that "relative rank" only was preferable.

The Federation has since been informed that medical women will not in future be permitted to choose relative rank without a commission, but must be given a commission in the Women's Forces—i.e., they receive a commission in the Women's Forces to serve *with* the R.A.M.C. (a medical man receives a commission in the Land Forces to serve *in* the R.A.M.C.). We shall be glad if publicity can be given to this decision in order to avoid further misunderstandings.

The position as regards medical women serving with the R.A.F. Medical Branch has also now been clearly defined. The women are obliged to accept commissions in the Women's Forces to serve with the R.A.F.M.B. The appointments are gazetted as "To be Medical Officers with the relative rank of Flying Officer for employment with the R.A.F.," and they are shown in the Air Force List as "Women Medical Officers commissioned for employment with the R.A.F."—I am, etc.,

CLARA STEWART,
President, Medical Women's Federation

Inhibition of Lactation

SIR,—Drs. Macpherson and Haultain have done right to draw attention to their previous reports, which I gladly acknowledge, on the use of triphenylchloroethylene and other oestrogenic substances for inhibiting lactation. In her paper on this subject (*Journal*, May 16, p. 601) Miss Barnes mentioned the first investigation by Macpherson and Robertson, and at the time of preparation the most recent work by Haultain and Macpherson had not been published. My letter was intended as an addendum to Miss Barnes's paper, and I therefore did not introduce new references, although I now regret the omission.

Although in my experience the drug, when injected in a single dose of 250 mg. in 5 c.cm. of sesame oil (first tried in a few cases two years ago and repeated again recently), has not given such good results as those reported by the Edinburgh workers, we all agree that oral administration in suitable dosage has an excellent effect. There is no doubt that the use of synthetic oestrogens for the inhibition of lactation has supplanted the older uncertain and painful methods of treatment.—I am, etc.,

Oxford CHASSAR MOIR.

Complacency in Anaesthetics?

SIR,—Dr. E. C. Atkinson (June 20, p. 774) has asked whether any large-scale statistics are available of immediate mortality under anaesthesia apart from any added factor such as the magnitude of the operation or the poor condition of the patient. In other words, he asks for the incidence of primary cardiac failure due to anaesthesia.

It is now recognized that with a competent anaesthetist using modern techniques this event is so rare that an immense number of cases must be handled to obtain any reliable figures. Anaesthesia for dental extractions has been studied from this angle, and at large children's hospitals many thousands of cases are dealt with yearly without accident.[1] The usual techniques are open ethyl chloride or divinyl ether. One series of 123,000 consecutive cases with the former drug has been reported without incident,[2] as has another of 125,000.[3]

The mortality rate of expertly given nitrous oxide and oxygen for dental extractions is also infinitesimal. For example, 1,161,820 dental cases were anaesthetized with this method with 2 fatalities, a mortality rate of 0.00017%. Another series of 300,000 has been reported with no deaths.[4]

I believe that the vast majority of primary cardiac failure cases are due to gross errors in technique or to the employment of chloroform or a mixture containing it. With the advent of trichlorethylene the number of occasions when chloroform is justifiable is almost zero.—I am, etc.,

St. Albans, Herts C. LANGTON HEWER.

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[3] Kniberg, B., *Dental Cosmos*, 1933, Jan.
[4] McCardie, W. J., *Proc. roy. Soc. Med.* [Sect. Anaes.], 1923, March 2

SIR,—Dr. E. C. Atkinson (May 9, p. 595, and June 20, p. 774) appears to have laid himself out to criticize the McKesson machine. Why the machine? Surely he cannot blame a machine for any death. The machine is worked by someone, however incompetent, and the administrator is the one to blame, if there is any blame. I am afraid that, when this machine came out a very large proportion of men considered it to be quite foolproof, and with a certain number to-day that opinion is prevalent. It is far from being foolproof; I cannot conceive of any mechanical device being foolproof. I have seen a McKesson worked many times by men who were grossly incompetent and who got into trouble. Recently I met a man who had been using a McKesson for several months and asked me where the bags were. During that period he had not even learned the mechanism. I should think he was about due for a death or two and then would promptly blame the machine.

I have heard criticisms like Dr. Atkinson's many times, but usually from men who either have never owned a machine or only use one occasionally: never from men who use it constantly and are in a position to criticize it. May I draw Dr. Atkinson's attention to the very convincing letter by Dr. Freda Bannister (March 14, p. 367) and also the one by Dr. Massey Dawkins (May 23, p. 653)? I have used McKesson machines since 1926 and my results are far better than they were under the "rag-and-bottle" regime. The "rag-and-bottle" method may be fairly safe on the table, but what about the after-effects? The opponents of the machines are usually silent on these matters. The McKesson is, to my mind, the Rolls Royce of machines, as stated by Surg. Cmdr. H. Parry-Price (June 13, p. 738), but it is certainly not foolproof and cannot be blamed if it is used by incompetent people.—I am, etc.,

J. B. H. HOLROYD, D.A.,
Anaesthetist, Sheffield Royal Infirmary.

Vitamin B and Toxaemia of Pregnancy

SIR,—The article by Prof. W. C. W. Nixon, Dr. Margaret Wright, and Mr. E. C. Fieller (May 16, p. 605) was of great interest to us in view of the following case.

A primigravida aged 19, attending the ante-natal clinic of this hospital, was apparently normal until 33 weeks, when her blood pressure was 130/86, previous readings having been about 120/70. She did not attend when requested, and her B.P. was found to be 190/120 at 37 weeks, and she had albumin + + in the urine. She felt fit and well, but came into hospital on being pressed, afterwards admitting that her face, body, and legs had swollen noticeably. Conservative treatment as follows was started immediately: (1) Complete rest in bed, with a radiant heat bath for 20 minutes twice daily. (2) Nothing by the mouth beyond barley-water or marmite prepared as a beverage, pot. cit. gr. lx four-hourly, and mag. sulph. ʒij twice daily. (3) Enemata as required to maintain frequent stools.

After two days as above she was allowed sandwiches of marmite or grated raw carrot, first one of each per meal and later almost *ad lib.* A small amount of fish and chicken was then allowed to relieve the monotony. The main part of the food taken was marmite—i.e., vitamin B_1—in one or other form. The result was surprising. The blood pressure fell from 192/120 to 186/96 over-night, then to 166/110, 130/90, 130/86, 130/90, 130/86, 130/84 on successive days, and the albuminuria and oedema disappeared completely. At her own request she was allowed home under medical supervision. When readmitted in labour her blood pressure was 144/90 and there was albumin + in the urine. Labour and puerperium were normal and she was albumin-free on discharge, with blood-pressure 112/76. The placenta incidentally had four white infarcts, two of which were over 2 inches in diameter, and the whole maternal surface was studded with pin-head size calcified punctations.

The paper referred to above suggests that vitamin B_1 might be beneficial in pre-eclampsia. This case would appear to indicate that some part of the B complex is in fact strikingly beneficial. I have to thank Mr. R. Everett, F.R.C.S., M.R.C.O.G., for permission to publish this case.—I am, etc.,

WALTER CALVERT,
Resident Obstetrical Officer, Victoria Hospital, Blackpool.

The Mesentery in Regional Enteritis

SIR,—While the role of the mesentery in the development and dissemination of this lesion remains obscure, speculation is rife. Mr. Norman Tanner (June 13, p. 739) ranges himself beside those who regard the changes in the intestinal wall—ulcerative and hyperplastic—as secondary to lymphatic obstruction with mesenteric lymphadenitis; and he cites the oft-quoted experimental evidence of Reichert and Mathes in support of this theory of causation. These workers, it is well known, produced lymphoedema (hardly described correctly as "elephantiasis") in the bowel wall of dogs by the injection of sclerosing solutions into the mesenteric lymphatics. When the animals were killed some months later neither the characteristic ulceration nor fibrosis of regional enteritis was found, and apparently they were driven to the assumption of a "chronic low-grade bacterial infection" to explain these features of the human lesion. All of which seems rather like begging the question of aetiology, inasmuch as not a tittle of evidence has been produced about the nature of the hypothetical infection, bacterial, protozoal, fungal, or viral. Each species in turn has been incriminated as the causal agent—viruses seem to hold the field at the moment—but no proof of any has been forthcoming.

Mr. Tanner also emphasizes the obvious importance of removing the thickened mesentery and its glands along with the diseased gut. "The highest visibly affected segment" is an uncertain guide to this, for we have no knowledge whatever of the earliest stages of the process such as are incapable of detection by the naked eye. In practice we have found great difficulty in determining the true extent of the affected bowel, and believe that this failure to appraise accurately the limits of the disease at the first intervention is responsible for some of the recurrences after a "radical" operation. Even the so-called skip areas may be a snare, masking wide submucous extension of the condition beyond visible changes in the bowel wall.

En passant, has not the time arrived for the adoption of a uniform nomenclature descriptive of this clinical entity? Of the two titles used for it by Mr. Tanner, that which I have employed above seems preferable, though this is only a personal view. Eponyms abound in medicine, and it is unfortunate that they do, for they are often inaccurately assigned and as often invidious in choice. One pertinent example of this may suffice. The fact that Crohn and his associates rediscovered in 1932 a lesion which Dalziel (*Journal,* 1913, **3,** 1068) fully described with a wealth of pathological detail in 1913—incidentally in a paper read at the Annual Meeting of the British Medical Association—is surely not evidence of the existence of "Crohn's disease." In the interests of accuracy I think this term should be abandoned.—I am, etc.,

Ashton-under-Lyne F. G. RALPHS.

Tetanus after Sulphonamide Treatment of Cavities

SIR,—In view of the increasing application of sulphapyridine and sulphanilamide powder to septic and potentially septic cavities, and particularly to the peritoneum in peritonitis, I think I am justified in drawing attention to an inquest reported recently in the *Pharmaceutical Journal* (May 30), which I have not noticed published in the medical journals.

Briefly, a married woman of 34 was operated on for an unspecified pelvic inflammation on April 13. Free pus was found in the pelvic peritoneal cavity and sulphapyridine powder sprinkled therein. There are no details of what drainage was employed. On April 20 the patient developed tetanus and died the next day. The pathologist confirmed the presence of tetanus in the tissues. He examined the catgut, with negative results. In the cardboard of both containers of the sulphapyridine he found tetanus and in the actual powder from one of them.

Further evidence called disclosed that the powder had not been sterilized, but handed to the surgeon in a sterile swab. The medical consultant to the firm supplying the drug drew attention to the fact that printed on the label of the container was the advice: "The contents of this package have not been sterilized." He recommended sterilizing at 160° C. for 20 minutes. I believe, from the fact that in case reports of the use of this drug in operative surgery its sterilization is not stressed, that it is generally held that it is not necessary to sterilize it. I have seen it used straight from the packet in two or three hospitals and have used it so myself, believing that being a mild antiseptic it would not contain viable germs. For its application in surface work—skin grafting and extensive surface lacerations, for instance—sterilization is probably unnecessary, as tetanus rarely develops in such sites. But in view of the above case its use unsterilized in deep cavities, the peritoneum, and the wound resulting from a perineal excision of the rectum would appear to be very dangerous, as these sites favour growth of anaerobes.

Apart from the possibility of tetanus, the other question that the report raises is the use of the powder in the presence of free pus. Apparently it is contraindicated in these circumstances, because the chemical is inactivated by the pus. But is its use definitely harmful? One hears from time to time of its successful use in apparently hopeless cases of fulminating peritonitis with much free pus present. Is it justifiable in these desperate cases to calculate a maximum dose, based on the patient's weight and supposed tolerance under the circumstances, and put it in the peritoneum, assuming that half or more will be neutralized by the free pus and the remainder be available for action in the blood stream? If such a procedure is considered justifiable a routine full course of intramuscular pentnucleotide (Smith, Kilne, and French) might be started immediately.

It would be interesting to know whether any of the newer sulphonamides—succinyl-sulphathiazole and sulphaguanidine—now recommended for intestinal conditions and considered very little toxic would be better received by the peritoneum and more effective, owing to their selective action on the harmful bacteria of the intestinal tract.

At all events, it is obvious that in future sulphonamide powders must be sterilized carefully, and the statement in *The Surgery of Modern Warfare*[1] attributed to J. H. Key and T. H. Burford that "sterilization of the crystals does no harm but is unnecessary" must now be considered obsolete.—I am, etc.,

St Ives, Cornwall E. C. ATKINSON.

Urethral Instrumentation

SIR,—I wish to support Mr. Clifford Morson's plea for more efficient instruction in the use of urethral instruments (June 20, p. 771). There is, however, one statement in his letter which cannot be allowed to pass unchallenged. Surely it is not true to say that "a general practitioner will *benefit* his patient . . . by passing a catheter" in a case of acute retention. There are many dangers associated with this apparently simple procedure, not all of which will be obviated by efficient training.

Let us assume that the practitioner is able to avoid making a false passage and that his aseptic technique is above reproach, there are still the dangers of complete anuria and of haemorrhage, either from the kidneys or from the bladder, as the result of a too sudden decompression. It would probably be of more value to teach senior students when *not* to pass a catheter; acute retention due to an enlarged prostate would come at the head of the list. In my opinion such a case should be treated as an acute emergency and admitted immediately to hospital or nursing home before the retention is relieved.

I can recall many cases, as no doubt can Mr. Morson, where catheterization has added very considerably to the difficulties of the surgeon. This is particularly true of cases that are suitable for the perurethral operation by the Thompson punch or McCarthy's electrotome. In my experience this operation is not infrequently contraindicated as a result of interference by the practitioner.—I am, etc.,

Reading GORDON L. BOHN.

Bacteriophage for Bacillary Dysentery

SIR,—I am very glad to observe the satisfactory report by Dr. Arthur Compton (June 13, p. 719) of the bacteriophage treatment of bacillary dysentery in Alexandria. It is, however, perhaps unfortunate that his paper had to be abridged as a war economy, since it is evident both from the paper and from results achieved in this country that despite earlier forebodings there is a future for this form of therapy. One would have liked more details of the actual form of administration and the source and potency of the bacteriophage used to compare with those adopted here in Britain. A considerable number of cases for which I have prepared and used both autogenous and stock bacteriophages in this country have obviously not allowed any number of dysenteries to be included; in fact the work has been largely carried out on staphylococcal cases and some various toxaemias associated with intestinal bacilli. Suffice it to say for the moment that the results are as satisfactorily significant and interesting as to be compared with advantage with those of modern chemotherapy with sulphonamides.

Results such as are reported by Dr. Compton must be of the greatest importance, and should be emphasized as an effective and rational form of treatment, especially in view of the very large concentrations of men in the Forces now in that country and among whom such epidemics must be rapidly controlled and effectively treated. To this end Morison even reports the prophylactic use of bacteriophage in well-water in Assam, and treatment by bacteriophage of cholera reduced the mortality in two series from 55% and 70% to 23% and 21%. Specificity and potency are two essential features, and we find that a phage lysate to be effective must be active in at least a dilution of 1 in 1,000,000. One wonders, therefore, what has happened to the unfortunate typhoid cases whose mortality is reported stationary at approximately 20%. It is as easy to prepare rapidly really potent specific bacteriophage solutions to this group of organisms as to the dysenteries, so that one must reasonably look forward to a further paper from Dr. Compton reporting a similar significant drop in the mortality of the typhoid group in Alexandria.—I am, etc.,

London, W.1. HARRY COKE.

Obituary

DR. WILLIAM HENRY TURTON, who died at the end of April at the age of 79, had practised for many years at Heanor, Derbyshire, the town in which he was born. He studied medicine at the University of Edinburgh, graduating M.B., C.M. with first-class honours in 1886. He then began practice in Market Street, Heanor, and served for 54 years as medical officer of health for the Urban District, a post in which he is succeeded by his son Dr. Philip H. Turton. In every department of the town's life Dr. W. H. Turton used his knowledge and influence wisely and won the affection and respect of the whole neighbourhood. He was a man of many-sided tastes, with a deep interest in geology and zoology, on which he gave many public lectures. In Freemasonry he attained high honours. He had been a Justice of the Peace since 1916, and for some years deputy chairman of the Heanor Bench; he had also been warden of the Parish Church. In 1888 he began to take an active and prominent part in the work of the St. John Ambulance Association, becoming divisional surgeon and superintendent of the Heanor Ambulance Division, and afterwards county surgeon for the No. 5 District. He was appointed an officer of the Order of St. John after 32 years' service, and in 1935 was promoted to the rank of Commander of the Order. During nearly half a century of ambulance work he trained hundreds of candidates in first aid and left a lasting mark upon the efficiency of the district. Dr. Turton had been a member of the B.M.A. since 1912.

We regret to announce the death of Dr. WILLIAM GIBSON PARKER of Taunton, who was for many years assistant school medical officer under the Somerset County Council. He was born at Newcastle-upon-Tyne on July 30, 1878, the eldest son of the Rev. I. Parker, and was educated first at Wesley College, Sheffield; then at the Glasgow High School, and afterwards at the University of Birmingham and Guy's Hospital. He graduated M.B.Lond. in 1901 and took the Cambridge D.P.H. some years later. His early appointments were assistant house-surgeon at Guy's and assistant medical officer to the City Fever Hospital, Birmingham; then for a year he was medical superintendent at the Birmingham City Smallpox Hospital. Dr. Parker joined the British Medical Association in 1905, was honorary secretary of the West Somerset Branch 1924-7, and president in 1930-1. During the last war he served in the R.A.M.C. with the temporary rank of captain.

Dr. Bernard Leggett writes: I read with the greatest regret the obituary notice of Mr. GEORGE HUDDY, M.S., F.R.C.S. I was a student at the London Hospital when Mr. Huddy was registrar. At that time the manner of a few house-surgeons, registrars, etc., whose experience of life was bounded by hospital medical experience only, was on some occasions very irksome. Huddy was the opposite and showed to all an unfailing kindness and courtesy. Among my contemporaries he was greatly liked and appreciated, and the dresser or clerk who sought information from him would be treated with unfailing consideration and nothing was a trouble to him. Having attained the highest surgical distinctions, a future as a chief on "the London" appeared assured until he went to the Provinces, where first-class surgeons were becoming more in demand.

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[1] Hamilton Bailey's work; appendix at back.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—*Part I (Surgery, Midwifery, and Gynaecology)* J N. Agate, R J Alcock, W B Alexander, A G S Bailey, A D Barlow, H W A Baron, D. J. Bauer, A. O Bech, C P. Bennett, N L. Birkett, F. W Blacklay, R. J K Brown, P H Buxton, T. O Candler, A. W. Capon, E F Carr, F S. Carter, J M Childs, J. A H Collyns, D J. Conway, W. N Coombes, P N. Cunliffe, A J Danby, I N Darbyshire, J Dean, P J R. Deller, W. K. Douglas, M P Durham, P F Early, A G. Eddison, W F Felton, J. H. L Ferguson, J. L Fluker, T R Gilchrist, J V. T Gostling, A. G Harrold, P L. M. Hartley, D Hilson, T. S Hindle, R F Hollick S. C. H. Hood, P. H. S Hooper, E N M Johnston, H R. Jolly, L G Kingdom, W S S Ladell, F M Lancaster, F K Lau, T L. T Lewis, D I. Lishman, G C Lloyd Roberts, J Lomas, T G E Loosemore, D McAnally, I. M. MacArthur, E. L McDonald, N M Mann, H E. S Marshall, P H. N Matthews, R M S. Matthews, H R. A Michelmore, P A. G Monro, W K. S Moore, J. M. Morgan, Y. H Ng, W. J L. Pain, J. S. Pegum, J A Peters, R V. Peters, H L. Pierce, R J F H Pinsent, B Pownall, E Pringle, S H Purser, J F. P Quinton, R. K. Reid, W. Rogers, L. A Rook, H M. J. Rowan, I. A. Roxburgh, P H Sanderson, D L Sandes, O. L S Scott, T. O Scudamore, J. H Simpson, I. M Smith, O Sookias, J. W Squire, J H Steeds, J. P Stephens, H C. Still, J R Thompson, R. N Ticehurst, W. H Trethowan, G. S Udall, C. R. M Warner, D J Watt, L. A S White, E N Whitley, D. E. C Whittome, H I Winner. *Women:* F H Lomax, A. B. Willcock.

UNIVERSITY OF LONDON

In a report on the work of the University of London the Acting Principal, Mr. Harold Claughton, states that the medical students in 1940-1 were nearly 90% of the number for 1938-9, whereas non-medical students were only 56%. The proportion of men to women in the medical schools is 90%, again contrasting with the non-medical schools, in which the sexes now are about equal. The dispersal of medical schools, with the clinical students distributed throughout sector hospitals in the Greater London area, has had its compensations in the more varied experience of the students and their greater opportunity for practical clinical work. Reference is made to the offer of the Rockefeller Foundation, made to Universities of the United Kingdom in general, of a number of studentships to permit students to follow a two-year course in medical schools in the United States and Canada. Six London students have been awarded such studentships, and, to avoid a technical interruption of their courses of study, the schools to which they have been sent have been recognized by the University for the purposes of the M.B., B.S. examination. The chair in radiology at Middlesex Hospital Medical School, which was instituted twenty years ago but to which no one has ever been appointed, is now to be filled. Regret is expressed at the postponement, owing to the war, of many university developments. This year four great buildings would have been opened, including the ceremonial hall.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of Council on June 11, with Sir Alfred Webb-Johnson, President, in the chair, the award of the Blane Medal to Surgeon Commander E. R. P. Williams, R.N., for his original work "A Hunterian Lecture on Blast Effects in Warfare" was announced. A report was made of the election as Hunterian Trustees of Lord Moyne, Sir Cuthbert Wallace, and Sir Hugh Lett. Surgeon Rear-Admiral C. P. G. Wakeley was appointed representative of the College on the Court of the University of Bristol and Mr. Ernest Finch was appointed representative on the Court of Governors of the University of Sheffield. The Hallett Prize, granted on the result of the Primary Examination for the Fellowship, was awarded to Miss Margaret Ruth Taylor of Manchester University. Examiners were elected for the ensuing year

Diplomas of Fellowship were granted to the following candidates S. G French, G. N. St. J. Hallett, H. N. G. Hudson, A J. Wilson, H. A. C. Chalmers, A. N. Guthkelch, T. W. Rowntree, J. H Hicks, J M. Fitton, W I. Cawkwell, M. Gamal-el-Din, C. R. Salsbury, A. B Watson, S. C. Williams.

Diplomas of Membership were granted to Janet W. Shrimpton and F. R Wilde

Diplomas in Anaesthetics were granted, jointly with the Royal College of Physicians of London, to the following candidates: Helen M. B. Alcock, R. E. Angel, T. H. Baillie, E. J. W. Barnard, J R. J Beddard, Stella G. Braithwaite, T. R. M. Bristow, A. Coleman, Florence K. Costello, J. P. Cuddigan, J H. Dixon, J D. Ebsworth, Phyllis M. Edwards, A. J. Evans, Mita Frost, Edith Gilchrist, G. P. Goodwin, J. R. Hindmarsh, A. R Hunter, Jean E. W. Inglis, Edith S. M. Merry, R. E. J. Pembrey, S. F. Polley, Norah K. Priestley, H. J. Richards, G K T. Roche, G F. Smith, A. E. Ward, F. Widlake, Gertrude A. Willis.

The Services

The A.F.C. has been awarded to Air Commodore P. C. Livingston, O.B.E., Acting Wing Commander R. H. Winfield, and Acting Squadron Leader E. B. Bright, R.A.F.

The Efficiency Decoration of the Territorial Army has been awarded to Lieut.-Col. G. P. Crowden, Major (Temp. Lieut.-Col.) D. L. Kerr, and Major C. E. Fenton, R.A.M.C., T.A.

The name of Acting Col. C. V. Thornton, M.C., R.A.M.C. (Reserve of Officers), attached to the Southern Rhodesia Medical Corps, has been mentioned in recognition of gallant and distinguished services in the Middle East.

The following officers have been mentioned in dispatches by Air Officers Commanding-in-Chief: Acting Group Capt. J. G. Russell, R.A.F.; Wing Commander D. H. Brinton, R.A.F.V.R., and Wing Commander J. H. Williams, A.A.F.; Squadron Leader C. W. S. Marris, R.A.F., and Acting Squadron Leaders F. R. Buckler, R. Carpenter, D. A. Davies, D. C. Farquharson, G. R. Gunn, S. J. Hadfield, and D. St. C. L. Henderson, R.A.F.V.R.; and Flight Lieut. J. N. Loring, R.A.F.V.R.

The King has approved the award of the George Medal to Acting Squadron Leader Robert Hill, R.A.F.V.R., Acting Flight Lieut. E. L. Williams, Leading Aircraftman C. J. Boarman, and Leading Aircraftman H. Sumray. The citation in a *Supplement* to the *London Gazette* dated June 8 reads as follows:

"One night in March, 1942, two aircraft, carrying bombs, collided on an aerodrome in Malta and burst into flames. Squadron Leader Hill (the station medical officer), Flight Lieut. Williams, and Leading Aircraftmen Boarman and Sumray immediately proceeded to the scene. Shortly afterwards the bombs began to explode and enemy aircraft began to bomb the area. Despite the great danger, Squadron Leader Hill, assisted by Flight Lieut. Williams and the two airmen, successfully extricated four members of the crews from the wreckage The prompt and gallant action of these officers and airmen undoubtedly saved the four lives. Squadron Leader Hill has invariably performed exemplary work in dealing with casualties during heavy bombing raids, and both he and Flight Lieut. Williams have set a magnificent example which has done much to maintain a high standard of morale on the station. The bravery shown by Leading Aircraftmen Boarman and Sumray has been an inspiration to others."

CASUALTIES IN THE MEDICAL SERVICES

Surg. Capt. ALGERNON EDGAR PERCY CHEESMAN, R.N., who is included as killed in an Admiralty Casualty List published on June 10, received his professional education at Guy's Hospital and qualified M.R.C.S., L.R.C.P. in 1909. He held a house appointment at Leicester Infirmary before entering the Royal Navy as surg. lieut in 1910. He was promoted surg. lieut.-cmdr. in 1921, surg. cmdr. in 1923, and was placed on the retired list in March, 1941, with the rank of surg. capt., but was re-employed for service during the present war. He had been a member of the B.M.A. since 1931.

Surg. Cmdr. DOUGLAS ARNOLD NEWBERY, R.N., who was reported missing in Dec., 1941, is now presumed to have been killed in H.M.S. *Repulse* on Dec. 10, 1941. He received his professional education at Guy's Hospital, qualified M.R.C.S., L.R.C.P. in 1926, and immediately entered the Royal Navy as surg. lieut., being promoted surg. lieut.-cmdr. in 1932 and surg. cmdr. in 1938. In Sept., 1926, he was appointed to the flotilla leader *Keppel*, for duty with the destroyers of the 3rd Flotilla; in 1929 he joined H.M.S. *Iron Duke*; and from 1930 to 1933 he was stationed at Gibraltar Dockyard. After further service afloat in H.M.S. *Renown* and H.M.S. *Terror* he was employed at Haslar Hospital from 1934 to 1937, when he was appointed to H.M.S. *Sussex*. He leaves a widow. He had been a member of the B.M.A. for 10 years.

Surg. Cmdr. THOMAS CLOVER LARKWORTHY, R.N.V.R., who is now officially presumed killed in H M.S. *Neptune*, was 38 years of age, the son of Mr. and Mrs G. Larkworthy. He graduated B.A. at Cambridge in 1924 and qualified M.R.C.S., L.R.C P. in 1928, proceeding M.A. in the same year, also taking the B.Chir. degree in 1932 and the M.B. in 1937. He had been house-physician at the Brompton Hospital, resident obstetrical assistant, house-surgeon, house-physician, and casualty officer at St. George's Hospital, and clinical assistant at the Hospital for Women, Soho Square. At the outbreak of war he was senior clinical assistant at Brompton, and clinical assistant at the Victoria Hospital for Children and the infant welfare department of St. George's. He entered the R.N.V.R. before the war and in Sept., 1939, held the rank of surg. lieut.-

cmdr., being called up for service in December of that year. On Jan. 1, 1941, he was promoted to acting surg. cmdr. and was mentioned in dispatches. He leaves a widow.

Surg. Lieut.-Cmdr. HAROLD THEODORE LOGAN BROADWAY, R.N.V.R., is posted as missing, presumed killed in an Admiralty Casualty List published on June 24. He received his professional education at St. Thomas's Hospital, qualified M.R.C.S., L.R.C.P. in 1932, and then held the house post at the Royal Victoria and West Hants Hospital, Boscombe. He had been in practice in Dorchester since 1932, in partnership with Dr. T. B. Broadway, and was honorary anaesthetist to the Dorset County Hospital. He entered the R.N.V.R. as temp. prob. surg. lieut. soon after the outbreak of war and was reported missing in the *Journal* of March 21. He had been a member of the B.M.A. since qualification.

Surg. Lieut. JOHN WENLOCK ASHLEY, R.N.V.R., the elder son of Mr. and Mrs. L. Ashley of Tenbury, Worcestershire, is reported missing, presumed killed on active service last month. He was born on Sept. 27, 1914, and was educated at the University of Oxford, where he graduated B.M., B.Ch. in 1939. He entered the R.N.V.R. soon after the outbreak of war and was injured while serving in a destroyer in 1940. He had also seen service in H.M.S. *Hermione.*

Surg. Lieut. JAMES FREDERICK NEWMAN, R.N.V.R., who was reported missing in the *Journal* of Sept. 21, 1940, is now presumed to have been killed on active service when his ship, H.M.S. *Esk*, was sunk in the North Sea by enemy action in Sept., 1940. He was born on May 1, 1914, and was educated at Wycliffe College and the University of Birmingham, where he graduated M.B., Ch.B. in 1938. He had held house posts at the Staffordshire General Infirmary. In March, 1939, he entered the Supplementary Reserve of the R.N.V.R., and when war broke out he was mobilized with the rank of temp. surg. lieut., and saw service at the first Battle of Narvik and at the Dunkirk evacuation. He leaves a widow, Dr. Joan J. Newman, who is a member of the medical profession and who was his fellow student.

Wounded or Injured.—Prob. Temp. Surg. Lieut. R. P. M. Miles, R.N.V.R.

Missing.—Squadron Leader J. A. MacCarthy, R.A.F., Capt. C. Rigby, R.A.M.C., Lieut. E. Snell, R.A.M.C.

Prisoners of War.—Lieut. G. D. Cribb, R.A.M.C., Lieut. H. Rosenberg, R.A.M.C.

Medical Notes in Parliament

Health and Training of Youth

On June 16 the House of Commons considered the education estimates. Mr. BUTLER, President of the Board of Education, said that there was a substantial rise in the expenditure on education this year due, in part, to increased provision for meals and milk. The sum set aside for the youth service had also increased from £136,000 to £250,000. Over 700,000 children now took their midday meals at school. Last year 1,733 proposals providing for 240,000 children were approved, and from January to May of this year the number sanctioned was 3,642, providing for over half a million children. He saw no reason now why the target already mentioned of one million meals a day for children should not be reached by the end of the summer. He had consulted his medical advisers before making the statement that he believed the health of the children—largely thanks to these proposals and to the fact that some 3,250,000 children were now getting milk at school—had positively improved and that in wartime. It had been decided to extend to all schools the benefits of the milk-in-schools scheme, now confined to grant-aided schools. The result would be that all school children would be able to get milk for drinking at the price of ½d. per one-third of a pint.

With regard to the school medical and dental services, the volume of treatment given to school children in 1941 was almost as great as in 1940 and the years immediately preceding the war. That was not to say that everything was all right. The loss of doctors to the Services had been very severe, but the Board was doing its best to meet the situation. The Board had stimulated the formation of new nursery classes and play centres to look after the children of women engaged in war work, and for this purpose a new department had been established in Kingsway. He was determined that the educational value of the wartime nurseries should find full scope. Perhaps a more direct contribution by the schools to the war effort was the steady flow of qualified recruits for the Services which came from the secondary schools. The technical colleges all over the country had been given over very largely to the training of expert personnel for the Services.

Youth Advisory Council

Referring to the youth service, he said that every authority for higher education now had a youth committee and a substantial number of local organizers had been appointed. To help in the growth and expansion of the movement, he had felt the need for some closer contact with those connected with the actual work, and he proposed accordingly to appoint a Youth Advisory Council. This council was the first attempt to include in one body many types working among our youth—administrators, members of youth committees, and younger people engaged in this work, whether in voluntary or pre-Service organizations. One member was a chairman of a Juvenile Court, and there would be those who could speak with knowledge of the employer's and employee's point of view. The chairman would be Mr. Wolfenden, headmaster of Uppingham. The great mass of children broke off their education suddenly at about the age of 14, Parliament voted millions in the estimates, and then ceased to exercise a continued care and supervision over adolescents. This loss would not be obviated merely by raising the age for full-time schooling to 15 or even to 16, though we should take the former step when we got the chance. The new registration scheme had already recognized that up to at least 18 young people should be regarded as still falling within the province of the education service. He hoped the Youth Advisory Council would be an advance along the road to a more integrated national service for youth. To do what was right by the health and the welfare of the young people not only was continued supervision necessary, but the young people must be treated as learners and not simply as earners in their first years in employment. In the interests of youth, as well as out of consideration for our future industrial and commercial welfare, the time had come to review the whole system of industrial and commercial training, including the apprenticeship systems.

After debate, the discussion on the estimates was adjourned

Committee on Child Welfare

Mr. ERNEST BROWN told Miss Rathbone on June 11 that an advisory committee on the welfare of young children had been constituted. He would act as chairman, with Miss Horsbrugh as vice-chairman. The committee would advise him on any question affecting the welfare of expectant and nursing mothers and of children under 5 which are referred to it. It would do most of its detailed work through subcommittees appointed for the investigation of particular problems. The medical members of the Committee are Dr. Ethel Cassie, Dr. Letitia Fairfield, Dr. Dennis Geffen, Dr. William S. Macdonald, Dr. Alan Moncrieff, Dr. Annie Rowlands, Dr. Charles M. Smith, Mr. Arnold Walker, and Dr. Edith Williamson.

Period of Clinical Studies

On June 11 Sir E. GRAHAM-LITTLE asked Mr. Brown to address simultaneously and in the same terms his request, now sanctioned by the General Medical Council, to all the medical licensing bodies in Great Britain so as to avoid the inequality of sacrifice which must result from sporadic action on the part of individual licensing bodies. Mr. BROWN said the General Medical Council had communicated on this question with all licensing bodies and examining boards in Great Britain and Northern Ireland.

Psychoneuroses and Pensions

Replying on June 11 to Lieut.-Comdr. Hutchison, Sir WALTER WOMERSLEY said the grant of pension for any disability, including psychoneurosis, depended on whether the condition was accepted as attributable to or materially aggravated by service. It could not be assumed that a disability could be so accepted simply because it led to discharge from the Service. The question must be determined in each case in the light of the nature of the disability and the service and medical history of the claimant. Provision was made by the Ministry of Pensions for the treatment in special neurological centres under the E.M.S. of men discharged from the Services suffering from a condition of neurosis, provided they were likely to benefit by such treatment. This treatment was granted whether the condition was accepted by the Ministry or not.

Maternity Beds in Scotland

On June 16 Mr. JOHNSTON told Dr. Summerskill that 42 of the 55 Scottish local authorities with power to provide maternity beds had done so either in special maternity hospitals, of which there were 22 with 555 beds, or in general hospitals, where there were 400 maternity beds. There were also in Scotland 700 maternity beds in voluntary hospitals, and 300 beds in 10 maternity hospitals provided by the Government for expectant mothers who had been evacuated, but which in practice were also used for other patients. There was, therefore, a total provision of nearly 2,000 maternity beds in the country. Local authorities did not specifically allocate beds as free ones; they charged according to the patients' means, and in necessitous cases no charge was made.

Eye Injuries in Ordnance Factories

On June 17 Sir **Andrew Duncan** told Sir Francis Fremantle that returns of eye injuries at Royal Ordnance Factories had not hitherto been abstracted from case records, but arrangements had now been made to obtain these returns. Adequate preventive measures were taken by the provision of guards or goggles where necessary. Minor injuries were treated at the factory surgery, but where the injury was serious the employee was sent to hospital.

Silicosis Disablement

On June 16 Mr. **Ness Edwards** asked the Home Secretary the number of claims for silicosis certificates made by South Wales coal-miners to the Medical (Silicosis) Board. Mr. **Peake** said that 658 applications for disablement certificates were made in 1939, of which 271 were refused; in 1940, 825 were made and 396 refused; and in 1941, out of 1,136 applications, 662 were refused.

Civilian Medical Services

Mr. **Duncan Sandys**, answering Mr. T. E. Harvey on June 18, said the allocation of doctors for the needs of the fighting Services, in relation to those of the civilian population, was based on a careful system of priorities worked out by the Medical Personnel Priority Committee set up by the Minister of Health, the Secretary of State for Scotland, and the three Service Ministers. Many medical officers had already been granted temporary release from the Army to meet civilian needs. This practice had been in force for over twelve months and the War Office would maintain it as fully as the needs of the Service allowed.

Mr. **Brown** announced on June 18 that the Secretary of State for War had agreed in principle to the temporary loan to understaffed civilian hospitals of Army nurses who could be spared. Details were under discussion. There was a standing arrangement under which Army doctors would give all possible assistance to a civil hospital if required in an emergency. Medical Personnel Priority Committees in each Region had constantly under review the co-ordination of military and civil hospital services.

Mr **Ivor Thomas**, on the same date, asked Mr. Brown to undertake that, before any more general practitioners were released for the Services, the E.M.S. would be reduced to a size more comparable with proved needs. Mr. **Brown** answered that a percentage reduction in the whole-time medical staffs of hospitals, including those enrolled in the E.M.S., was already being carried out in the light of the proved needs of the hospitals. In addition, the period for which hospital appointments might be held by recently qualified doctors liable to military service had been restricted. The reduction of hospital staffs was, therefore, proceeding concurrently with the call for more general practitioners for the Services.

Family Allowances

On a motion by Wing Commander Wright, in the House of Commons on June 23, commending for the Government's consideration a national scheme of allowances for dependent children, Sir **Kingsley Wood** said that even if the principle of family allowances was accepted there were a number of important matters which still remained to be decided: whether such a scheme should be contributory or non-contributory; whether its benefits should be extended to families of all incomes or be confined to the poorer ones; whether it should be confined to the larger families by excluding the first eligible child or the first two eligible children in each family. There were also much wider and more important considerations about the effect of family allowances on the present wartime economy, particularly if given on a large scale and paid in cash If the motion were adopted, the Government would give full consideration to the matter in the light of the Beveridge report, the further conclusions of organized labour, and the financial position. It should be possible for all these matters adequately to be considered in the autumn. They would be given immediate attention, conclusions would be reached as rapidly as possible and communicated to the House, when, no doubt, there would be occasion for further discussion.

Medico-Legal

A FATAL OVERDOSE OF CARBACHOL

Carbachol became official in the Third Addendum to the *British Pharmacopoeia, 1932.* Chemically it is carbamylcholine chloride, the urethane of choline. It is sold in this country under the proprietary names of "moryl" and "choryl." A foreign proprietary of similar composition was formerly marketed here under the registered name "doryl." Carbachol is officially described as consisting of "small, colourless, hard, prismatic crystals, or a crystalline powder." The dose by mouth is 0.001 to 0.004 g. and by subcutaneous injection 0.00025 to 0.0005 g. It is soluble in equal parts of water. The effects are like those of acetylcholine—that is to say, it is a powerful vasodilator and cardiac depressant. Carbachol stimulates the parasympathetic nervous system. It causes contraction of the intestinal and bladder muscle, and is used subcutaneously or intramuscularly to relieve post-operative intestinal atony and promote micturition due to atony of the bladder wall. Its action by the mouth is less certain than by injection. In comparison with acetylcholine the effects on the gastro-intestinal tract and the bladder appear to be greater, and those on the cardiovascular system less (F. R. Fraser, *Journal,* 1938, **1**, 1293). Its great value is in the relief of urinary retention not due to obstruction.

The *Oxford Mail* of June 4 printed a full report of an inquest held by the city coroner, sitting with a jury, on Flight-Sergeant J. Simpson, R.A.F., aged 41, who died in the E.M.S. department of the Cowley Road Hospital after an overdose of "moryl." The charge-sister said that on May 11 a representative of a local firm of chemists called as usual on his daily visit, and among other things she ordered ampoules of "moryl," but did not indicate any specified form. She expected it to be supplied as a liquid, with which form she was familiar. She opened the box on May 19 for the purpose of giving an injection to Sergeant Simpson on the instructions of Dr. Lovas. She noticed that the drug was in crystals and was a little surprised not to find it in liquid form, though she had seen the crystal type a few days before when another sister had asked for some "moryl" out of her store. She dissolved the crystals in the ampoule in sterilized water and gave the injection at 11.50 a.m. She did not then know that the dosage of one ampoule applied only to liquid "moryl" and not to crystal "moryl." There were no instructions on the box stating that crystal "moryl" was not to be used for injection. Another sister gave evidence that a nurse whom she had sent to watch Sergeant Simpson immediately after the injection while she herself served dinner reported that he was breathing strangely. She found him almost pulseless, very blue, gasping, and in a collapsed condition. She sent for the doctor and started applying oxygen, but the patient died at 12.5 p.m. before the doctor's arrival. The manager of the branch pharmacy gave formal evidence of receipt and delivery of the drug. He did not know that "moryl" was done up in both liquid and crystal form. When he ordered the drug from Savory and Moore's Oxford establishment by telephone he was not asked if he required it in liquid, crystal, or tablet form. Evidence was then given regarding a patient in the same hospital who had an ampoule of "moryl" on April 9, and collapsed, but recovered after oxygen; and another patient, who had had an ampoule of liquid "moryl" without ill effect on May 9, but collapsed after administration of an ampoule of crystal "moryl" dissolved in water on May 10 and recovered from this under treatment. In reply to the coroner the sister said that she expected that one ampoule of crystals dissolved in sterilized water would be the same as one ampoule of liquid "moryl." The factory manager of Savory and Moore's said that boxes of "moryl" in crystal form were sometimes sent out with instructions and sometimes without. The general practice with hypodermic injections was not to issue any instructions as to the way they were to be injected. His firm had been making "moryl" for two years and there had been no previous complaint about its use. Dr. A. Lovas, a medical graduate of Prague serving in the E.M.S. department at the hospital, said that on the day after the operation on Simpson for haemorrhoids he gave instructions for an injection of one ampoule of "moryl" to be given. Several months earlier he had read the instructions given on a box of ampoules of liquid "moryl," and being unaware that "moryl" was supplied in crystal form he thought it sufficient to give instructions for a patient to have one ampoule of "moryl." If he had known that in two earlier cases of collapse crystals had been used instead of liquid, that would certainly have put him on inquiry. Dr A. H. T. Robb-Smith, director of pathology at the Radcliffe Infirmary, who had conducted a post-mortem examination, gave the opinion that death was caused by an overdose of the drug. The jury returned a verdict of death due to an overdose of "moryl" accidentally given, and added a rider: "We consider that the method of handling the drug at the hospital and the manner of labelling the drug by the manufacturers are both deserving of censure."

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there was a rise in the notifications of whooping-cough 213, diphtheria 54, and cerebrospinal fever 13: and a fall in measles 624, acute pneumonia 107, dysentery 45, and scarlet fever 33. The largest rises in the incidence of whooping-cough were in Warwickshire and London, where 51 and 41 cases more than in the preceding week were notified.

Diphtheria, with a rise of 54, due to the experience of Wales and Northern England, reached almost the level of the last three weeks in May. The lower incidence of measles was more pronounced than last week, although the decline was not general throughout the country. The largest decreases were those of London and Surrey, 157 and 140 less than the totals of the preceding week. The high level of incidence in Kent and Lancashire remained unchanged, whilst the notifications in Durham rose by 51. The lower incidence of scarlet fever was mainly due to the experience of London and of Wales. In Yorks West Riding and Kent there was a slight increase in notifications. Eleven more cases of dysentery were reported from Yorks West Riding, Wortley R.D., and this was the only outbreak of any note during the week.

In *Scotland* a fall in the incidence of infectious diseases was reported, dysentery, with an increase of 9 cases, being the only exception; 714 cases of measles, 186 fewer than in the preceding week, were notified in Glasgow.

In *Northern Ireland*, in Belfast, the notifications of measles numbered 342, a decrease of 26, but as only the first case in a household has to be notified, unless two months intervene between cases, the actual number is probably larger.

Quarterly Return of the Registrar-General for Scotland

The report for the first quarter of 1942 shows that Scotland enjoyed a very favourable mortality experience, particularly from infectious diseases. The marriage rate of 10.3 per 1,000 was the highest ever recorded for any first quarter in Scotland.

Live births numbered 21,881 and corresponded to a rate of 17.7 per 1,000 of the population, which was 0.1 below the average for the March quarter for the five years 1937-41. The illegitimate births were 7.0% of the total and were 1.0 above the average. The infant mortality rate—90 per 1,000 live births—was an improvement on previous experience. This rate was 19 below that for the first quarter of 1941 and 7 below the five-year average. Maternal mortality was 5.3 per 1,000 live births—an increase of 0.4 on the average of the preceding five years for the first quarter.

19,441 deaths were registered during the quarter, equivalent to a rate of 15.7 per 1,000 of the population. This rate was 3.2 below that recorded in the corresponding quarter of 1941 and 1.8 below the five-year average. There were only 411 deaths from the principal epidemic diseases—about one-third of the number recorded in the first quarter of 1940. The death rate from these causes was 33 per 100,000 of the population—about one-quarter of the five years' average rate for the March quarter. The death rates for all forms of tuberculosis were 57 per 100,000 and 67 for respiratory tuberculosis; these rates showed practically no change from the five-year average. Despite the severity of the winter the death rate for both bronchitis and pneumonia was only 89 for each cause as compared with 130 and 135 respectively, the average rate for the first quarters of the five preceding years.

Returns for the Week Ending June 20

The notifications in England and Wales during the week included the following numbers: scarlet fever 1,317, whooping-cough 1,389, diphtheria 660, measles 6,629, acute pneumonia 593, cerebrospinal fever 104, dysentery 71, paratyphoid 9, typhoid 7.

Outbreak of Small-pox

According to statements in the Press there have been up to date 22 cases of small-pox in Glasgow. Of 7 patients from a ship 2 have died; 4 cases of small-pox have also been reported in the Swindon area.

No. 23

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 13.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county) (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	140	8	28	1	5	224	16	47	2	11
Deaths ..		1	1				2	5		
Diphtheria	637	27	145	56	21	818	45	196	24	25
Deaths	12	—	1	2	—	21	3	3	1	—
Dysentery	55	3	54	—	—	114	5	59	—	—
Deaths				—	—			—	—	—
Encephalitis lethargica, acute	—	—	—		—	1	—	—		—
Deaths		1					—	—		
Enteric (typhoid and paratyphoid) fever						161	10	33	3	3
Deaths						2	—	1	—	—
Erysipelas			32	4	1			41	6	1
Deaths							—	—		
Infective enteritis or diarrhoea under 2 years				50						
Deaths	30	4	14	8	3	43	3	9	5	3
Measles	6,655	699	830	65	342	11,597	357	167		19
Deaths	6	2	4	1	3	9	1	1	1	—
Ophthalmia neonatorum	98	2	17		1	67	—	6		—
Deaths										
Paratyphoid fever ..	7	1	—							
Deaths	—	—	—		—					
Pneumonia, influenzal*	687	27	19	3	2	816	31	2	3	—
Deaths (from influenza)	5	—	1	—	—	10	2	3	—	7
Pneumonia, primary ..			209	21				169	9	
Deaths		12		8	5		31		10	
Polio-encephalitis, acute	1	—				—	—			
Deaths ..		—					—			
Poliomyelitis, acute ..	6	—	—	—	2	7	1	2	—	
Deaths ..		—					—	—		
Puerperal fever ..	—	4	12	2	2	1	1	15	3	1
Deaths		—					—			
Puerperal pyrexia .	151	11	18		3	122	5	28		
Deaths .										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever ..	1,025	65	200	62	39	962	51	152	37	29
Deaths .	4	—	—	—	—	—	—	—	—	—
Small-pox .	—	—	2		—	—	—	—		—
Deaths .	—	—		—	—	—	—	—	—	—
Typhoid fever			3	5	2					
Deaths .			—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths ..			—	—	—			—	—	—
Whooping-cough ..	1,350	144	48	42	12	3,774	135	312		2
Deaths ..	5	1	1	4	1	24	1	8	—	—
Deaths (0–1 year) ..	287	38	58	39	23	293	9	40	30	8
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,797	567	529	224	102	4,412	558	664	214	127
Annual death rate (per 1,000 persons living)			11·9	15·0	†			14·5	14·2	—
Live births	5,463	569	871	557	261	4,620	334	911	304	173
Annual rate per 1,000 persons living .			18·0	37·2	†			18·5	20·2	—
Stillbirths	227	28	41			187	14	40		
Rate per 1,000 total births (including stillborn)			45					42		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

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Medical News

Prof. Major Greenwood, F.R.C.P., F.R.S., will give a public lecture on "Civilian Hazard of Life in this War and in the Last: A Profit and Loss Account for 1915-16 and 1940-1" at the London School of Hygiene, Gower Street, W.C., on Thursday, July 16, at 2.30 p.m.

The thirty-first Long Fox Memorial Lecture will be delivered in the Lecture Theatre of the H. H. Wills Physics Laboratory (Royal Fort), University of Bristol, on Tuesday, July 7, at 8.30 p.m., by Prof. C. M. Yonge, D.Sc., whose subject is "The Experimental Study of Development."

The London and Home Counties branch of the Child Health Planning Group will hold its inaugural meeting at 13, Hill Street, Berkeley Square (British Dental Association headquarters), on Saturday, July 18, at 2.30 p.m.

The name of Col. Robert Bruce, D.S.O., M.D., Deputy Lieutenant for the County of Aberdeen and chairman of the Territorial Army Association for the County of Aberdeen, was omitted from the list of Birthday Honours published in the *Journal* of June 20. He received the C.B. (Civil Division).

The Heberden Society has awarded the Heberden Medal for Research in Rheumatic Diseases for 1942 to Dr. Philip S. Hench of the Mayo Clinic, Rochester, Minnesota, in recognition of his distinguished contributions to the subject over a number of years, and particularly of his most recent work on the effect of jaundice on the course of rheumatoid arthritis.

The 89th annual general meeting of the Governors of Epsom College was held on June 19 at 49, Bedford Square, London, W.C. In moving the adoption of the Council's report, Lord Leverhulme, the President, congratulated the Treasurer, Council, headmaster, and bursar for the way in which they had tackled the burdens of an exceptionally difficult year, which showed a reduction in numbers and a financial loss. The report was unanimously adopted, and the Governors received the announcement of Foundation scholarships, pensions, and educational grants awarded by the Conjoint Committee in May.

The Queen has allocated £2,000 from the "Bundles for Britain" Fund to the Belfast Hospital for Sick Children towards the establishment of a child guidance clinic.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Coltsfoot

"TUSSILAGO" writes: Can any colleague put me wise about coltsfoot, said to be good for asthma? Should the leaves be young or mature? How are they cured? I read that coltsfoot was smoked before the arrival of tobacco in this country, and that Pliny advised that the smoke from the burning leaf be inhaled through a reed. Information about the manufacture would interest me.

Blood Slides in Heat Pyrexia

Wing Commander S. B. S. SMITH (R.A.F. Medical Branch) writes: I note that Surg. Lieut.-Cmdr. Corr in his article on treatment of heat pyrexia by lumbar puncture (June 20, p. 761) makes no mention of blood-slides being taken to exclude malaria. Hyperpyrexial malaria is not uncommon when high atmospheric temperature is combined with high humidity. Were blood slides taken at a later date, and if so with what result?

Income Tax

Assistant's Accommodation

D. S. pays his assistant a salary, etc., "and £113 allowance for rent and rates of a furnished house which he has taken." He understands that if he pays the rent himself the assistant would not have to account for tax on the £113; but could he (D. S.) continue to deduct that amount as a professional expense?

** The reply cannot be given in quite such simple terms. If D. S. had taken the furnished house and required the assistant to live in it, he could have deducted the £113 as a professional expense and the assistant would not have been liable to tax on it, as the benefit would not have been convertible by him into money. But as matters stand payment of the £113 is a monetary liability of the assistant, and if D. S. discharges that liability for him the effect is the same as if he had paid him that amount in cash. If the tenancy and service agreements are altered making D. S. the tenant and requiring the assistant to live in the house provided, the assistant will cease to be liable to tax on the £113 as from the effective date of the change, and D. S. will still be entitled to deduct that amount as a professional expense; but until such a change is made no difference in the legal position with regard to income tax would be created merely by the rent and rates of the premises being paid by D. S. instead of by the assistant.

LETTERS, NOTES, ETC.

A Family History of Intussusception

Mr. JOHN J. LISTON, honorary surgeon to the Royal Portsmouth Hospital, writes: In May this year I operated on Sylvia X, aged 4 months, for intussusception. It was of the ileo-caecal type and early. She was the 14th child of the family. The mother stated that several of her children had suffered from the condition previously. On inquiry the following history was obtained. Reginald X died after operation for intussusception; age and date not known as the records have been "blitzed." Leslie X, aged 9 months, died after operation on April 5, 1930, for intussusception. Kenneth X, operation for intussusception on July 30, 1939, aged 3 years, alive and well. Ronald X, operation for intussusception on March 3, 1933, aged 5 months. Again operated on for intussusception on July 7, 1933; alive and well. Sylvia X, case quoted above, alive and well.

Blood Groups in Nullity Suit: Correction

We regret the clerical error by which, in the note under this title which appeared in our issue of June 20, p. 776, the child's blood group was given as ABN instead of ABMN. The mistake did not contradict the double exclusion of the husband (OM) from paternity which was the outstanding feature of the case, but had the effect of also excluding the mother (BM).

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* of July 2, 1842:

"The peaceful but arduous labours of the medical man render peculiarly obnoxious to him the heart-burnings, jealousies, and strifes engendered by the present condition of medical affairs. To continue his way, quietly and respectably, in the exercise of his profession, benefiting mankind by his science, while he procures for himself and his family the means of honourable existence, is the main object of his ambition. To pursue this object in peace is impossible under the existing state of medical affairs. The conflicting interests of our rulers have entailed upon us the curse of the disobedient son; the hand of the medical man is incessantly raised against his brother; laws and regulations, with the enactment of which we have no concern, have created a diversity of interests in our community, and introduced confusion and strife into a commonwealth where harmony of feeling and identity of interests should have prevailed; the character of the medical man is thus lowered in his own eyes, while the public estimation which he enjoyed is deteriorated in a still greater degree. These facts are brought home to every member of the profession in all parts of the empire. At one time the demand for medical reform was but a low and confused murmur; it is now the voice of the many—strong in number, and confident in the justice of their cause. But what is the measure of reform which we ask?—what the amendment which the enemies of reform affect to represent as a destruction of ancient institutions, prompted by a vague and restless love of change? The majority of reformers—those with whom all prudent and true friends of the profession are prepared to act—require nothing very violent in action, or destructive in its effects; they simply ask, as a fundamental measure, the institution of an uniform qualification for all persons who shall hereafter enter the medical profession; and, as a necessary consequence, they demand an equality of privileges for all those who shall have thus obtained an uniform qualification."

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MEGALOBLASTIC ANAEMIA OF PREGNANCY AND THE PUERPERIUM

BY

L. S. P. DAVIDSON, M.D., F.R.C.P.Ed.&Lond.

L. J. DAVIS, M.D., F.R.C.P.Ed., M.R.C.P.Lond.

AND

JAMES INNES, M.B., Ch.B., M.R.C.P.Ed.

(From the Department of Medicine, University of Edinburgh)

Apart from the apparent anaemia caused by physiological dilution of the corpuscles resulting from increased plasma volume in pregnancy (Dieckmann and Wegner, 1934) and the hypochromic anaemia due to nutritional iron deficiency which has been shown by Davidson, Fullerton, and Campbell (1935) to be of frequent occurrence in pregnant women of the poorer classes, it has been recognized since 1842 (Channing, 1842) that a severe anaemia of the pernicious type may complicate pregnancy. Very occasionally it is of the classical Addisonian type, having antedated the onset of pregnancy, but more often it is an anaemia closely resembling Addisonian pernicious anaemia which develops during the course of pregnancy. Osler (1919) discussed this latter condition and pointed out that it differed from Addisonian anaemia in that recovery, when it takes place, is permanent. It should be noted, however, that the number of cases upon which this observation was based was small and that the haematological data submitted were inadequate and unsatisfactory—for instance, two of the cases had a colour index of 0.6.

A number of cases of this type of anaemia have been recorded in temperate climates during the past 20 years, but most authors have stressed its rarity. Thus Evans (1929) states that not one case of macrocytic anaemia was observed in 4,000 pregnancies. Whitby (1932), Wilkinson (1932), Bethell (1936), and Musser (1940) all indicate that the condition is encountered but seldom. On the other hand, Stevenson (1938) during six years studied 30 cases in Glasgow, which she classified as "pernicious, megaloblastic, or hyperchromic anaemia of pregnancy or puerperium." It is significant to note, however, that of her 30 cases only 17 had a colour index above unity, and that Price-Jones curves showed a shift to the right in only 6 cases. Leucopenia was present in 8 cases only. She concluded, on the basis of the frequency with which polychromasia, nucleated red cells, and immature leucocytes were observed, that the blood pictures reflected greater activity of the bone marrow than is found in Addisonian pernicious anaemia in relapse, and that an added iron deficiency sometimes complicated the picture. No observations on the bone marrow were recorded by Stevenson or the other workers mentioned above. Another significant observation by Stevenson was that achlorhydria was uncommon, being present in only 3 of her 19 cases.

Investigation of 16 Cases

In Edinburgh during the past two years we have studied 16 cases of this type of anaemia referred to us by our obstetrical colleagues. During this period there were approximately 8,000 confinements in the maternity hospitals concerned, but as no special study of anaemia in pregnancy was being undertaken by us, and as the cases were seen only in the course of our routine work as hospital physicians, it is reasonable to assume that many additional cases occurred during the period under review. Seven of the cases were seen by us prior to the use of liver therapy, but in the remaining 9 cases treatment had been instituted from two days to two months before we were called into consultation on account of their refractoriness to treatment.

Age.—The ages of the patients are set forth in the Table. It will be noted that 9 were between 23 and 30, 5 were between 30 and 40, and 2 were aged 41. It is evident that the ages are considerably lower than those commonly met with in Addisonian pernicious anaemia.

Number of Pregnancies.—Two of the patients were primigravidae, 6 were primiparae, 4 were in their seventh, and 4 were in their third, fourth, sixth, and ninth pregnancies, respectively. It is commonly held that pernicious anaemia of pregnancy occurs mainly in women who have borne several children, but it will be seen that this is not supported by our experience.

History of Anaemia.—Only 2 of the patients were seen by us before delivery, but examination of case records revealed a history of marked pallor and dyspnoea during pregnancy in 13. In 8 of these cases haemoglobin figures were available, ranging from 18 to 52%, and more detailed haematological data available in 4 of them indicated a severe anaemia of the pernicious type. It was repeatedly noted that the anaemia became progressively more severe during the last two months of pregnancy.

Peripheral Blood Findings

The data recorded in the Table are those obtained when the patients were first seen by us. It has already been noted that liver therapy had previously been instituted for varying periods of time in 9 cases before they came under our observation.

The *red cell counts* are seen to vary from 0.57 to 3.2 millions per c.mm., being below 1.7 millions in 11 of the cases. *Haemoglobin concentrations* were estimated by the Haldane method, 100% being equivalent to 13.8 g. per 100 c cm. The figures ranged from 12 to 52%, being below 40% in 12 cases. Ten of the patients had *colour indices* above unity. It is generally agreed, however, that the normal range is from 0 9 to 1.09. On this basis the colour indices were greater than normal in only 6 cases, within normal limits in 8 cases, and below normal in 2. Of the 7 patients seen before beginning treatment, only 3 had colour indices above 1.09, while of the 5 seen within a week of beginning liver therapy 4 had colour indices within the normal range. In view of the short time that had elapsed since treatment of these latter patients had been started, we consider it improbable that they had

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previously displayed high colour indices. Of the 2 hypochromic cases, one (No. 9) was an unusual case, to which further reference will be made, while the blood picture of the other (No. 8) was modified by a blood transfusion given shortly before the recorded blood examination was made by us.

Anisocytosis and ovality of outline of the red cells were not considered by us to be so prominent in these cases of anaemia of pregnancy as we have been accustomed to find in classical Addisonian anaemia of equivalent severity.

Macrocytosis.—Price-Jones curves were not constructed, but the films were carefully inspected with a view to assessing the approximate frequency of cells of different sizes. We feel that, with experience and using a constant magnification, a very fair approximation can be obtained by visual inspection. In 9 of the cases we noted numerous macrocytes, and formed the opinion that the mean cell size was greater than normal, while in 7 the mean cell size did not appear to exceed normal limits.

Leucocytes.—In 9 patients the white cell counts were within or below normal limits. A leucocytosis was present in 4, all of whom were suffering from septic complications.

Table showing Details of 16 Cases of Megaloblastic Anaemia of Pregnancy

GROUP I.—CASES DISPLAYING A PROMPT RESPONSE TO LIVER THERAPY

Case No., Age, etc.	Peripheral Blood: Hb %	R.B.C. (millions per c.mm.)	Colour Index	W.B.C. per c.mm.	Sternal Marrow	Free HCl	Amount of Liver Extract before Response	Time of Initial Reticulocyte Response
(A) Cases studied before starting liver therapy.							c.cm.	
No. 1, aged 41, para. 8	40	2·07	1·00	5,400	Megaloblastic	+	4	3 days
No. 2 „ 35 „ 5	34	1·74	0·98	8,800	„	+	8	4 „
(B) Cases first seen after starting liver therapy.								
No. 3, aged 33, para. 6	40	1·47	1·33	12,000	Not examined	−	1	4 days
No. 4 „ 32 „ 6	32	1·48	1·08	3,800	Megaloblastic, with early normoblastic differentiation	−	6	4 „
No. 5 „ 41 „ 3	22	1·01	1·09	19,800	„	−	6	4 „

GROUP II.—CASES DISPLAYING A DELAYED RESPONSE TO LIVER THERAPY:

Case No., Age, etc.	Peripheral Blood: Hb %	R.B.C. (millions per c.mm.)	Colour Index	W.B.C. per c.mm.	Sternal Marrow	Free HCl	Amount of Liver Extract before Response	Time of Initial Reticulocyte Response
(A) Cases studied before starting liver therapy:								
No. 6, aged 29, para. 6	17	0·58	1·45	5,200	Megaloblastic	+	28	26 days
No. 7 „ 25 „ 1	32	1·45	1·20	2,200	„	+	60	4 months
No. 8 „ 27 „ 1	30	1·70	0·84	2,500	„	+	24	6 „ (died from sepsis)
No. 9 „ 23 „ 1	48	3·20	0·75	5,200	Normoblasts preponderate, but megaloblasts numerous	+	30	7 weeks
(B) Cases first seen after starting liver therapy								
No. 10, aged 38, para. 6	12	0·57	1·05	10,400	Megaloblastic	+	16	15 days
No. 11 „ 27 „ 1	18	0·95	0·95	7,400	Megaloblastic and normoblastic	+	18	11 „
No. 12 „ 24 „ 0	52	2·18	1·19	10,200	Not done	+	15	3 weeks
No. 13 „ 38 „ 1	29	1·20	1·21	3,400	Normoblastic*	+	42	4 „
No. 14 „ 23 „ 2	29	1·33	1·09	8,800	Not done	Not done	48	8 „
No. 15 „ 29 „ 1	32	1·58	1·01	4,000	Normoblasts preponderate, but megaloblasts numerous	−	22	10 „
No. 16 „ 29 „ 0, seen before liver therapy began	21	0·80	1·30	7,000	Megaloblastic	Not done	6	Died following transfusion 3 days after liver

* Sternal marrow examined two weeks after beginning of response to liver therapy.

Other Findings

Sternal Marrow.—Sternal puncture was performed in 13 of the cases. The resulting films with one exception showed numerous primitive megaloblasts. In 6 of the 7 cases seen before beginning liver therapy the qualitative and quantitative erythroblast pictures were identical with those found in Addisonian pernicious anaemia in the stage of relapse. The remaining marrow film, from Case 9, contained many megaloblasts, but the normoblasts were more numerous than we should expect to find in a case of Addisonian pernicious anaemia at the level of 3.2 million erythrocytes per c.mm. The marrow films from the cases seen subsequent to starting liver injections presented the mixed megaloblastic and normoblastic pictures that have been previously described by us in Addisonian pernicious anaemia responding to treatment (Davidson, Davis, and Innes, 1942). The bone marrow in Case 13, which gave a normoblastic picture, was examined two weeks after a response to liver therapy had occurred.

Gastric Juice.—It was practicable to carry out gastric analysis in only 11 of our cases when they were first seen. Free hydrochloric acid was present in 7. In the course of subsequent examinations free hydrochloric acid was found in 3 of the cases that had not been tested previously. Thus of 14 cases tested only 4 were found to have a histamine-fast achlorhydria.

Sepsis.—Septic complications developed during the puerperium in 9 cases. The conditions were: mastitis in 4 cases, pyelitis in 3 cases, and pneumonia in 2. In 3 of these patients a streptococcal stomatitis had also been present during pregnancy.

Treatment and Progress

All the patients were given liver extract parenterally in ample doses. In 5 cases this resulted in a typical reticulocyte response within a week and a subsequent adequate rise in the red cell count. Ten patients were temporarily refractory to treatment for periods varying from eleven days to several months. All received intensive parenteral liver therapy, well-known preparations such as anahaemin, pernaemon forte, campolon, neohepatex, haemex, and reticulogen being used. In order to eliminate the possibility of the failure to respond being due to an inert batch, more than one brand was invariably administered to such refractory cases. In addition to liver extract, all the refractory cases were treated with iron, and many of them also received yeast and ascorbic acid. In spite of this treatment 6 cases continued to be refractory for a month or longer. In 12 of the severest cases life had to be sustained by blood transfusion because of the low blood level and the unsatisfactory clinical state. In some of the refractory cases blood had to be given repeatedly, sometimes over several weeks.

In some cases liver therapy resulted in the same dramatic haematological and clinical improvement as is seen in

Addisonian pernicious anaemia, but in others the response was delayed, and when it occurred the rise in red cells and haemoglobin was gradual and protracted. Fourteen of the cases eventually made a complete clinical and haematological recovery. One patient (Case 16) died after a transfusion reaction; another (Case 8) died six months after delivery, despite large doses of liver extract, iron, yeast, and ascorbic acid, and repeated blood transfusions; death was attributed to severe bronchiectasis and pyelonephritis.

Since all these patients have been under observation for only two years, or less, it is impossible to make any statement regarding the permanency of recovery. Four have been followed during periods of six to twenty-four months and have maintained satisfactory blood levels without further treatment.

Discussion

Consideration of our own findings as well as those of previous investigators (e.g., Osler, 1919; Stevenson, 1938) reveal that a considerable proportion of cases of "pernicious anaemia of pregnancy" fail to satisfy all the criteria that are usually required for a diagnosis of Addisonian pernicious anaemia. In our opinion, for the diagnosis of the latter condition the following features should be present: a blood picture displaying anisocytosis, macrocytosis, ovalocytosis, hyperchromia, leucopenia, and thrombocytopenia, and a histamine-fast achlorhydria. In none of our group of 16 cases were all these features present. Basing a diagnosis solely on the peripheral red cell picture, we should have designated 5 of our cases as classical pernicious anaemia, while 7 more would have required careful consideration, since the colour indices were considerably higher than would be expected in iron-deficiency anaemias of comparable severity. The outstanding features serving to differentiate many of our cases from Addisonian pernicious anaemia were the presence of free hydrochloric acid in the gastric juice and a lower frequency and degree of macrocytosis and ovalocytosis.

Examination of the sternal marrow obtained before and after beginning liver therapy revealed with one exception (Case 9) pictures identical with those found in Addisonian pernicious anaemia at equivalent stages, and clearly indicated that these anaemias have for their immediate cause arrested maturation of the megaloblasts. Accordingly we propose that the term "megaloblastic anaemia of pregnancy" should be substituted for the misleading name "pernicious anaemia of pregnancy" on the grounds that the megaloblastic appearance of the bone marrow is characteristic and constant, while the peripheral blood findings are variable. The varying blood pictures are probably due to coexisting deficiencies of other haematinic factors.

Owing to the varying peripheral blood picture it does not appear practicable to establish adequate criteria for diagnosis without examination of the sternal marrow. Since severely anaemic patients with colour indices within or below the normal range may respond promptly to liver extract it would follow that the institution of rational treatment is dependent upon sternal puncture. The alternative is the empirical administration to all such patients of liver extract in addition to iron. Although manifestly undesirable, empirical liver therapy is perhaps less deserving of censure in this instance than in the treatment of other types of anaemia, since megaloblastic anaemia of pregnancy is of temporary duration, and the patient is accordingly not permanently condemned to an expensive and tiresome treatment.

The aetiology of megaloblastic anaemia of pregnancy is still unsettled. The most acceptable explanation is that the primary cause lies in a temporary failure of secretion of the intrinsic factor of Castle by the stomach during the later months of pregnancy (Strauss and Castle, 1933). That the secretion of hydrochloric acid may be temporarily impaired in a considerable proportion of pregnant women has been established by Strauss and Castle (1932). Other factors held to be of importance are: (1) reduced intake of extrinsic factor consequent upon poor diet, capricious appetite, anorexia, and vomiting; (2) impaired absorption from the small intestine due to altered hydrogen-ion concentration of its contents secondary to reduced gastric acidity; and (3) increased demands by the foetus for haematinic principles. We are unable to express any opinion on impaired production of intrinsic factor by the stomach or failure of absorption by the small intestine, as we have made no special investigation of these points. With regard to diet, in some of our cases it was apparently satisfactory, but in others it was undoubtedly poor. Furthermore, in some patients undue anorexia and vomiting were known to have occurred, whereas in others no note of such symptoms appeared in the case records. Nevertheless, since the bone marrows were megaloblastic, it can be safely assumed that there was an insufficiency of liver factor for normoblastic erythropoiesis.

Ten of our cases were refractory to treatment for longer or shorter periods before they eventually responded. This failure suggests the existence of a state of temporary arrest of erythropoietic function consequent on the absence of some essential factor additional to the liver principle. A similar state of affairs not infrequently occurs in sprue, in which a megaloblastic marrow may fail to react to parenteral liver extract. One of us has previously noted (Davidson, 1939) that in this condition a response may occur when liver therapy is supplemented by a high-protein diet. This would suggest that some factor in protein is necessary for erythrocyte production, possibly in connexion with stroma formation.

An alternative hypothesis is that refractoriness to treatment is related to a functional inability of the bone marrow to utilize the various haematinic principles because of the profound strain of pregnancy and the shock of labour occurring in a severely anaemic patient. In this connexion we wish to draw attention to the disastrous fall in the blood count which may result from a normal blood loss in such women during childbirth. Data available to us show that a haemoglobin level of 30 to 40% before labour may drop to a figure of 15 to 20% immediately subsequent to delivery.

The inhibitory effects of sepsis on liver therapy have been widely accepted. In 6 of our cases it is possible that sepsis played a part in this delayed response to liver therapy, but one of us has had cases of Addisonian pernicious anaemia with severe pneumonia with blood counts of a million or less which responded promptly to liver therapy (Davidson, 1933). Furthermore, in some of our present group of pregnancy cases refractory to treatment no sepsis could be found.

Conclusions

The practical conclusions drawn from our experience on which we wish to lay particular emphasis may be stated as follows.

1. It should be recognized that a severe megaloblastic anaemia may occur during pregnancy or the puerperium although the colour index may be unity or less.

2. Despite the administration of large quantities of liver extract, iron, and yeast, no response may be obtained for a considerable time in a proportion of such patients.

3. Our experience indicates that the great majority of refractory cases eventually make a complete recovery if life is maintained by blood transfusions while persevering with vigorous haematinic treatment. A study of the Table will show that, no matter how severely anaemic the patient, a good prognosis can be given if these measures are carried out.

4. The paramount importance of recognition of anaemia during pregnancy cannot be stressed too strongly, as only by this means can the acute exacerbations which tend to occur during the last two months of pregnancy be prevented.

Summary

A severe type of anaemia associated with a megaloblastic bone marrow occurring during pregnancy and the puerperium has been defined and its points of resemblance to and distinction from Addisonian pernicious anaemia considered.

Sixteen cases have been recorded and their haematological, clinical, and therapeutic aspects discussed.

Ten of the cases were temporarily refractory to treatment with massive doses of liver extract, iron, and other haematinics.

Attention has been drawn to the vital importance of perseverance with intensive therapy in refractory cases and to the necessity for sustaining life by blood transfusions until a response is obtained.

On a basis of bone-marrow cytology, the term "megaloblastic anaemia of pregnancy and the puerperium" has been proposed for this type of anaemia.

We wish to thank our colleagues on the medical and obstetrical staffs of the Royal Infirmary of Edinburgh and the Western General Hospital, Edinburgh, for allowing us to investigate and report on the above cases. Two of us (L. J. D. and J. I.) were in receipt of a Crichton Research Scholarship and a Leckie Mactier Fellowship in Medicine respectively during the period of this investigation.

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ASPHYXIA FOLLOWING DENTAL EXTRACTION IN A HAEMOPHILIAC

WITH A NOTE ON THE SPREAD OF INFECTION IN LUDWIG'S ANGINA

BY

C. L. ENDICOTT, L.D.S.
Director, Eastman Dental Clinic

J. H. MITCHELL, L.D.S.
Chief of Staff, Eastman Dental Clinic

AND

G. QVIST, F.R.C.S.
Late Surgical Registrar, Royal Free Hospital

The dangers of dental extraction in haemophilia are well recognized, and numerous cases of persistent haemorrhage are on record. The case here described is of interest on account of the anatomical extent of the haemorrhage, the extravasation of blood involving the deep cervical tissues as far down as the larynx, so that tracheotomy was necessary.

Case Report

The patient, a man aged 35, attended the Eastman Dental Clinic on Oct. 14, 1941, complaining of pain for two days localized to the right second lower molar tooth. He did not admit any previous history of bleeding, so that when dental extraction was performed it was not known that he was a haemophiliac.

His history, which was obtained later, showed that he had in fact suffered from recurrent haemorrhages from the age of 19. There was no abnormality of bleeding among his parents and six brothers. When 19 years old he was admitted to St. Bartholomew's Hospital with a large haematoma of the thigh following a trivial injury, and was readmitted a year later for haemorrhage after dental extraction, when bleeding continued for one week and 550 c.cm. of blood was given. On this occasion the blood-coagulation time was 17½ minutes; after the blood transfusion it was 8¾ minutes. At the age of 24 he was admitted to Guy's Hospital with a haematoma of the rectus abdominis and haemarthrosis of the left knee. Bleeding-time was normal and coagulation time was 13 minutes on one occasion (12/5/30) and 16 minutes on a second occasion (24/12/30) (control, 6 minutes). He was readmitted to St. Bartholomew's at the age of 31 with a haematoma of the forearm. The bleeding-time was then 2 minutes 10 seconds and coagulation time 3 minutes 30 seconds (27/8/37) (control, 2 minutes 10 seconds); platelets, 244,000.

When seen on Oct. 14, 1941, the patient had a tender loose second right lower molar, which was removed under gas anaesthesia. There was no undue difficulty or bleeding, and the patient went home. He returned in the afternoon, 5 hours later, bleeding from the tooth socket, which he stated had begun on the way home. The usual methods of control were attempted—plugging with dry gauze, adrenaline gauze, etc.—without relief. The patient was kept in the casualty ward, but in spite of repeated packing slow bleeding continued. Early the next morning, 18 hours after extraction, examination of the mouth showed that bleeding was proceeding from the gum at the site of extraction just behind the lower right first molar. Blood was welling up slowly from the depths of the socket, and there was no evidence of any tear of the mucosa other than at the actual situation of the extracted second molar. There was some swelling of the floor of the mouth just medial to the molar region, with the appearance of a submucosal haematoma. Two catgut stitches were introduced, closing over the gum, and external bleeding ceased immediately. Bleeding returned after two hours, and a third stitch was put in; no further haemorrhage occurred from this site. At this time, 24 hours after extraction, it was noted that the submucous swelling of the right side of the floor of the mouth had increased considerably, and there was now in addition a haematoma of the right side of the tongue and swelling of the right submaxillary region of the neck. It was believed that, bleeding from the gum having been controlled, tension in the tissues would not have to be very great to check what was regarded as a capillary ooze. Blood transfusion was begun.

During the next few hours the haematoma of the tongue spread to involve the whole organ, and swelling of the neck extended downwards, mostly on the right. During the course of the next day it became obvious that the larynx was being involved. Stridor was present and respiration was embarrassed, so that tracheotomy was necessary (54 hours after extraction). Actually breathing became extremely difficult on lowering the patient into the semi-supine position, and consciousness was lost just after incising the skin under local anaesthesia. On re-establishment of an airway with the tracheotomy tube, consciousness was recovered rapidly. The tracheotomy wound oozed continually and severe epistaxis started, and in spite of continued blood transfusion the patient died a few hours later, 66 hours after the extraction.

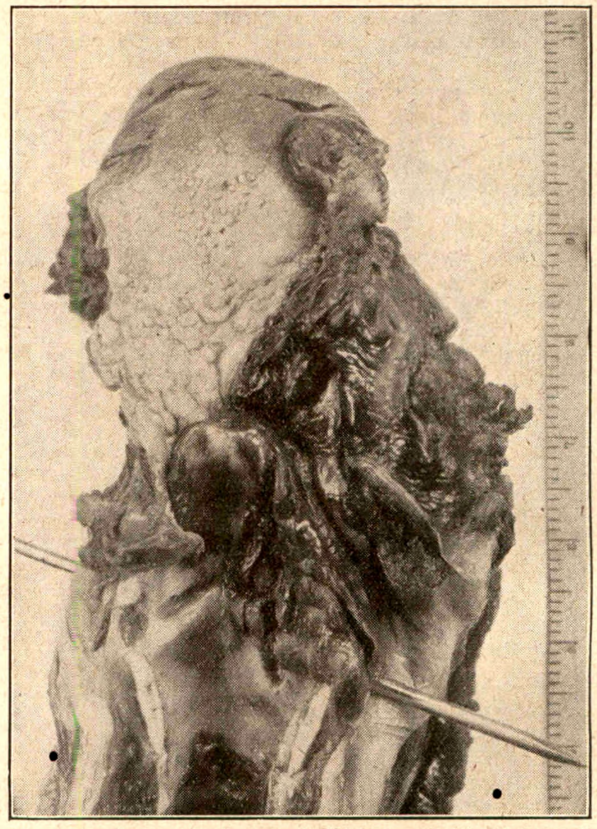

FIG. 1.—Specimen showing infiltration of blood into the mucous membrane of the larynx and upper part of the trachea.

Necropsy confirmed the presence of massive infiltration of the cervical tissues with blood, extending from the floor of the mouth and tongue down to the larynx and upper part of the trachea. The epiglottis and aryepiglottic folds were much swollen with blood and oedema in the submucosa, and the mucous membrane of the larynx and upper part of the trachea was infiltrated with blood, more marked on the right (Fig. 1). Careful search was made for a source of bleeding outside the gum, but none could be found.

Commentary

Several points of interest arise from consideration of this case:

1. *Source of Haemorrhage.*—The source of bleeding seems to have been a capillary ooze from the mucoperiosteum of the alveolus. Although external haemorrhage was controlled by stitches, blood must still have been escaping into the submucosa of the floor of the mouth. Extraction had been simple and trauma slight.

2. *Control of Haemorrhage in Haemophilia.*—It is doubtful if in the present state of knowledge it is possible to take adequate pre-operative measures to control haemorrhage in haemophilia. The time-honoured premedications with calcium and other agents are recognized to be of little value, the only promising one of these, according to Mead (1940), being intensive feeding with citrus fruit. Tainter, Throndson, and Richardson (1939) after an investigation of various agents concluded that "the results of this study leave no doubt that the agents commonly advocated for oral administration as haemostatics in dentistry are not effective when so used. The dental practitioner is advised to direct his efforts at controlling haemorrhage to local application of demonstrably effective agents rather than to try to speed up the coagulation processes by systemic medication." Perhaps the safest method of dealing with the problem is by slow exfoliation of the tooth, using a rubber band as recommended by Birch and Snider (1939).

3. *Path of Extravasation of Blood.*—A further point that arises is in connexion with the path of the blood down into the neck. It is quite clear that in this case blood extravasated from the floor of the mouth downwards through the base of the tongue in the plane above and behind the mylohyoid muscles and the hyoid, thus reaching the submucous tissues of the aryepiglottic region and thence the submucosa of the larynx. It provides an admirable illustration of the path of spread of infection in Ludwig's angina.

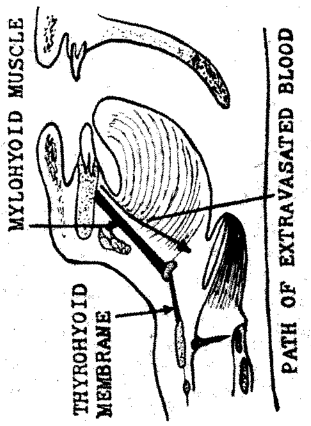

FIG. 2.—Diagram showing the relation between the musculo-membranous layer and the path taken by extravasated blood.

A most important anatomical feature in the neck influencing the spread of inflammatory fluids is the musculo-membranous layer represented by the mylohyoid muscles, the hyoid bone, and the thyrohyoid membrane (Fig. 2). Infections of the floor of the mouth and submaxillary region can be considered clinically in two groups according to their anatomical relation to this layer, this being the most important factor in prognosis and treatment, especially with reference to involvement of the larynx. Cellulitis primarily situated *below* the mylohyoid, as from a lymphadenitis of the submaxillary glands, if it extends downwards in the neck, will be *superficial* to the thyrohyoid membrane, and therefore does not endanger the larynx. Infections which are primarily in the submucosa of the floor of the mouth *above* the mylohyoid may easily track downwards, and will then be *deep* to the thyrohyoid membrane, thus involving the submucous layer of the larynx, this path of spread being well illustrated by the extravasation of blood in the case described above (Fig. 2).

Oedema of the larynx is therefore a complication essentially to be expected in infections above the mylohyoid—i.e., of the floor of the mouth or tongue. It is true that oedema of the larynx may complicate a superficial infection of the neck by spread along the stylopharyngeus to the laryngeal submucosa, as pointed out by Hamilton Bailey (1931), but this must be extremely rare. Oedema of the larynx is nearly always a complication of infection *above* the mylohyoid—that is to say, it is to be feared in true Ludwig's angina, and not in the superficial infections of the neck below and anterior to the mylohyoid-thyrohyoid layer which are often incorrectly called Ludwig's angina.

It is fortunate, therefore, that most dental infections spreading out from the lower alveolus reach the periosteum on the labial border of the gum owing to the thinner layer of bone on this aspect of the alveolus (Hamilton Bailey). If infection spreads downwards it will then be superficial in the neck. In the region of the third molar the alveolar bone is thinner on the lingual side, and dental infections may thus reach the submucosa of the floor of the mouth; spread downwards will then be above the mylohyoid, in the base of the tongue—a true Ludwig's angina.

Summary

A case of asphyxia following dental extraction in a haemophiliac is described. Obstruction of the airway was due to massive haemorrhagic infiltration of the floor of the mouth.

Control of haemorrhage in haemophilia is briefly discussed.

The path of extravasation of blood and inflammatory fluids into the neck is discussed, the importance of the mylohyoid muscle layer being stressed. Oedema of the larynx is essentially a complication of infections *above* the mylohyoid, and very rarely occurs in infections superficial to this layer.

We are indebted to the Registrars at St. Bartholomew's Hospital and Guy's Hospital for access to old notes.

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INSULIN HYPOGLYCAEMIC COMA
WITH A REPORT OF TWO FATAL CASES

BY

E. H. ROCHE, M.C., M.D.Lond., F.R.A.C.P.

Physician to the Auckland Public Hospital, New Zealand

Before the introduction of protamine-insulin, deaths from insulin hypoglycaemic coma were very rare, and were confined to cases of gross overdosage with insulin or cases in which the sudden onset of coma caused the patient to fall into water or sustain serious injury. The ordinary hypoglycaemic attack was as a rule of short duration, and coma, if promptly treated, was practically never fatal. The records of the Auckland Public Hospital (800 beds) from the introduction of insulin to May 31, 1941, do not include a single fatal case. The possible effect of protamine-insulin, however, upon the character and outcome of hypoglycaemic coma has not yet been fully studied; consequently, the occurrence within a period of six weeks of two fatal cases in which the usual treatment was of no avail may be considered worthy of record.

Case I

This patient, a man aged 50, was drawing a military pension for achlorhydria. He had undergone an operation for ischiorectal abscess in August, 1937, but urine tests do not seem to have been made. He was admitted to the Auckland Public Hospital on May 5, 1941, with 6 months' history of polyuria, thirst, and loss of weight and strength. His blood sugar was 374 mg. per 100 c.cm. This and all subsequent blood-sugar estimations were made by the ordinary method of Folin and Wu. He was quickly stabilized on a diet of carbohydrate 200 g., protein 80 g., and fat 90 g., with a morning injection of zinc-protamine-insulin 20 units and ordinary insulin 16 units. On this dosage he had for 11 days consistently shown a small amount of sugar in specimens taken at 9 and 11 a.m., and frequently also at 4 p.m., but those taken before breakfast and at night were for the most part sugar-free. To prevent this small daily loss of sugar the ordinary insulin was increased from 16 to 20 units on May 30, and the next day he was transferred to a Returned Soldiers' Hospital for further observation.

On June 3 he left the Soldiers' Hospital at 10 a.m. apparently quite well, and at 12.20 p.m. was readmitted to the Public

Hospital in deep coma. The pupils were small and fixed, but all other reflexes were brisk. The cranial nerves, so far as they could be examined, were intact. The pulse was full and bounding at 60 a minute, and the temperature was 95°. Radiant heat was applied and the blood sugar was estimated immediately and found to be 41 mg. per 100 c.cm. At 1 p.m., therefore, he was given 100 c.cm. of 25% glucose intravenously by syringe and 250 c.cm. of 5% glucose by rectal drip, and a catheter was tied in so that the excretion of sugar could be closely watched. At 2 p.m. a further 100 c.cm. of 25% glucose was given by syringe, making a total of 50 g. of glucose intravenously, in addition to that which might have been absorbed per rectum. In spite of this, at 3 p.m. the blood sugar had fallen to the extremely low level of 16 mg. per 100 c.cm. The total non-protein nitrogen was 22 mg. per 100 c.cm. Two pints of 5% glucose-saline was then added to the rectal drip, and at 4 p.m. 500 c.cm. of 10% glucose was given by rapid intravenous drip. At 5 p.m. the blood sugar had risen to 80 mg., but the patient remained in deep coma. The temperature had risen to 100.6°, and thereafter remained moderately elevated and somewhat erratic. At 9 p.m. he received a further 250 c.cm. of 10% glucose-saline, and at 10 p.m. the blood sugar had risen to 190 mg., Benedict's urine test then giving a brick-red deposit (8 drops of urine to 5 c.cm. reagent—boiling-water bath for 5 minutes).

Thereafter for the next 7 days hourly specimens were tested and the greatest care was taken to maintain an adequate blood-sugar level, in the forlorn hope that the cerebral depression might lift. Throughout this period small amounts of sugar—green to yellow—were present in nearly every specimen of urine, but the Rothera test remained for the most part negative. By continuous intravenous drip an average of nearly 6 pints of 5% glucose-saline was administered daily, and small doses of insulin were given when indicated. Details of this treatment together with the temperature are recorded on the Chart. By 11 p.m. on June 7 he had recovered consciousness sufficiently to make some attempt at speech and to take 6 oz. of fluid containing 25 g. of glucose by mouth. Next day he took 18 oz. of fluid by mouth, and, though still stuporous, had a few moderately lucid intervals. On the seventh day he took 24 oz. of fluid by mouth, but remained stuporous. At 8 a.m. on June 10 he became suddenly weaker, lapsed into deep coma, and died 2 hours later. During the last 2 days approximately 0.5% sugar had been present in every specimen and the Rothera test had remained consistently negative.

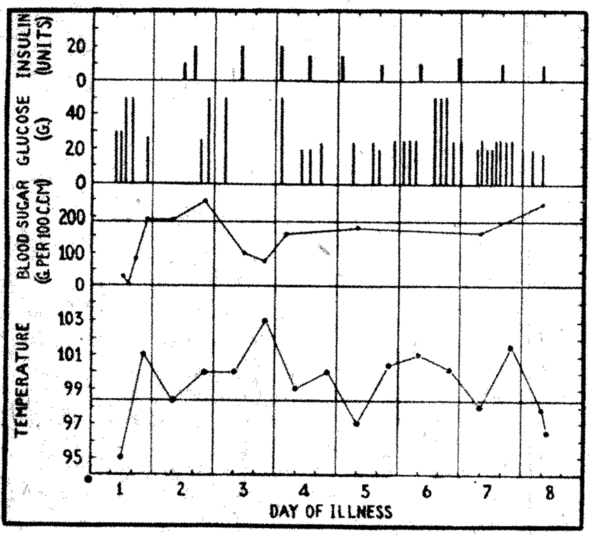

Chart of Case I

The necropsy revealed a pancreas of normal appearance, as were all other organs except the lungs, which showed early patchy bronchopneumonia at both bases, and the brain, which showed congestion of the surface vessels and, microscopically, perivascular softening in the thalamus and caudate and lenticular nuclei.

Case II

This patient, a man aged 55, was admitted to the Auckland Public Hospital on July 3, 1941, with 3 years' history of loss of weight, lassitude, frequency, and thirst. His urine gave a brick-red Benedict and a negative Rothera reaction, and the blood sugar 3 hours after breakfast was 328 mg. per 100 c.cm. He responded rapidly to treatment and was quickly stabilized on a morning dose of 24 units of zinc-protamine-insulin.

On July 11 he was discharged from the ward and referred for further supervision to the diabetic clinic, where, however, he did not report. On July 21 he drove into town with his wife. The morning was so fully occupied with calls that he missed his 12 o'clock lunch. On the way home he drove recklessly, and occasionally swerved without reason across the centre of the road. At 12.30 p.m. he collided with another vehicle, wrecking his own car. He was shaken, but escaped bodily injury and had no difficulty in walking 100 yards and giving detailed instructions as to his car. Arriving home at 1.30 p.m., he sat down heavily and announced that he felt very hungry. His wife hastened to prepare lunch, but he had scarcely begun to eat when he rolled off his chair and could not be roused. A doctor who was called diagnosed diabetic coma and, finding in his room a syringe and bottle of insulin (protamine-zinc), gave him an injection of 12 units. At 3.45 p.m. he was admitted to hospital in deep coma. The pupils were small and fixed. His throat was so thickly coated with mucus as to impede respiration and cause cyanosis: 4 oz. of mucus was aspirated. The blood sugar on admission was at the very low level of 15 mg. per 100 c.cm. The temperature was 98.4°, pulse 96, and respirations 16. Radiant heat was applied, and 50 g. of glucose in normal saline was given at once intravenously. There was a definite response, deep coma giving place to restlessness and the pupils dilating to a diameter of 1/8 inch and reacting sluggishly to light. At 4 p.m. 50 g. was given intravenously and at 6 p.m. 25 g., but without further recovery of consciousness. At 8 p.m. a specimen was taken for blood-sugar estimation, but before the completion of this test the patient's condition suddenly deteriorated, the respiration rate fell to 8 a minute, further mucus collected, and cyanosis developed. Aspiration and stimulants met with no response, and death ensued at 9.15 p.m. The blood sugar at 8 p.m. proved to be only 20 mg. per 100 c.cm.

The post-mortem examination revealed a poorly nourished body with no marks of injury. The pancreas was rather small but otherwise normal, and all the other organs except the lungs and brain appeared to be normal. The lungs showed in the right upper lobe a primary caseous tuberculous lesion about half an inch in diameter, with involvement of the corresponding root gland. The brain was very oedematous, with marked excess of cerebrospinal fluid upon its surface. There was general softening, especially in the cerebellum.

Discussion

A. Causes of Coma

Both cases had been under observation in hospital until 3 days (Case I) and 10 days (Case II) before the onset of coma. During that period they behaved as ordinary diabetic patients of average intelligence and their response to insulin and diet was normal. They had been carefully instructed as to their diets and were fully competent to give their own injections of insulin. Further, the subsequent necropsy failed to reveal any organic cause of hypoglycaemia such as tumour of the pancreas or pituitary or any disease of the suprarenal or thyroid glands or liver or pons. Our study of these cases suggests that coma was at least partly due to the following:

1. In Case II the full cumulative effect of zinc-protamine-insulin may not have developed at the time of discharge from hospital. When this effect was obtained, perhaps on the day after discharge, it may have been too great.

2. The shock of the motor accident in Case II may have disturbed the endocrine balance in such a way as to increase sugar utilization.

3. Escape from Public Hospital discipline may have resulted in considerable increase in bodily exercise with consequent improvement in sugar utilization. This effect would be enhanced in Case I by the small increase of insulin (from 36 to 40 units) which was ordered, inadvisedly, on the day before discharge.

4. The ever-present risk of an error in the measurement of insulin and the natural tendency of a man feeling vaguely unwell to prescribe for himself an extra dose of anything that has previously done him good.

B. The Fatal Outcome

Necropsy revealed organic changes in the brain consisting of perivascular softening in the thalamus and lenticular and caudate nuclei in Case I, and of an abnormal amount of cerebrospinal fluid and general oedema of the brain with softening, particularly in the cerebellum, in Case II. These changes, or their physico-chemical precursors, were undoubtedly the cause of death and must have been responsible for the continuance of coma in Case I when, 4½ hours from the onset, the blood sugar returned to normal. Other possible causes such as encephalitis and head injury must be excluded. In Case I the history is unlike that of encephalitis, and the pyrexia can be accounted for by the bronchopneumonia. There was no evidence of head injury in Case II.

There remains only hypoglycaemia to account for the cerebral damage. Pathological changes, including chromatolysis, vacuolation of protoplasm, fragmentation of cell processes, pyknosis of nuclei, petechial haemorrhages, and oedema widely and irregularly disseminated through the nervous system, have been described by Terplan (1932), Baker and Lufkin (1937), and many others, in fatal cases of pancreatic tumour and insulin hypoglycaemic coma in man and animals. Baker and Lufkin, however, being unable to find similar changes in hypoglycaemic rabbits upon which necropsy was performed immediately after death, considered that most if not all the changes observed in their 3 human cases occurred post mortem. They believed, further, that similar changes could be found in normal brains at the same period after death and doubted whether hypoglycaemia had played any part in their causation. Baker (1939), however, later found incontrovertible evidence of hypoglycaemic cerebral damage. Among his 26 rabbits 7 were examined after a single induction of hypoglycaemia with convulsions. A great many petechial haemorrhages and widespread severe demyelination and encephalomalacia were demonstrated. In these experiments the hypoglycaemia, though doubtless severe, was limited to an hour's duration, and only one rabbit actually died in coma. Accornero (1939) and Ferraro and Jervis (1939) present corroborative evidence.

Tyler (1941) confirmed the presence of hypoglycaemic brain damage in cats even when convulsions were prevented by sodium pentobarbital (nembutal). He made the important observation that a fall of body temperature and the administration of drugs such as nembutal, which depressed cerebral metabolism, gave an appreciable measure of protection against brain damage. He attributed the damage to inadequate cerebral respiration, in which glucose plays a vital part. We cannot escape the conclusion that severe hypoglycaemia as a cause of cerebral damage and death is now well established. But hypoglycaemia pushed to the stage of convulsions is a common and comparatively safe method of treatment for schizophrenia. An interesting study of therapeutic hypoglycaemia in 25 cases of schizophrenia has been made by Day, Niver, and Greenberg (1938). After shock-doses of ordinary insulin, estimations of glucose in the blood and cerebrospinal fluid were made by Benedict's method. The Folin-Wu method, which I used, is sensitive to many non-glucose-reducing substances equivalent to 20 to 27 mg. of glucose per 100 c.cm. of blood; the Benedict method is insensitive to all but a few, equivalent to 4 to 8 mg. per 100 c.cm. of blood. It follows, therefore, that when comparing the results obtained by these different methods a correction of 15 to 20 mg. per 100 c.cm. of blood must first be applied. Out of 28 inductions of hypoglycaemia by Day and his colleagues, in one case the blood sugar remained for 2½ hours between 5 and 20 mg. per 100 c.cm. (Benedict). In every case consciousness was promptly restored on the administration of 15 g. of glucose intravenously, and no after-effects were observed.

The lowest blood sugar recorded in my two cases was lower than that present in any of the schizophrenic cases, allowing for the effect of the non-glucose-reducing substances. In fact, with the correction for the Folin-Wu method there was apparently a complete absence of glucose from the blood. This aglycaemia may have lasted from 1 p.m. till 3 to 4 p.m. (2 to 3 hours). In Case II the duration of aglycaemia was about 4 hours, and this implies that at some time during that period there was free insulin in the blood with no glucose upon which to act. In Case I also the same condition was almost certainly present. The effect of such a glucose vacuum may well be more destructive to the nervous tissues than any degree of mere hypoglycaemia in which the blood retains a reserve of glucose, however small. In view of Tyler's work previously mentioned it is probable that the destructive effect of aglycaemia was increased in both our cases by the application of radiant heat. It is possible that the tissues of diabetics, inured to a raised blood sugar, would be more susceptible than those of normal persons to damage from sudden extreme hypoglycaemia.

Conclusions

Too much must not be deduced from evidence based upon limited clinical material, but we venture to draw the following tentative conclusions:

1. Zinc-protamine-insulin, while constituting an advance in the treatment of diabetes and while diminishing the frequency and in most cases the severity of hypoglycaemic symptoms, adds seriously to the gravity of hypoglycaemic coma when established.

2. Patients who are exposed to shock and strain while under treatment with zinc-protamine-insulin may develop profound hypoglycaemia of rapid onset and fatal outcome.

3. Patients who develop hypoglycaemic coma while under treatment with zinc-protamine-insulin should be treated much more vigorously than is necessary for similar cases under ordinary insulin. We suggest the following measures in such cases:

(*a*) An immediate intravenous injection of 100 g. of glucose (400 c.cm. of 25% solution) by syringe or cannula—the same dose to be repeated within half an hour if necessary. In the absence of immediate intravenous facilities a still larger dose should be administered by stomach-tube.

(*b*) An immediate subcutaneous injection of adrenaline 15 minims and pituitrin 1 c.cm.

(*c*) Except perhaps in cases of extreme fall in body temperature no warmth should be applied and no cerebral stimulants given.

Summary

An account is given of two cases of insulin hypoglycaemic coma which failed to respond to prompt and moderately vigorous treatment. In each case there was a period of aglycaemia with probably excess of free insulin in the blood. The damaging effect of aglycaemia upon the brain and the relative safety of insulin-shock treatment for schizophrenia are discussed. Attention is drawn to the gravity of hypoglycaemic coma in diabetic patients under treatment with zinc-protamine-insulin, and measures which should prove effective are suggested.

My thanks are due to Drs. W. H. Jackson, R. Rogers, and H. C. Tuck, house-physicians, for constant vigilance and unremitting care in the treatment of the cases, and to Dr. W. Gilmour and his staff for biochemical and post-mortem examinations.

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A CASE OF HUMAN ISO-AGGLUTININ ANTI-M

BY

J. L. HAMILTON PATERSON, M.D.
R. R. RACE,* M.R.C.S., L.R.C.P.
AND
G. L. TAYLOR,* M.D., Ph.D., M.R.C.P.

(*From Redhill County Hospital, Edgware, and the Galton Laboratory, Department of Pathology, Cambridge*)

Antibodies for diagnosing the M-N blood-group factors have to be made by injecting appropriate red blood cells into an animal—nearly always a rabbit—and later absorbing suitably the rabbit serum to remove unwanted species antibodies. Because anti-M and anti-N do not occur naturally in man serum, and because M and N do not seem to be antigenic for man, the M-N groups can be neglected almost entirely in considering compatibility in blood transfusion. Wiener (1941) wrote: "Only 3 individuals have been observed to date with natural isoagglutinins anti-M, none with anti-N, among several hundreds of thousands of individuals tested." He had previously (Wiener, 1939) mentioned three cases of anti-M and had given references to two of them. The first had been reported, without details being given, by Wolff and Jonnson (1933, p. 84), the second by Friedenreich (1937), and another case, which may be the third one referred to by Wiener, has been described by Moureau and Lambert (1939a, 1939b).

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* Working on behalf of the Medical Research Council.

Details of the Case

Recently, as a result of testing, against the red cells of potential donors, the serum of a woman (M. W.) who might have needed a transfusion in connexion with parturition, an antibody, apparently anti-M, has been discovered. No transfusion was given. M. W. was 28 years of age and pregnant for the fourth time. Her blood group was ON and she was Rh-positive. Friedenreich's case was that of an infant aged 2½ months, of group ON, whilst Moureau and Lambert's case was that of a man of group A₁BN aged 35. Friedenreich intended to find out what became of the anti-M as the child grew up, but it died of an epidemic disease when 9 months old.

Serum obtained from M. W. four months after her confinement was tested against the red cells of 20 persons belonging to group O. Equal volumes of serum and cell suspension—about 5% whole blood, as judged by eye—were mixed in 2 in. by 1/4 in. precipitin tubes; readings were made after the tubes had stood at room temperature for two hours. Undoubted and clear-cut agglutination was found in 14 of the mixtures; in some the reactions were seen by the naked eye, in others by using a microscope (see Taylor, Race, Prior, and Ikin, 1942). The 14 lots of cells which were agglutinated all contained the agglutinogen M; 5 were OM and 9 OMN. On the whole the reactions given by the homozygous M cells were stronger than those given by the heterozygous MN cells. The 6 donors whose cells did not react belonged to group ON, and so lacked the antigen M. When the reactions given by a known and an unknown antibody and the same panel of red cells are identical the odds in favour of the two antibodies being the same can easily be calculated. The probability that the apparent identity of the two antibodies is due entirely to chance is given by the formula $\frac{a!\,b!}{n!}$,* where n is the number in the panel and a and b the numbers of positive and negative reactors. Applying the present figures, we get $\frac{14!\,6!}{20!}$, or $\frac{1}{38,760}$, as the probability that the identity of the results is due merely to chance; in other words, the odds in favour of the antibody in M. W.'s serum being anti-M are 38,759 to 1. After absorption of the serum in the cold with OM cells the reaction, both in the cold and at room temperature, disappeared, while absorption with ON cells did not remove the antibody.

Table showing Titration of Serum of M. W.

Temperature	Serum Dilution	Cells			
		OM	OMN	ON	M. W.
2° C. ..	1/1	V	+ +	—	—
	1/2	V	w		
	1/4	+ +	—		
	1/8	—			
Room temp.	1/1	V	(+)	—	—
	1/2	+ +	—		
	1/4	—			
37° C.	1/1	—	—	—	—

No reaction is scored as negative without a microscopical examination; reactions weaker than V were determined with a microscope.

C = Clumps of cells in clear surrounding fluid visible to naked eye.

V = Somewhat weaker reaction, with clumps distinctly visible to naked eye, although surrounding fluid is not clear.

+ + = Very big clumps under microscope; + = not quite such big clumps; (+) = less than +.

w = Definite weak reaction in which there is a uniform distribution of very small clumps of about 6 to 8 cells.

Titration of the antibody in M. W.'s serum, detailed in the Table, showed that it was most active in the cold, less active at room temperature, and undetectable at 37° C.; the homozygous M reacted better than the heterozygous MN cells. This iso-agglutinin anti-M, like those described by Friedenreich and by Moureau and Lambert, had some of the characteristics of a cold agglutinin.

Both Friedenreich, and Moureau and Lambert, examined the relatives of their patients, but found no evidence that the occurrence of the iso-agglutinin anti-M was familial. M. W.'s father is dead and her mother and one sister are OMN; a second sister belongs to group ON, but anti-M has not been discovered in her serum. The husband of M. W. is OM and all their children will therefore be OMN. It might be suggested that the anti-M in M. W.'s serum resulted from the stimulus provided by the antigen M, present in the cells of all her foetuses, but there is no evidence to support this possibility. Her four pregnancies were: 1935, female, 6 lb., alive and well; 1937, male, 6 lb., alive and well; 1939, miscarriage, 3/12; 1941, female, premature, alive and well. No child has shown any signs of erythroblastosis foetalis. The anti-M was not the result of a previous transfusion, for none had been given.

Summary and Conclusions

Iso-agglutinin anti-M has been found in the serum of a woman as the result of tests made to obtain a suitable blood transfusion donor for her.

Although the occurrence of iso-agglutinin anti-M must be exceedingly rare, the case here reported shows that its presence may interfere with the selection of a suitable blood transfusion donor for a person in whose serum this antibody appears.

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* We are indebted to R. A. Fisher for this formula. (6! = "factorial six" = 6×5×4×3×2×1=720.)

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FURTHER DATA CONCERNING HUMAN FERTILITY

BY

G. PUGH SMITH, B.Sc., Ph.D.

University College of South Wales and Monmouthshire, Cardiff

Recent contributions to knowledge concerning the period of ovulation and successful fertilization in the human female (Weinstock, 1934) have thrown some doubt upon the validity of Knaus's theory of the relation between the dates of ovulation and onset of menstruation, and upon the deductions which may be made concerning the existence and duration of a pre-menstrual "safe period." Data quoted by Pryde (1941) and by Fleck, Snedeker, and Rock (1940), however, tend, within limits, to substantiate Knaus's views. Further data given below support the following hypotheses: (i) if fertilization does not occur menstruation follows approximately 15 days after ovulation; (ii) within limits there is a "safe" or infertile period a few days before the onset of the next menstrual cycle; (iii) an average "safe period" can be predicted with fair accuracy by a sufficiently extended study of the individual's menstrual periodicity.

The Present Investigation

The data concern all the acts of uncontraceptive intercourse during 31 menstrual cycles after which pregnancy did not occur and one cycle which was followed, as intended, by pregnancy. Pregnancy intended in cycles 30 and 31 was not fulfilled owing to the intermittent absence of one partner. There were no other acts in which contraceptive methods were used. An accurate record was kept of the dates and duration of each cycle, and the dates on which intercourse took place. A table was drawn up with vertical columns for the individual days of a cycle, starting with the first day of menstruation, data for successive cycles being recorded horizontally (see Chart). As each cycle was completed the last day was marked, and also the hypothetical day of ovulation, assuming it to be 15 days *before the first day of the next cycle.* A box was drawn round the supposed fertile period of each cycle, assuming it to be 3 days before and 1 day after the hypothetical day of ovulation: it was assumed that the maximum period for which spermatozoa were able to withstand the body temperature of 98.4° F. *and still remain active enough to penetrate the ovum* was 72 hours, and that the viability of the ovum after shedding was up to 48 hours. On these premisses the safe period for a 28-day cycle ran from the 16th day onwards. However, owing to variation in cycle length this assumption could not be applied as a generalization to all cycles. Therefore, before attempting uncontraceptive intercourse the variation in length of the menstrual cycle of the same partner was ascertained by recording the lengths of 21 successive cycles (Chart and Table I). It was decided that in her case, if Knaus's theory was correct, and in spite of one longer cycle on June 27, 1937, a "safe period" would be assumed to run from the 20th day to the end of any cycle, and that intercourse before this and later than the 9th day would invite fertilization. Guided by this assumption, during a further 29 cycles sexual activity was largely avoided between the 9th and 20th days. On certain occasions this practice was deliberately discarded. As previously stated, sexual activity in cycles 30 and 31 was intended to fall within the hypothetical fertile period, but this arrangement was not fulfilled. In cycle 32, however, pregnancy ensued. The details are shown graphically in the Chart.

TABLE I.—*Duration of Cycles*

Period	Duration (Days)													Total No. of Cycles
	25	26	27	28	29	30	31	32	33	34	35	36	37	
1937–8	1	1	2	9	1	4	2	0	0	1	0	0	0	21
1938–41 ..	0	0	4	10	8	4	1	2	1	0	0	0	1	31
Total	1	1	6	19	9	8	3	2	1	1	0	0	1	52

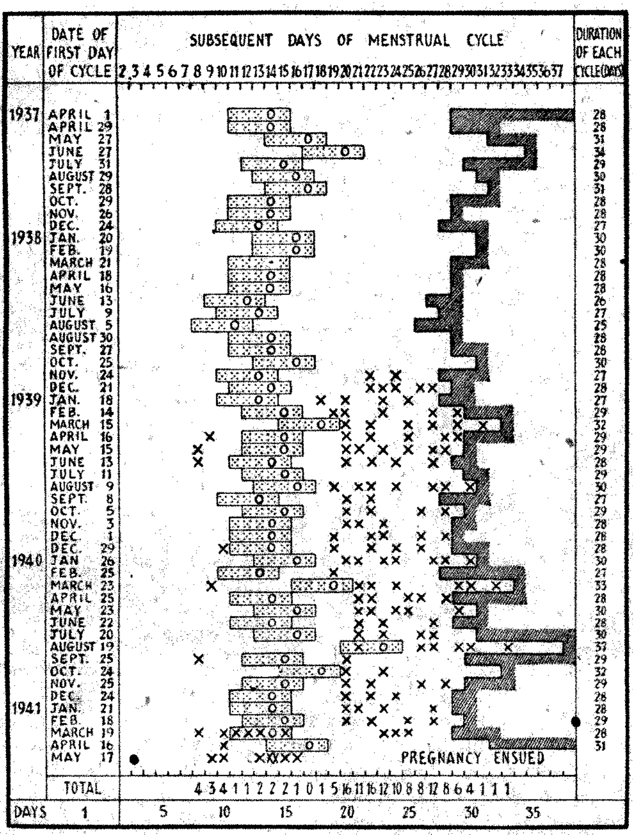

Chart showing distribution of uncontraceptive acts of intercourse throughout 32 menstrual cycles, the variation in length of which and of 21 other cycles is illustrated. The narrower assumed limits of the fertile period in each cycle are also shown.

When predicting the fertile period of a given individual the most convenient way is to count from the beginning of a cycle. If, however, the dates of ovulation and onset of the following menses are more closely related than the date of the preceding menses is to ovulation, then, taking variation of cycle length into account, it is difficult to generalize by indicating the "safe period" in terms of the *beginning* of the cycle. When the data are arranged as tabulated by Pryde—i.e., assuming the fertile period always to occur from the 10th to 15th day of a cycle (Table II)—it will be seen that in the non-fertile cycles 1 to 31 there was intercourse on some of the days of this very period, although it happens that in cycle 32, which was followed by pregnancy, there was intercourse on all days of the fertile period except the 12th.

TABLE II.—*Distribution of Acts of Intercourse without Contraception, shown according to Date from Beginning of each Menstrual Cycle (cf. Pryde, 1941)*

	Day of Cycle	Total No. of Uncontraceptive Acts	
		Non-fertile Cycles 1–31	Fertile Cycle 32
	1	0	0
	2	0	0
	3	0	0
	4	0	0
	5	0	0
	6	0	0
	7	0	0
	8	4	0
	9	2	1
Assumed fertile period (case cited)	10 (Pryde)	3	1
	11 (Pryde)	1	0
	12 (Pryde)	1	0
	13 (Pryde)	1	1
	14 (Pryde)	0	2
	15 (Pryde)	1	1
	16	0	1
	17	0	0
	18	1	0
	19	5	0
	20	16	0
	21	11	0
	22	16	0
	23	12	0
	24	10	0
	25	8	0
	26	8	0
	27	12	0
	28	8	0
	29	6	0
	30	4	0
	31	1	0
	32	1	0
	33	1	0
	34	0	0
	35	0	0
	36	0	0
	37	0	0

Time Relation between Menstruation and Ovulation

However, in considering the period of fertility in the light of Knaus's views—i.e., the relation between the onset of menstruation and the number of days prior to it when ovulation occurs—it is more appropriate, in arranging the data, to relate the date of intercourse *to the date of onset of the following cycle* (Table III).

The data in the Chart and Table III show that in this particular case during 31 cycles there was a period of infertility up to a maximum of 13 days *before the onset* of the next menstrual cycle. The Chart and Table II show that the assumption that this infertile period ran from at least the 20th day of any cycle was fairly well justified. In view of the longer cycle beginning on March 23, 1940, the 21st day onwards was temporarily resorted to as being safer for uncontraceptive intercourse, although the unexpected abnormally long cycle beginning on August 19, 1940, would suggest that the 25th day was more appropriate. The occurrence of such a long cycle after a succession of shorter ones may explain the failure of some predictions of infertile periods (Fleck *et al.*). In spite of this "escape," however, in the case cited, the 20th day was again assumed to be the beginning of the infertile period. It is unfortunate that there is no record whether any ailment (cold, etc.) occurred during the early part of the cycle beginning on August 19, 1940, that might be considered a possible factor in the postponement of ovulation.

From Table II it is clear that in the 32nd (fertile) cycle fertilization occurred between the 9th and 16th days.

The foregoing conclusions depend upon the assumption that, throughout, the spermatozoa were capable of fertilizing. There was a long period of abstention from regular sexual activity between the onset of menstruation and the 20th day of each cycle. Both partners were young and healthy, and in a good state of nutritional well-being.

TABLE III.—*Distribution of Acts of Uncontraceptive Intercourse shown on Days before the Onset of the Next Cycle*

Days before Next Cycle started	Total No. of Uncontraceptive Acts	
	Non-fertile Cycles 1–29, 31	Non-fertile Cycle 30
25	1	
24	0	
23	0	
22	3	
21	2	1
20	0	0
19	1	1
Assumed fertile period (narrower limits) 18	0	1
17	1	1
16	0	1
15	0	0
14	0	1
13	3	0
12	3	0
11	4	0
10	16	0
9	9	0
8	14	0
7	11	0
6	9	1
5	11	1
4	9	1
3	10	0
2	11	0
1	6	0
Menstruation begins		

Summary

Data are given showing the variation of 52 menstrual cycles in the same individual, and the relation between an assumed fertile period and the beginning and end of each cycle.

Ovulation is assumed to occur 15 days before the onset of the following menses.

Records of uncontraceptive intercourse during 31 infertile cycles show that there were occasions when intercourse took place as much as 13 days before the beginning of the next cycle without ensuing pregnancy. Intercourse was most frequent up to 10 days before the next cycle without pregnancy resulting.

Intercourse which took place on the 9th, 10th, and 13th to 16th days after the beginning of a cycle was followed by pregnancy.

It is concluded that prediction of the narrower limits of the fertile period of an individual can only be made by counting back from the beginning of the next cycle.

Only the wider limits of the fertile period may be predicted by counting from the beginning of the same cycle, requiring a knowledge of the variation of menstrual periodicity.

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W. M. Fowler and Adelaide P. Barer (*J. Amer. med. Ass.*, 1942, **115**, 421), investigating the rate of regeneration of haemoglobin in blood donors, found that the average drop in blood haemoglobin was 2.3 g. after the removal of 555 c.cm. of blood, and that the average time needed to replace this amount of haemoglobin was 49.6 days. Longer recovery periods were associated with a steeper fall in haemoglobin and could not be correlated with initial blood haemoglobin values. Hb was regenerated in man at the rate of 0.049 g. per 100 c.cm. of blood a day, and in women at the rate of 0.040 g. The administration of 1 g. of iron and ammonium citrates a day increased the daily haemoglobin regeneration by 49% and shortened the recovery period from 49.6 to 35.2 days. This was noticed during the first period, but the effect after subsequent blood donations became progressively less. If the haemoglobin of the donor is not regularly estimated the authors consider that three months should be allowed between donations.

Medical Memoranda

Scabies in an Army Unit

It has been held that blankets and clothing play an important part in the spread of scabies in the Army. Mellanby (1941a), on the other hand, from recent experiments with volunteers and other considerations, believed that fomites are unimportant in the transmission of scabies, and that many cases are acquired on leave, from wife or child.

The following is an account of 39 cases seen in one unit during 7 months. Of these, 36 were carefully investigated in an attempt to find out how the disease was acquired. The number of cases is small, but the series is thought to be interesting in that the conditions in the unit remained unchanged during the period and the circumstances were such that men rarely slept out except when they returned home on privilege leave. Week-end leave did not complicate the picture.

THE INVESTIGATION

Our methods of control consisted of monthly skin inspections of the whole unit, inspection of each man when he returned from leave, and the immediate hospital treatment of each case when detected, together with disinfestation of bedding and clothing. When a man reported sick with scabies he was questioned as to possible contact with other cases both within and outside his unit, as to the date when he last returned from leave, whether he was married or single, about children, and as to the whereabouts of his home. Little evidence was obtained of spread within the unit by means of blankets. In only 2 cases was there any connexion with another case within the unit (i.e., sleeping in the same hut or guard-room). In several cases it was evident that scabies had been present for at least 14 days before being detected, and yet skin inspection of other men of the hut failed to disclose further cases. The cases occurred at an even rate throughout the 7 months; there were no little epidemics confined to one hut or one company such as readily occur in pediculosis, which is undoubtedly spread by fomites.

Direct evidence of scabies acquired on leave was difficult to obtain. To contract scabies is considered by the men to be a disgrace, and as they are not willing to admit that their families could have the disease, great tact is necessary in questioning them. In 5 instances, however, clear evidence that there was scabies at home was obtained. It was found that out of the 36 cases 14 (39%) developed the condition within a week, 2 (5.5%) within 2 weeks, and 5 (14%) within 3 weeks of returning from leave. Thus 58.5% developed scabies within 3 weeks of returning. The leave rate during this time was about 6.4% a week, so in a normal group of men only 19% could have been expected to return from leave within 3 weeks. If Mellanby's views are correct a higher proportion of married men in the series was to be expected: actually it was found that 74% were married. In a control group of men from the unit only 51% were married. The towns where the men had been on leave were those of the industrial North and Midlands. No particular town was found to be associated with an undue proportion of these cases.

Mellanby (1941b) estimated the incidence of scabies in the general population as about 25 per 1,000. In the period under review there were 39 cases, and 1,700 men went on leave and were in contact with their homes. If 60% of cases are due to infection from home then a rough approximation of a scabies incidence in the general population of 16 per 1,000 is arrived at. If it is believed that a higher proportion than 60% are infected at home, then the figures rise to 23 per 1,000. When, therefore, the incidence of scabies in the unit is compared with Mellanby's figures for the general population it is not inconsistent to hold the view that the majority of cases were infected on leave.

CONCLUSION

Consideration of the cases of scabies occurring in an Army unit over a period of 7 months suggested that the majority of these men were infected from their homes while on leave. It would seem that blankets and clothes do not play a large part in transmission, and that fairly prolonged and intimate contact with another case is necessary to acquire the disease. The disease cannot be reduced much further in the Army at home until the problem of civilian scabies is vigorously tackled.

P. N. COLEMAN,
Captain, R.A.M.C.

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Reviews

CARDIOLOGY

The Principles and Practice of Cardiology. By Crighton Bramwell, M.D., F.R.C.P., and John T. King, M.D., F.A.C.P. (Pp. 509; illustrated. 35s.) London: Oxford University Press. 1942.

This volume on the *Principles and Practice of Cardiology* embodies the conception that medical thought has developed along different lines on the two sides of the Atlantic. Whereas laboratory methods have been progressively developed in the U.S. and Canada, clinical observation has always dominated the British outlook. Accordingly Dr. Crighton Bramwell has dealt with general problems, such as the physical basis of clinical signs, clinical methods, and principles of treatment. Dr. J. T. King holds that a regional classification of disease is now obsolete and that the only satisfactory basis is aetiology; he has therefore dealt with the various aetiological forms of heart disease. How far this is a natural subdivision and in what measure it lends itself to a profitable approach to cardiology will be very much a matter of opinion. It is true that each of the two sections of the work bears the stamp of a certain outlook on cardiology, but some of the consequences of this subdivision are hardly fortunate. Thus disease of the pericardium is considered at four places: in the first few pages under symptomatology, further on under heart sounds and murmurs, later in terms of rheumatic heart disease, and finally in a section on miscellaneous forms of pericarditis.

In the first part of the book Dr. Bramwell has throughout kept in mind the importance of envisaging the manner in which physical signs are produced. An excellent chapter, embodying many of the author's original contributions to the subject, is that on the pulse; other valuable sections are those on blood pressure and athlete's heart. In the latter are included the author's observations on marathon runners; in this also are enunciated the principal dangers of athletics—undue and competitive strain in growing youths, physical strain after recent infection, and frequently repeated severe muscular exercise. Reference in the section on blood pressure to the work of Treadgold demonstrates the relative insignificance of low blood pressures: a systolic blood pressure below 100 may be compatible with perfect health, as many as 3% of fit pilots being hypotensive. This finding is in accordance with the established actuarial fact that a better expectation of life exists among those with subnormal blood pressures than among those with average blood pressures.

In the second part Dr. King has shown an individual outlook upon many of the problems connected with the aetiology of heart disease. Particularly interesting is his view that rheumatism and chronic infections such as tonsillitis play an important part in the production of coronary artery disease and hypertension. While most clinicians could recall suspected examples of rheumatic involvement of the coronary arteries or of coronary thrombosis almost certainly related to infection, most would also demand stronger objective evidence of the general relationship than the statistical evidence here advanced or the personal impressions from case histories. However, speculation on this point may be not only diverting but ultimately valuable. The sections on bacterial endocarditis and coronary thrombosis are especially worthy of mention. The differences between coronary obstruction in middle and in later life as regards causation and prognosis are particularly well brought out. Dr. King has illustrated his work with many fine photographs of morbid anatomical specimens, and carefully chosen bibliographies augment the value of the text. In the chapter on rheumatic heart disease an excellent account is given of the evolution of mitral stenosis, but many readers will be surprised at the doubt expressed as to whether or not auricular fibrillation adds significantly to the circulatory embarrassment. The frequency of associated heart failure might, apart from strong experimental evidence, be taken as proof of the detrimental influence of this arrhythmia.

This Anglo-American textbook of cardiology, designed as it is upon a somewhat artificial basis, will nevertheless claim attention by virtue of the integrity and thoroughness of the authors and the intrinsic value of their various contributions.

SCHOOL MEDICAL AND CHILD WELFARE WORK

A Handbook for Assistant Medical Officers of Health on Child Welfare and School Medical Work. By F. J. G. Lishman, M.D.(Hyg.), D.P.H., D.L.O. (Pp. 63. 6s. paper boards.) London: H. K. Lewis & Co. 1942.

This handbook was first written for the guidance of assistant medical officers engaged by the Devon County Council to cope with the additional work caused by evacuation. It is designed for those taking up school medical and child welfare work for the first time. There are 20 pages of text describing the ordinary work of an assistant school medical officer, and the rest of the book consists of model leaflets of advice to parents, model forms used in school medical work, and Dr. Lishman's own scheme for the assessment of nutritional conditions. The first section, on co-operation, pays due tribute to the work of health visitors and teachers, without whose help no assistant medical officer can hope to be successful. The working of a maternity and child welfare centre is then described and emphasis laid on the fact that the primary object of the centre is educational. The section on the school medical service contains a detailed description of how to carry out an inspection in a school and how to deal with children who have defects or are "exceptional."

The advice given is thoroughly sound and practical, and only minor points call for criticism. In the section on school work it would have been advisable to draw attention to the importance of investigating the regularity of school attendance of individual children. A warning should be given that certification of mental defectives can be done only by medical officers who are specially approved. It is almost impossible to make a book like this up to date in existing circumstances, and it should be noted that derris root, recommended for lousiness, is no longer plentiful, and that some of the leaflets on feeding need considerable modification in wartime. The scheme for nutritional assessment is a sincere attempt to introduce some uniformity where probably none is possible, but it does serve as a useful guide to the examiner. This little book can be thoroughly recommended to those who are beginning child welfare and school medical work.

PREPARATION AND AFTER-CARE OF SURGICAL PATIENTS

Synopsis of the Preparation and After-care of Surgical Patients. By Hugh C. Ilgenfritz, M.D., and Rawley M. Penick, jun., M.D., F.A.C.S. (Pp. 532. 25s.) London: Henry Kimpton. 1942.

Lord Moynihan was wont to remark that surgery had been made safe for the patient and our task was now to make the patient safe for surgery. This laudable idea would appear to be the *raison d'être* of this book on the preparation and after-care of surgical patients. Urban Maes in a foreword writes: "It is obvious that much of the future progress in surgery will develop from closer co-operation between the scientific investigator and the practising surgeon." If we find in this volume chiefly an account of the results of such past co-operation as have a bearing on the care of patients both before and after operation, there are also some hints as to possible future developments. Well-set-out descriptions of pre- and post-operative management, such as we find here, will be not only of value to the house-surgeon just taking up his appointment but also a salutary corrective to many surgeons whose work may have become of so routine a nature that pre- and post-operative care have perhaps lost the relative significance which should be given to these all-important phases of surgical management. It is becoming increasingly realized to-day that the operation is but one event in the surgical treatment of a particular patient, and if this is obvious in such cases as thyrotoxicosis or intestinal or biliary obstruction, we are here reminded that it applies none the less to the surgery of the nervous system, the chest, or, indeed, any other region.

The book is of a suitable size to fit the capacious side-pocket of the house-surgeon: it contains some good line drawings and photographs and a useful appendix, with, among other things, an account of the newer chemotherapeutic agents, oxygen administration, and some tables of concentration of the blood constituents. Recent work such as the pre-operative use of vitamin B_1 (thiamin chloride) in thyrotoxic cases is included, and we may sum up by saying that here we have in convenient size an up-to-date and very useful account of the management of surgical patients, both before and after operation.

Notes on Books

The Natural Development of the Child is a difficult subject to write about, for to be natural is to be happy, and the happiest child is, like the nation, one with no particular history. So in order to write about the natural child it is almost inevitable that the unnatural or pathological must be quoted, if only to show what the natural development should not be. Dr. AGATHA BOWLEY has not escaped from this dilemma, but she has produced a readable simple book which should be of great service to parent and teacher. To the medical reviewer she seems best when she is on her own aspect of the subject—education—but then the medical reviewer may not be altogether competent to judge of this. It is curious how every now and then she reverts to the tenets of the psycho-analytic school in which she has evidently been trained, but when she does she is not very convincing and does not seem to be very convinced herself. The tracing of the accomplishments and difficulties of the child from birth to adolescence is well done, and the final chapter, on the effects of war on our children, is stimulating and suggestive. Dr. Bowley believes firmly in the need for a strong liaison between medicine, education, and psychology on sound child-guidance lines, and looks forward to these three sciences leading to a renaissance of happiness and opportunity for the child after the war. Her book is published in Edinburgh by E. and S. Livingstone at 8s. 6d. plus 6d. postage.

Dr. GEORGE WAY HARLEY'S book *Native African Medicine: With Special Reference to its Practice in the Mano Tribe of Liberia* is published in this country by the Oxford University Press at 20s. Over twenty years of West African experience have given Dr. Harley a close insight into the anthropology and ethnology of Negro Africa, especially throughout Liberia. Many thousands of natives passed through his hands, and he was ever on the alert to probe into the psychology of their rational and magical treatment of disease. The book deals largely with the extent to which the African native has been able to discover for himself successful methods of effecting cures. Dr. Harley's descriptions of the use of magic and fetishes are of practices which are too fanciful for serious consideration, but with his keen analytical mind he has been able to trace the underlying motive for many of the ideas about native witchcraft and the rather terrible deeds of secret societies. The author has compiled a good summary of diseases and a botanical list of plants used for herbal remedies; also a comprehensive bibliography of works on Africa. Anthropologists and medical men interested in tropical medicine will find valuable material in this book.

Preparations and Appliances

A DIRECTOR STIRRUP

Mr. E. T. BAILEY, M.B., F.R.C.S., surgeon in charge of fracture "A" department, Northern Hospital, Winchmore Hill, writes:

This stirrup has been designed to dispense with spanners for Kirschner wire gripping and straining and, at the same time, to act as a wire director. It is adjustable for width and can be used also with Steinmann pins.

It is made of 1/2-inch-diameter rounded metal, in two halves (Fig. 1), each consisting of a side-arm with an expanded head and two parallel cross-bars. One half has fixed to the outer side of the head a form of chuck, through which the Kirschner wire passes, to be gripped by a "bulldog" locking device with a wing-nut (B) of standard Whitworth thread. The head itself has a cone-shaped central aperture to guide the wire into the chuck. The cross-bars of this half are tubular, to receive the solid bars of the opposite side, which are locked after adjustment for width by a similar wing-nut (A) fixed on the outer cross-bar. The other half carries a similar but movable chuck which is slotted through the expanded head to end in a circular disk with a central 2-mm. aperture. Between this disk and the expanded head is a circular nut (E) for fixation of the chuck when used as a director, while immediately to the outer side of the head is a larger straining wing-nut (D), by turning which, after the wire is gripped, the whole chuck is drawn through the head until enough tension is obtained. Immediately below the head on each side the side-arm is perforated to take the pointed ends of a Steinmann pin up to 6 inches in length.

For Use as a Combined Director and Stirrup.—The stirrup is applied to grip the part firmly between the expanded heads of the side-arms, and is steadied by an assistant (Fig. 2). By means of the circular nut (E) the movable chuck is fixed after it has been protracted through the head to the required gripping interval, which may be reduced to as little as 2½ inches to hold the os calcis or tibia. A wire is drilled through the movable chuck straight into the bone, to emerge through the fixed chuck on the opposite side. In most cases the wire passes cleanly through, but should it catch on leaving the bone a slight movement of the side-arm is sufficient to cause it to engage in the conical aperture leading into the distal chuck. The wire is then gripped by tightening the wing-nuts B and C, care being taken to have the movable chuck in the position ready for straining (Fig. 3), which is accomplished by turning the straining nut (D).

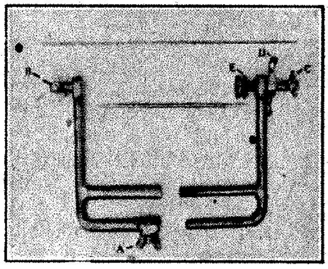

FIG. 1

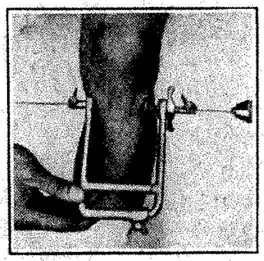

FIG. 2

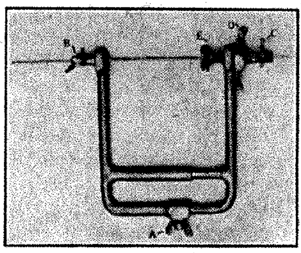

FIG. 3

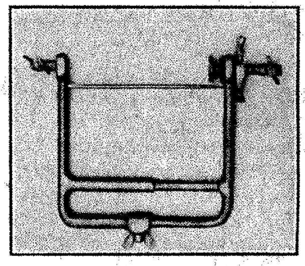

FIG. 4

FIG. 1.—A: Locking nut. B and C: Wire-gripping nuts. D: Wire-straining nut. E: Circular nut for fixation of chuck.

FIG. 2.—Wire director applied to the tibia.

FIG. 3.—Assembled with wire ready for straining.

FIG. 4.—Assembled with Steinmann pin.

For Use as a Stirrup Only.—The Kirschner wire is first drilled through the bone independently, and the two halves of the stirrup are threaded separately over the ends of the wire and locked together. Gripping and straining are then completed as before.

For Removal of Wire.—One half of the stirrup is detached, leaving the other half still gripping the wire for easy withdrawal.

For Use with Steinmann Pins.—The pin aperture of each side is threaded over the pin-point, and the two halves are locked (Fig. 4).

It is hoped that the instrument, while serving several purposes, will help to overcome the difficulties arising from the use of stirrups with an apparently endless variation in size of nuts, strainers, and spanners, due to differences in standardization. As each director stirrup is a complete entity, any slight variation in manufacture will not cause this inconvenience.

The stirrups are made by Messrs. Masters and Son, Old Kent Road, London, S.E., and have been supplied through the London County Council, to whose photographic department at the Southern Group Laboratory I am also indebted for the photographs reproduced.

CALCULATING FOOD VALUES

Messrs. Vitamins Ltd. (23, Upper Mall, Hammersmith, London, W.6) have just issued a "Food Value Calculator" (price 2s. 6d.) designed to simplify the evaluation of family and institutional diets in terms of the main nutrients. This ingenious device consists of two superimposed concentric circles of card, so arranged that one can be simply slid over the other, thereby revealing through appropriate slots the kind of approximate figures that dietitians and nutritionists often wish to have quickly at their disposal and almost as often have to do without—or at best elaborately to calculate for themselves. Incidentally, it manages to cram together very competently a mass of general information about the composition of many foods, including milk, butter, and cheese, cereals and bread, fruit and vegetables, eggs, fish, and meat. Conservative estimates as to average daily requirements are given for protein, calcium, iron (available), and vitamins A, B_1, and C.

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PULMONARY DISEASE IN MINERS

There is still a wide belief outside coal-mining circles that the dust hazard of coal-mining is relatively unimportant, that anthracosis causes little incapacity, and that, in contrast to silicosis, it does not predispose to tuberculosis. The recently published M.R.C. report[1] on chronic pulmonary disease in South Wales miners is a most valuable contribution to this highly important industrial problem, and should go far to correct misconceptions and to provide evidence on which preventive action can be based. And it is fitting that the report should be issued at a time when much attention is focused on the reorganization of the coal-mining industry. The present volume, entitled "Medical Studies," consists of a report by the Committee on Industrial Pulmonary Disease, an extensive medical survey carried out by P. D'Arcy Hart and E. A. Aslett, and a pathological report by T. A. Belt (with assistance from A. A. Ferris). We are promised a second volume on environmental investigations within a few months.

It is pertinent to refer to the events that led up to the investigation. It had been recognized that in the coal-mining industry one class of occupation was comparable with the surface industries (for instance, quarrying and dressing of sandstone) causing silicosis—the driving of hard headings through strata composed of various kinds of rock. But the number of men engaged in this class of work formed only a small proportion of the total number employed underground. In 1936 the chief medical officer of the Silicosis Medical Board drew attention to the increasing claims for compensation made by coal-miners in South Wales: thus in 1933 there were 234 claims; in 1935, 398 claims. Moreover, the proportion of refusals rose from 23% to 52%. It was noted that a large proportion of the cases arose in the South Wales coalfield, and that by far the greater proportion of the increase was derived from the anthracite mines in this area. The increasing proportion of refusals appeared to be due to the fact that a disabling pulmonary disease existed among the miners which did not fulfil exactly the definition for silicosis laid down by the International Conference held at Johannesburg in 1930. At the request of the Home Office and the Mines Department the Medical Research Council therefore undertook to investigate the whole problem from the aetiological, clinical, and radiological points of view.

The medical survey involved the examination of 2,000 miners from 16 collieries, and of nearly 400 coal-trimmers from 4 coal-exporting ports. The entire population (560 persons) of one anthracite colliery was clinically and radiologically investigated, full industrial histories being taken. From the remaining 15 representative South Wales collieries (7 anthracite, 5 steam, and 3 bituminous coal) selected colliers were *x*-rayed only, again with full industrial histories. In addition, there were similarly investigated long-term workers from the surface screens at various collieries, and men occupied as hauliers or riders on the underground roadways at two of the bituminous coal collieries who had been exposed to the shale dust used for stone-dusting. The data obtained from this elaborate investigation were analysed in a most searching manner. There can be no doubt of the importance of the conclusions formed. Hart and Aslett offer a new radiological classification of the changes caused by dust in coal-miners. (Excellent representative *x*-ray plates are reproduced.) There are two main divisions: consolidation and reticulation. Consolidation is a composite category including discrete nodulation and various forms of conglomerate shadow, corresponds to the changes which generally go under the name of "silicosis" in coal-miners, and is seen in cases certified as "silicosis for compensation." But a substantial amount of pulmonary abnormality of the same type was also found in men still working underground. It is the cause of a serious amount of respiratory disability, taking the coalfield as a whole, although the affected men can often continue their accustomed work for some years within a limited range of effort. The greater part of this consolidation abnormality in the anthracite mines is found among the colliers. Its distribution is broadly correlated with the disposition of the differing ranks of the coals mined in this field: the highest is found in the anthracite mines in the western half of South Wales, the lowest in the bituminous mines of Monmouthshire; and there is a fairly gradual decrease in incidence between these extremes through the steam-coal mines.

No special emphasis has hitherto been laid on reticulation, a term newly coined. It is described as a characteristic non-nodular pulmonary *x*-ray change which may be associated with respiratory disability, but which does not conform to the criteria generally accepted as indicating silicosis for compensation purposes. It is a dust condition of occupational origin, as the appearances are very infrequent among the general population of the area. Reticulation is an earlier *x*-ray change than the well-known discrete nodular and conglomerate shadows, and it remains recognizable in these later stages. It represents in fact an essential part of the pneumoconiotic process leading to consolidation. Like the latter, it is found mainly among colliers. Its incidence follows a trend like that of consolidation, and is generally on a higher level than consolidation. Belt shows that this reticulation corresponds to a notable retention of silica (the greater part in the form of silicate) as well as of carbon, with the elaboration of reticular tissue throughout the interstitium of the lung. This "dust-reticulation" tends to impair the function of the lung by encroaching upon vital capacity and interfering with the elasticity of pulmonary tissue, thus contributing to the development of emphysema. Dust-reticulation is not necessarily progressive, but the grosser indurations of anthraco-silicosis develop on the basis of dust-reticulation. As dust-reticulation, and even the various stages of consolidation, differ from classical silicosis, it is suggested that the changes represented by both be included under the term "pneumokoniosis." Although no tubercle bacilli were found in the sputum of those in whom this examination was carried out, Belt shows that pulmonary tuberculosis tends to be so modified in colliers that it loses its identity and becomes merged with the pneumoconiosis. The combined effect constitutes a more or less separate and distinct disease; and the term "koniophthisis" is suggested to cover it. He also would like to see the term "anthracosis" replaced by the non-specific term "dust-reticulation." In the first place anthracosis has come to denote something harmless, akin to tattooing of the skin; and in the second place there is in such lungs a good deal of silica as well as coal-dust.

Hart and Aslett point out that even when reticulation is not accompanied by clinical disability its presence still implies the risk—considerable in certain mines—of the later progression to consolidation with its more serious accompaniment. It is not yet possible to say what is the cause of the changes described apart from the fact that dust at the coal face is responsible. So far it would appear that none of the actual methods and processes used in mining coal is the main factor in the incidence of either of the abnormalities in anthracite colliers, but they may be contributory. Therefore certain suggestions for change in mining procedure that might cause improvement are made by the Committee on Industrial Pulmonary Disease. The committee further recommends that "pneumokoniosis of coal-workers," when fulfilling the criteria of radiological change (including reticulation) and pulmonary disability, should be included with "silicosis" for purposes of compensation, and that not only underground workers but also screen workers at collieries and coal-trimmers at docks should be covered. Finally it points to the great advantage that would accrue from initial and periodic examinations of all coal-miners in South Wales. These examinations would make possible the transfer of men to more suitable work before they became unfit; they would facilitate the detection of tuberculosis and the removal from the mines of men in an infective stage; and over a long period of time they would provide a means of observing the effects on health of any preventive measures carried out in the mines. Although it is not so stated, we assume that an *x*-ray examination is regarded as an essential part of the initial and periodic examinations, and it should therefore be known how far miniature indirect radiography would lend itself to the detection of reticulation.

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[1] *Chronic Pulmonary Disease in South Wales Coal-miners.* H.M. Stationery Office. (10s. 6d.)

The investigations are being continued, and further reports will be awaited with high interest. In the meantime two corollaries appear to follow from the findings and recommendations already published. In view of the established relation between dust-reticulation, or "anthracosis," and tuberculosis, it would seem wise to include active tuberculosis for the purpose of compensation. This would undoubtedly encourage the elimination of potential sources of infection from the mines. And, finally, some form of rehabilitation scheme involving vocational training for the partially incapacitated appears to be called for As T. W. Davies,[2] a tuberculosis physician to the Welsh National Memorial Association, has so graphically described, financial compensation, particularly when it is partial, fails to bring about the social rehabilitation of men who have been connected with mines all their life. Their plight, he says, is most distressing. And these men, at the present time at all events, represent an appreciable reservoir of man-power.

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[2] *Publ. Hlth*, 1942, 55, 101, 102

SCABIES

Scabies has always been one of the minor horrors of war, and it still remains with us in our present discontents. A fact, however, that has not been generally appreciated is that, although after 1918 its frequency diminished very much, scabies began to increase in 1936 while peace still reigned in Europe. It has undoubtedly increased more rapidly since the war broke out, but it is doubtful whether this can be attributed to shelter life and wartime crowding, for, as Kenneth Mellanby has pointed out, the disease has increased just as rapidly in areas where there has been little enemy action and where but a negligible portion of the community has ever lived in shelters. Other reasons must be sought to explain the increase. It is a little remarkable that scabies should be so difficult to control, for the causal organism is well known, comparatively large, and superficial in its attack. The central facts in the life history of the *Sarcoptes scabiei* are that the adult female landing on a new host immediately begins to burrow and lay eggs, which take just about a week to develop into adults. On emerging from the parent burrow they spend but a short time on the surface and then make burrows for themselves. Reproduction probably takes place both sexually and parthenogenetically.

The practical problem of the control of scabies divides itself naturally into two parts: the prevention of infection, and the provision of speedy and successful treatment. It is well known that the usual method of infection is by personal contact, and there seems no need for the contact to be particularly intimate. The chief point of contention among those who have experience of the disease is the importance of fomites in spreading infection. Since the last war the military authorities have always emphasized the dangers of infected blankets and have laid great stress on the disinfection of all fomites. According to R. M. Gordon and D. R. Seaton[1] spread by fomites is a risk, but it must be borne in mind that their work was carried out in animals with *Notoëdres*, not with *Sarcoptes*. Recent work by K. Mellanby,[2][3] which has been confirmed by several other observers, tends to show—and, in fact, well-nigh proves—that scabies is scarcely ever spread in this way. Volunteers have slept in beds previously occupied by heavily infected persons and have all escaped infection. (As, however, the accuracy of diagnosis of scabies in military circles is by no means above reproach, and as it is quite often confused with pediculosis, it will probably be wise for the Army to continue their present practice.) We must, however, seek elsewhere for the real reasons for the spread of the disease. Are there "scabies carriers"? The answer must be in the affirmative, for there is no doubt that there are many individuals infected with scabies who fail to exhibit the typical picture of the disease. In the first place there are insensitive persons on whose tactile nerves the nocturnal wanderings of the sarcoptes make no impression, and who consequently make no complaint of irritation, even though they may be heavily infected. But much commoner than these are individuals who have been infected only recently, and in whom the characteristics of the eruption have not yet properly developed. Scabies is not a disease in which infection takes place one day and in which the diagnosis can be readily made the next. It takes time to develop. This time varies a good deal in different people and depends to some extent on the personal habits of the patient. Those who pay close attention to daily ablutions undoubtedly delay the spread of the infection, though a daily bath will certainly not stop it. The time taken to establish the scabietic picture may, therefore, be anything from three weeks to two months. During that time the patient is an undoubted menace to his contacts. The menace ceases as soon as treatment is begun. The lesson to be drawn from these considerations is that as soon as one case of scabies is detected in a family, or in an institution such as a school, not only should that case be properly treated and all the contacts (e.g., other members of the family) be inspected, but in view of the difficulty of making the diagnosis in the early stages they should also undergo treatment. It is impossible to lay too much stress on the frequent inspection of individuals living a communal life or of those who are for one reason or another being sent to join a new community. This applies equally to members of the Forces, dwellers in hostels, or evacuated children. Any vesicle in the neighbourhood of the hands or feet should be an object of suspicion, for the sarcoptes may often be found therein, although not a single typical burrow may be discoverable, and on several occasions during the routine examination of children a single interphalangeal vesicle was the only lesion on the whole surface of the body and yet a sarcoptes was found in it. Had these cases not been detected they would undoubtedly have been serious sources of infection. As a counsel of perfection it is recommended that a skilled dermatologist should be available for consultation in all cases of any difficulty.

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[1] *British Medical Journal*, 1942, 1, 685.
[2] *Publ. Hlth.*, 1942, 55, 150.
[3] *British Medical Journal*, 1942, 2, 1.

The second part of the problem is that of treatment. To be satisfactory the treatment of the disease must be speedily effective, easy to apply, free from objectionable odour and the risk of dermatitis, and there should be no relapses. "It must be admitted at once that the ideal sarcopticide still remains to be discovered"; in fact, it is questionable whether one has yet come to light more efficient than the time-honoured sulphur ointment. Sulphur in other forms can of course also be used. Among the new preparations which must be considered are benzyl benzoate, derris root and its active principle rotenone, and preparations of pyrethrum from *Chrysanthemum cinerariaefolium*. All these products have been thoroughly tested by Mellanby and his co-workers, and the following remarks are largely based on their conclusions. It appears that no substance has yet been tried which is superior to the old stand-by—the 10% sulphur ointment of the *B.P.*—or to the polysulphide preparation known as Marcussen's ointment or kathiolan. The only other sarcopticide which gives results in any way comparable is benzyl benzoate, of which a 20% emulsion in soft soap and spirit appears to be quite satisfactory. There is, however, a serious objection to this application in that it is liable to cause an intractable scrotal dermatitis. (The same objection seems to apply to derris root and rotenone.) Moreover, it is not very suitable for use at a children's treatment centre, for it always causes a certain amount of stinging, and if applied to a raw area or to septic burrows is extremely painful. As Dr. Dorothy Carter points out, it is difficult enough to get regular attendance at a treatment centre in any case; it is well-nigh impossible with a "burning lotion." One of the more prominent supporters of benzyl benzoate is Dr. N. D. Begg,[4] who has treated considerable numbers of cases as in-patients at the Eastern Hospital (L.C.C.). In-patient treatment of course gives the medical officer good clinical control; hence one is not greatly impressed with Dr. Begg's figures, which give the average duration of treatment in 157 cases as just over twenty days. There may be, however, an explanation for this in that his cases, being more severe than the average, were for that reason admitted to hospital.

Of the various preparations of sulphur other than ointment, which many object to on account of its messiness and its odour, dimethylthianthrene, which before the war was sold under the name "mitigal," is well spoken of by several observers, but it is expensive and now almost unobtainable. Gordon and Seaton had good results with tetraethylthiuram monosulphide in the treatment of animal scabies and recommend its trial in human cases. Sulphur lather and flowers of sulphur seem to be unreliable and no more free from the risks of dermatitis than ointment, and they also need more skill in their application. The conclusion that Mellanby has arrived at after careful study based on 1,500 cases is that the classical treatment of scabies, consisting of three applications of ointment after three baths, is quite satisfactory and efficacious. Even without the bath two applications of the ointment have yielded 100% cures. The lines upon which he looks for improvement are (1) the substitution of vanishing cream for the paraffin base, as both more pleasant to use and affording economy in the use of paraffin, and (2) diminution of the sulphur content of the application employed. For years many dermatologists have held that it is unnecessary to use an ointment containing 10% of sulphur, and in his experiments with the vanishing creams Mellanby finds that a cream containing only 0.5% sulphur is strong enough to kill most of the parasites. All are agreed that the treatment is most efficacious when administered by skilled personnel, but if this is not available sulphur ointment is the easiest and the most satisfactory when the treatment has to be administered by the patient or the patient's parents. On the whole the solution of the problem appears to be in the direction of more accurate diagnosis and not only inspection but treatment of contacts. There is no serious fault to find with the classical treatment of the disease.

HYPNOTICS, ANALEPTICS, AND MENTAL DISEASE

Sleep is a many-faceted problem. Only a conjunction of comparative biology, chemical physiology, electro-physiology, clinical and experimental neurology and psychiatry will suffice to give even an approximate account of the phenomenon we call sleep. Even with such diverse fields of knowledge to draw upon our understanding remains provisional. If there is a sleep centre, or, more correctly, a waking centre, what determines its rhythm, and of what nature is its own intimate activity? Sometimes pharmacological experiment will help to get to the root of a matter of this kind:- the tissues may be subjected to chemical substances introduced from without, and their reaction examined. It has been found that one of the effects of hypnotics is to damp down oxidation in brain cells; it is therefore possible that one of the characteristics of the sleep process, and perhaps one of its fundamental conditions, is a lowering of metabolism in brain tissue, especially in those cellular regions upon which the occurrence of sleep most intimately depends. Variations in the temperature of a tissue are indicative of variation in the oxidation rate in it. Using this principle, Pick[1] has shown that the temperature of different parts of the brain may be made to vary by giving hypnotics, and in this way he has confirmed the differential locus of action of the latter. This was demonstrated in another fashion in Kieser's[2] chemical observations on the different concentration of hypnotic substances in different parts of the brain. Ether and paraldehyde cool the cortex more than the brain stem, and luminal has the reverse effect. The same delicate technique of the thermal couple which will register changes of temperature as small as 1/200th of a degree centigrade in the brain cells has been used by Pick to investigate the mode of action of analeptics, especially cardiazol. This has become of great importance in view of the mystery that still attaches to the *modus operandi* of cardiazol and convulsion therapy generally in the cure of mental disease. Pick found that cardiazol, pharmacologically antagonistic to hypnotics, increases the cerebral metabolism, sending the brain temperature up by 0.5° C. Moreover, this action is primarily in the brain stem, as is that of all other convulsants which have recently acquired a reputation in the cure of mental disease. Do mental diseases after all depend, as Mott suggested, on insufficient oxidation, but not, as he thought, in the cortex so much as in the brain stem? It is unlikely that an uncomplicated hypothesis of that sort will prove to be sufficient. Sleep and mental disorder may be similar, but they are not the same thing. They cannot both be the result of sub-oxidation and nothing more. Knowledge must go deeper and become more minute still. It must be acknowledged that Nature's laboratory in the many-functioned brain stem is more than a little intricate. We may take its temperature, but the physico-chemical processes that go on there remain, in spite of much brilliant work, a wonderland still largely to be explored.

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[4] *Publ. Hlth.*, 1942, 55, 151.

[1] *J. Mt. Sinai Hosp.*, N.Y., 1941, 7, 609.
[2] *Arch. exp. Path. Pharmakol.*, 1927, 127, 230.

ORGANIZED TREATMENT OF CANCER

Forty years ago there was only one method of treatment which could hold out any hope for the patient suffering from cancer. During the last 20 years, however, great advances have been made in radiotherapy, and for many types of malignant disease it has become the treatment of choice. At first the surgeons looked upon radiotherapy with scepticism, but once its benefits were proved there was a grave danger of the two methods of treatment being looked upon as rivals. In recent years, however, it has become more and more evident that each is complementary to the other. During the last ten years the members of the Radium Commission have been in a unique position to realize the truth of this statement. As a result of their experience they have issued a memorandum (see p. 48) which suggests the principles of a regional organization for bringing together the two types of treatment, and the necessary ancillary services into one team. With our present knowledge of the treatment of cancer, such a team must consist not only of physicians, surgeons, and radiotherapists but also of pathologists and physicists who have special experience in assisting in the treatment of malignant disease and must be able to attend the operating theatres, treatment rooms, and wards. The memorandum points out that it may be necessary for this team to be chosen from several hospitals in the same region, although, owing to the nature of the apparatus, the radiotherapy will probably be centralized in one institution. There may be some difficulty in deciding the size of the team. If the number of surgeons is too great there will be a real danger that each will not get enough experience to become proficient. For the same reason the team must serve an area containing a population of about 1,000,000, from which some 1,000 treatable cancer cases may be expected. The memorandum stresses the importance of proper "follow-up" departments and the necessity for accurate records. A valuable suggestion is made as to the administration of such a cancer organization—namely, that there should be an executive committee, with representatives of all the hospitals and bodies concerned in the area. Among other duties, this committee would choose the team which carries out the work. The publication of this memorandum is opportune, because recently the Ministry of Health asked local authorities to draw up instalment schemes under the Cancer Act, and many local authorities may find a memorandum from such an independent and unbiased source as the Radium Commission of considerable help to them. Copies of the full text may be had from the Secretary of the Commission, Westminster Hospital, S.W.1.

DICOUMARIN

Cattle which are fed on spoiled sweet clover hay develop a haemorrhagic diathesis, as a result of which bleeding may occur in practically any part of the body.[1] Common sites of bleeding are the ischial and thigh regions, the neck and shoulders, and the wall of the thorax, but it is rare in the parenchymatous organs. Haemorrhage is common on the serous surfaces, but less so on the mucosae. Affected animals are particularly liable to bleed to death after operations such as castration and dehorning. Focal necrosis of the liver is sometimes found post mortem, but it is doubtful if this is closely correlated with the haemorrhagic tendency or if there are any characteristic anatomical changes except those due to haemorrhage and anaemia.[2] The haemorrhagic tendency is due to a decreased coagulability of the blood, and Roderick[3] showed that this was associated with a diminution in the amount of prothrombin as estimated by Howell's acetone-precipitation method. The mechanism is therefore different from haemophilia, in which blood coagulation is delayed but prothrombin is apparently normal. It may be mentioned in passing that haemophilia has recently been described in swine.[4] Roderick's investigations were the mainspring of the cycle of discoveries which have culminated in the recognition of hypoprothrombinaemia as the cause of haemorrhage in jaundice and the newly born and have led to their effective treatment by vitamin K.

It is fitting that the latest of these discoveries should be the isolation of the active principle of spoiled sweet clover hay, which depresses the formation of prothrombin, as 3,3-methylene-bis-(4-hydroxy-coumarin)—to which we referred earlier this year.[5, 6] Despite its long name, this anticoagulant, which is coming to be referred to as "dicoumarin," is a relatively simple substance easily synthesized. It is cheap and it acts by mouth, and these apparent advantages over heparin have encouraged people to experiment with it in infective and non-infective thrombosis in man.[7] In practice considerable difficulties are encountered. The action is very variable from case to case, owing perhaps to insolubility and irregular absorption, a difficulty which may be overcome by parenteral injection of the soluble sodium salt. From experiments on dogs, Bingham and co-workers[8] believe that the maximum dose tolerated intravenously is almost certainly not much greater than 25 mg. per kilo and very likely less. In man single doses of 1,000 mg. orally seem to be safe,[9] but it is not known how soon or how often they can be repeated. Divided dosage of the order of 200 to 300 mg. a day has also been used in man; the coagulability of the blood may be considerably reduced in 3 or 4 days, and the effects must be followed closely to avoid overdosage. There is obviously much to be learned about methods of administration, and it is essential that the knowledge should not be too dearly bought. There is a latent period of 24 to 72 hours before coagulation is reduced, but once the drug comes into action the effects may last for 8 to 10 days after withdrawal. Overdosage leads to multiple haemorrhages, and the condition is improved only temporarily by transfusion and little, if at all, by vitamin K. The significance of the various laboratory data is not yet clear. Dicoumarin has much less effect on the ordinary coagulation, and it is essential that the knowledge should not be (prothrombin time), and it may lead to an apparent reversal of the coagulant action of the tissue extracts usually employed in these tests.[10] The apparent advantages of dicoumarin over heparin in the treatment of thrombosis have thus not yet been established, and there is more than a possibility that it may prove more dangerous and less efficacious than heparin. Townsend and Mills[11] are right in suggesting that experimentation with dicoumarin in man should for the present be limited to clinics with special haematological facilities and previous experience in this field.

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[1] *J. Amer. vet. med. Ass.*, 1924, **64**, 553.

[2] *J. Amer. vet. med. Ass.*, 1929, **74**, 314.

[3] *Amer. J. Physiol.*, 1931, **96**, 413.

[4] *Proc Soc exp. Biol*, N Y., 1941, **48**, 217.

[5] *British Medical Journal*, 1942, **1**, 78.

[6] *J. biol. Chem*, 1941, **138**, 513.

[7] *Proc. Mayo Clin.*, 1941, **16**, 388.

[8] *Amer. J med Sci.*, 1941, **202**, 563.

[9] *Lancet*, 1942, **1**, 318

[10] *Glasgow med. J*, 1942, **137**, 57.

[11] *Canad med. Ass. J.*, 1942, **46**, 214.

SURGICAL ECONOMICS IN WAR*

BY

Brigadier C. MAX PAGE, D.S.O., F.R.C.S.

In the organization of the Army the important part played by the medical services in maintaining the health of the troops is generally recognized. The possibility of keeping large armies in the field without undue wastage is accepted as being one of the striking achievements of preventive medicine of this century. This is effected by preventive inoculation, sanitation, and personal hygiene, and these subjects remain a primary and essential responsibility of the Service. When other methods are looked for whereby the medical branch can conserve man-power, it is apparent that, broadly considered, the efficient working of every department of the R.A.M.C. conduces to this end, and each branch has its special problems. I propose to consider in detail the responsibility from the surgical aspect. I will not refer to the handling of battle casualties, but to the less obvious and dramatic saving of man-power which can be effected by the management of the individual soldier suffering from diseases or disabilities that turn up apart from fighting. The views I express are personal, and are coloured by my observations of the results of various surgical work carried out in the Army and Ministry of Health Service during the past few years. The ideas put forward are not original, and the actions, advice, and attitude suggested are already operative in many centres. They are set forth here with the prime aim of giving the medical officer new to the Service a basis of action suited to our present needs.

The General Objective

A dogmatic definition of the procedures that will achieve an aim, the successful pursuit of which must in the main depend on an attitude of mind, is by no means easy. In medicine agreement between a group of doctors on the treatment and disposal of an individual case is seldom a simple problem. In peacetime the propriety and expediency of various methods of treatment are allowed to range over a wide field. In war the urgent need for the prevention or limitation of disabilities and for speed and efficiency in getting men back to work after illness requires no emphasis, nor does the importance of retaining a man in his unit, so far as this is possible, once he has become a trained and useful member of it. If every medical officer realizes his personal responsibility in the matter and considers his actions and their repercussions in this light something will be achieved. I will discuss the problem from the point of view of the unit M.O., the M.O. in charge of a reception station, and the operating surgeon.

The Unit Medical Officer's Work

The unit M.O. has an important part to play in the scheme, although the wide dispersal of troops complicates his work in war conditions. His position in relation to the men of his unit may be compared to that of a first-class general practitioner to his patients or, perhaps more appositely, with that of a whole-time school doctor. By means of periodic inspections he should be familiar with the physical condition and have some knowledge of the psychological attitude of all the men in his charge. He should be fully acquainted with the details of their routine work and training, and should take an interest in their recreations and study their intimate living conditions. By taking an active part in exercises and training, the M.O. will learn for himself the strain to which the troops are exposed, and will so acquire knowledge that may assist in preventing breakdowns; he will also in this way more easily win the co-operation of the officers and the confidence of the men.

Turning to matters of detail, it will be the responsibility of the medical officer to see that the unit is not carrying men unfit for the duties it is expected to perform. It is uneconomic to retain men in a job for which they are unsuited from physical or mental causes. Cases of acute disease or serious injury should clearly be evacuated promptly as they arise to the proper hospital, the location of which should be known, and with which personal contact should be made whenever possible. If, in routine inspections, the M.O. should detect such defects as varicose veins, bubonocele, or deformed toes, he should not be in too great haste to send the man for a specialist's opinion. This caution should certainly be adopted when a man does not himself complain of a defect, and is able to perform his full duties in spite of it.

It is in relation to the minor disabilities of the serving soldier that the M.O. will have the greatest opportunity for conserving the strength of his unit. Foot troubles represent an important proportion of this group. Prevention in these matters is clearly better than cure. He should make full use of the chiropodist and see for himself that boots and anklets fit properly. He should order such modifications to be carried out by the unit boot repairer as are possible or desirable. It should be noted that if a man has a foot defect which has proved no handicap in civil life the provision of light boots may sometimes solve the difficulty. The opinion and advice of a near-by orthopaedic surgeon will often help him in this respect. The M.O. should see that cases of foot-strain or tenosynovitis due to over-intensive training are rested before the condition becomes chronic. It must be recognized that the company officer is responsible for the care of his men's feet, but the M.O. should not on that account fail to take his part of the responsibility. A certain number of minor injuries may well be treated within the unit, but if it appears that recovery would be more rapid under better-equipped conditions the man should be transferred to hospital. The same remarks apply to cases of pyogenic infection. Cases of palmar whitlow in particular are best treated in hospital.

When a man is sent to hospital, whether for treatment or for opinion, the importance of sending notes bearing on the case may be emphasized. The M.O. should remember that the patient's history sheet does not always reach the consultant, nor does all the information which may be helpful. Reliable observations on the man's past medical history and on his value as an individual in the unit may be of considerable importance to the consultant if a proper decision on his treatment and disposal is to be made.

The Reception Station M.O.

Under quiet conditions the reception station can form an important buffer against hospitalization. Men may be retained for 10 days in these stations if they are not in need of specially skilled nursing and are likely to be able to return to their units within that period. At this stage an opportunity for some minor surgery arises. Certain nominated stations are now equipped to carry out injections for varicose veins. The selection of cases for this procedure is important, and observations on this point will be found in the *A.M.D. Bulletin*. Recent knee injuries should only be retained when the evidence suggests that there is no gross displacement of the meniscus or serious tear of a ligament. The accurate diagnosis of these injuries is of great importance, and further reference to the subject will be found below.

Reception stations will receive a good many cases of fibrositis. For localized cases injections of 1% novocain will often prove helpful and can do no harm. Hot-air baths can be arranged with a little resource either by extemporizing electric cradles or by the use of a paraffin stove. Cases of acute tonsillitis and laryngitis should not be automatically sent for examination by an E.N.T. specialist when the acute symptoms have resolved: unless there is definite evidence of chronic disease the man should be returned to duty.

The Surgeon's Responsibility

The surgeon can conserve man-power either by the advice he tenders or by his methods of operative management. In the presence of acute disease and serious injury, where active treatment is imposed, one can only suggest the importance of early rehabilitation once the acute phase is past.

It is in relation to what may be termed "cold surgery" that surgical economy or extravagance can be practised. One does not ask the surgeon abruptly to alter his peacetime views on technique. One asks him, however, to be persistently critical of his methods, and to assess so far as possible whether by his operation he is rendering the soldier more fit for his job with the least expenditure of time, or whether the soldier could by some adjustment carry on an active life without it. The argument will be clearer if some practical examples are given.

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* A lecture delivered at an R.A.M.C. Depot to a group of newly engaged medical officers.

Hernia.—A large number of hernias are being operated on in this country, and the results are not as good as might be expected. The proportion of recurrences is high, and the evidence available suggests that in many cases this is due to defective technique. An operation on a soldier or industrial worker for hernia, if effectively performed, should in general render him an A1 man. These operations should, therefore, be scrupulously carried out by an approved method and by an experienced surgeon. In the after-management of these cases graded physical exercises are valuable in restoring a man's efficiency in the minimum time. Cases of bubonocele due to direct hernia, certainly in men showing a pronounced supra-inguinal bulge, should not be operated on. The condition does not carry any risk of bowel strangulation and can be controlled with a truss. Though the wearing of a truss relegates a man to a "B" category it does not prevent him from taking a useful part in some branches of the Army.

Appendicectomy.—When this operation is decided on in the "cold" period the evidence leading to the decision should be carefully sifted. I have seen a good many men submitted to this operation on account of right-sided pain who have been found subsequently to have a stone in the kidney or a hydronephrosis. Removal of the appendix for what is termed "appendix dyspepsia" should not be undertaken too readily.

Varicose Veins.—I would suggest that a mild degree of this condition does not involve any material disability for Army life any more than it does for a civil occupation, and that, therefore, treatment might often be deferred until after the war.

Operations on the Feet.—It has been generally recognized that operations on the bones of the soldier's foot seldom improve his capacity or category. The practice of cutting the foot to fit the boot was long ago found to be unsatisfactory. The use of less drastic measures and the fitting and modification of footwear, so far as is possible in the Service, deserve more attention than they are given. If a man has "got on" in civil life with a minor or even a major foot deformity, it will be found better to avoid operation except in specially selected cases.

Derangements of the Knee-joint.—Troubles with this joint are the cause of a good deal of short- and long-term disability in the Army. This source of wastage will continue so long as the troops play football. The minor cases may be quickly restored by a short period of rest and pressure followed by progressive, active use of the limb. In the more severe, treatment without accurate diagnosis is little better than a gamble. It is essential to differentiate clearly between damage to ligaments and a cartilage tear and displacement. The taking of a careful history of the circumstances and mechanism by which the injury was caused is of great value here. Tears of a ligament are produced when the leg is in the extended position by forced lateral deviation or hyperextension. Displacements of the menisci are caused when the knee is bent and a rotatory strain is applied. Operation is only justified if history and physical signs point to a tear or displacement of a cartilage. The site of the lesion should be determined with precision. It may be noted that the localization of pain and tenderness on the medial side is closely related to the position of the lesion, whereas with an injury of the lateral meniscus pain and tenderness are less well localized and are generally referred to the posterior aspect or centre of the joint. Routine *x*-ray examination should never be omitted or else cases of osteochondritis dissecans and other less common conditions will be missed. Operation duly carried out on a torn or displaced meniscus gives a high percentage of good results. If it is performed without a precise diagnosis being made and no gross lesion of the cartilage is found the outcome is usually unsatisfactory. In my experience the removal of both menisci (or parts of them) often leads to a joint which is not fully stable and seldom allows a man to be graded A1.

Fractures.—In these cases, which form so large a part of the surgeon's wartime practice, one can only recommend a critical attitude of mind. Does the method employed impede the speed of repair? Does it allow return of functional activity at as early a period as possible? Is everything done that can be done to avoid prolonged stiffening of joints in relation to the fracture? Most surgeons agree that overtraction or "distraction" of the fragments at a sensitive phase of the repair process is responsible for delay in union. How far alternative methods of treatment lead to better results must be determined by the individual. The reduction and fixation of a fracture are mechanical processes, and the problem is therefore subject to many solutions as regards the exact method employed.

Ear, Nose, and Throat Operations.—I am here on delicate ground and I will limit myself to a few remarks. Operations for the removal of tonsils and for deflected nasal septum very often result in a man being "Y" listed. There have been wholesale attacks on soldiers' tonsils in certain areas, whereas in other localities with similar military populations such operations are few and far between.

In conclusion, I would say that the views which I have sketched in a wide field may well be subject for discussion, and I must admit they often lack precision, but I would emphasize that my main aim has been to induce an attitude of mind which will assist our Service to do its full share in saving man-power and man-hours at the present time.

I should like to acknowledge my indebtedness to Major-General S. Kyle for advice in assembling these notes.

ORGANIZATION FOR CANCER TREATMENT

MEMORANDUM BY RADIUM COMMISSION*

The National Radium Commission has been established 12 years and during that time has gathered much information about radiotherapy and the organization of radiotherapeutic centres. The most important part of the work of such centres is the treatment of cancer, and of late years the Commission has extended its observation, wherever possible, to cover the whole field of cancer. As a result, the Commission has been impressed by the fact that the death rate continues to rise although the centres with which the Commission deals treat a constantly increasing number of cases, with a slow but persistent improvement in the number of patients who survive several years after treatment.

Some Remediable Factors

Among the remediable factors which contribute to this paradox are:

(1) *Late diagnosis.*—This is due to (*a*) unsatisfactory conditions under which many patients are seen for the first time—e.g., ill-equipped consulting-rooms and inadequate facilities for examination and note-taking; (*b*) inexperience of cancer on the part of some medical men who see only a few cases a year and recognize them only when they are far advanced; (*c*) ignorance and fear of the disease among the laity, which prevent the victim from seeking advice in the early stage.

(2) *Scarcity of beds.*—This is a factor affecting the treatment of all hospital patients, but it has a more evil effect on the cancer patient than almost any other. In most hospitals cases fall into three classes: (*a*) acute emergencies, surgical or medical, which are admitted instantly; (*b*) patients admitted by a member of the honorary staff and generally admitted to his own beds; (*c*) patients who need admission for investigation or for treatment that can be postponed. These are placed on a "waiting list" and often have to wait a very long time. Under this heading are included a large number of cancer patients, and while on the "waiting list" their disease steadily progresses.

(3) *Failure to select the most appropriate treatment for each case.*—This is due to the absence in most hospitals of any regular and organized system for consultation, before treatment is started, between the various specialists whose skill may be needed during that treatment.

(4) *Inefficient treatment in inadequately equipped centres.*—This is due to the natural ambition of every hospital to carry out all kinds of treatment, and want of co-operation between medium-sized and small hospitals to build up joint centres in those specialties in which the needs are more elaborate than their means allow.

A Cancer Organization on a Regional Basis

The National Radium Commission puts forward the following suggestions for the organization of the treatment of cancer on a regional basis.

General.—The precise form of the administrative arrangements on which a cancer organization should be built up must depend in great measure on the general arrangements for the post-war hospital service which the Government has promised.

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* Owing to shortage of space the memorandum has been abridged.

While the outlines of these arrangements have already been announced, the details remain to be worked out, and accordingly it is not at the moment practicable to do more than assume that the arrangements will leave room for a cancer organization in which the various hospital authorities and other bodies concerned will play their part. The executive of such an organization should be in the hands of a special Cancer Committee. A whole-time Director of the Cancer Organization should be appointed, although it might be advisable to allow him private patients within his own hospital but not outside it. The choice of the director must depend on the man rather than on his specialty: he must clearly have a wide experience of cancer and should be one of the specialists engaged in the work of the organization. It is important that his position at the headquarters hospital should be assured, that he should be able to meet the members of the honorary staff on equal terms, and that he should be in full and effective control of the arrangements made for carrying out treatment.

The functions of a cancer organization are: (1) To put before the public those facts about cancer which ought to be generally known. (2) To secure the diagnosis of cancer at the earliest possible stage of the disease. (3) To secure prompt and adequate treatment of every case. (4) To improve established methods of treatment and devise new ones.

The area to be served should be of such a size that not fewer than 1,000 cancer cases are treated in a year. Such a number can be expected from a population of about a million, and this should normally be the smallest number of people for which a cancer organization should be established. This number of cases is necessary so that (1) each member of the medical team shall see a large enough number of cases to become expert; (2) the available radium and x-ray apparatus shall be used to capacity; (3) each type and site of growth may form a group large enough for statistical analysis in a few years.

The staff, besides the whole-time director, must include many specialists with all the assistants they need. Physicians, surgeons, E.N.T. surgeons, gynaecologists, radiotherapists, pathologists, radiodiagnosticians, and physicists must all form part of the team, be readily available, and meet in frequent consultation. As the work of the cancer organization must continue without interruption more than one specialist of each type must be on the staff, but most of them would probably devote part only of their time to the work of the cancer organization. It will be necessary for the radiotherapists, physicists, and pathologists to be wholly engaged on the work of the organization. Care should be taken that each specialist deals with enough cases to ensure that he becomes expert.

The housing of a cancer organization, in view of the staff requirements mentioned above, will almost certainly have to be in, or in close association with, one or more large general hospitals. One such general hospital would in most cases form the headquarters of the organization, and at that hospital it is desirable that a special block or department should be devoted to the work. The segregation of the cancer work makes the team more "cancer-minded," leads to an increase in efficiency, and facilitates better record-keeping. In few cases, however, will all the work of the organization be able to be done in one hospital, and arrangements will have to be made to utilize the facilities of several hospitals; in that case one or more members of the staff of each hospital concerned would be appointed as members of the team working the cancer organization. Provided that satisfactory arrangements are made for full consultation, effective co-operation, and perfect co-ordination, much of the work might with advantage be decentralized.

The arrangements for diagnosis present many difficult problems to be overcome. General medical practitioners will have to be taught to be "cancer-conscious" and persuaded to send promptly to the cancer organization all patients in whom any symptom calls for investigation. For this purpose it may be desirable to have arrangements for diagnosis at several or even at many hospitals in the region. Such hospitals must be well equipped for diagnosis and must be visited at regular intervals by members of the team who are capable of deciding whether the patient should be sent to one of the hospitals where treatment can be undertaken. Lectures should be arranged having for their object the encouragement of patients to seek advice early.

The treatment of cancer in any patient should be undertaken only after consultation between members of the team. At such a consultation the treatment of the individual should be planned, even though modification may be needed later. Although in some types of cancer the consultation may be a formality, nevertheless it provides an opportunity for the members of the team to review methods of treatment from time to time and for discussion. The treatment having been settled at consultation, it is then carried out by one of the specialists of the team, and at appropriate intervals or at the end of the treatment the patient is again seen in consultation.

The physicians of the organization will of course play their part in the diagnosis and treatment of cancer, but they should also be able to give much help in other ways. The recognition of metastases, the study of general reactions to treatment, the prevention and treatment of complications, and the supervision of the health of the workers with radium and x rays should all be done by physicians with special experience of these problems.

Treatment by surgery might be carried out at several of the hospitals taking part in the cancer organization, but it is essential that it should be done only by the surgeons of the team (who have special experience of the operations needed) after consultation with the radiotherapist. The surgeons must be provided with all the equipment that will enable them to do their work properly.

Treatment by radiotherapy will always have to be concentrated, if not at one, at most in very few, of the hospitals taking part in the cancer organization. The radiotherapist should be in full charge of all radium and x-ray therapy of the organization, though it will be necessary for him at times to work with the help of the surgeons. The radiotherapist should have at his disposal at least one gramme of radium so that he may in every case have available the containers best suited to it. He should have not fewer than two deep x-ray therapy sets so that if one breaks down treatment will not be interrupted. In an organization dealing with 1,000 or more cases a year he will need four or five tubes in constant use, in addition to those needed by the physicist. The organization of a radiotherapy department has been dealt with in a separate memorandum.

The pathologist plays an important part in the work of the cancer organization, and it is desirable that each organization should have at least one pathologist working for it. If the clinicians are to have as much help as can be given by a pathologist he must be familiar not only with all forms of cancer but with the habits of mind and methods of work of all those engaged in the organization. His duties will include the examination of material removed at biopsies to help in making a correct diagnosis, blood examinations and the examination of exudates, and bacterial examinations in patients with secondary infections; he should also be available to perform necropsies on patients who die, so that causes for the failure of treatment may be ascertained and important facts gathered about methods of spread, etc. If the work of the organization is carried on at more than one hospital, the pathological laboratory may conveniently be at only one of these, but the pathologist should be in personal contact with all members of the team.

Radiodiagnosis is necessary not only for the diagnosis of cancer but at many stages in the treatment and in the future follow-up of the patient. At every hospital where any part of the work of the cancer organization is done there must be an efficient radiodiagnostician with modern apparatus.

Physicists play an essential part in the work of any radiotherapy clinic. Their help is needed in the planning of radium appliances and the estimation of the dosage delivered. This work involves calculations which physicists are specially trained to do. X-ray therapy apparatus needs constant supervision and calibration, and depth-dose charts under many varying conditions are needed. Radium containers have to be tested frequently for leakage and examined for defects, and it is convenient for the physicist to be made custodian of the radium. He should be allowed facilities for research, be provided with a well-equipped laboratory and well-fitted workshop, and should have a whole-time mechanic. The setting of every patient each time he is treated should be done by one of the radiotherapists or under his direct supervision, but the physicist will frequently be needed to aid in beam direction and to see that patient and staff are adequately protected from stray radiation.

The beds for the organization should be set aside for its patients, and in large hospitals are best provided in a special block in which the x-ray therapy plant is situated and radium treatment carried out. There must be a large enough number of beds to make sure that no case is kept waiting for treatment. Some of these beds, for the surgical treatment of patients, may conveniently be in hospitals where no radiotherapy is done but where the surgical and gynaecological members of the team do their cancer work. Not fewer than 75 beds will be needed for the cancer organization.

The follow-up of cancer patients after treatment must be thorough and persistent. The patient should attend at regular intervals and should, wherever possible, be seen by those members of the team who originally planned the treatment. To save patients unnecessary travelling it may be possible for some follow-up work to be done at those hospitals where arrangements for diagnosis only have been made. All cancer patients should be followed up for at least 5 years, though much may be learnt by following them up for 10 years or even more. It is not enough that patients should be given an appointment to attend: arrangements should be made so that any patient who does not keep his appointment receives a reminder of it. This must be repeated until the patient does attend or until a report is obtained from some medical man who has examined the patient. For the purpose of this follow-up it is essential that there should be a system of visiting patients, and this can be done best by hospital almoners or public health visitors.

The records of a cancer organization must serve three purposes: (1) to record the patient's condition from time to time so that an estimate may be made of the changes that have taken place in the disease between his visits; (2) to provide accurate records of the treatment to act as a guide for further treatment when needed; (3) to provide a basis for statistical analysis of the results obtained by treatment so that the team may know where improvements are needed and in what direction they should be attempted. For these purposes it is essential that there should be a special case paper for the cancer organization which should be independent of the ordinary hospital in-patient case paper. It should be of a type that is uniform throughout all the hospitals taking part in the work of the cancer organization and the main file should be kept at the headquarters. Clinicians should always be provided with clerks at each clinic. The physicians' findings and conclusions, the pathologist's and radiodiagnostician's reports, the account of operations performed, and full details of any radiotherapy given should all be entered in their proper places. Statistical analysis cards should be prepared for every patient.

FEEDING OF INFANTS IN WARTIME

ADDRESS BY LORD WOOLTON

Lord Woolton, Minister of Food, attended the annual general meeting of the National Baby Welfare Council, held in the Great Hall of B.M.A. House on June 26, and gave an address on the feeding of babies in wartime.

He said that the proper feeding of the nation's children was one of the first tasks to which he addressed himself on taking office. He had the good fortune to have Lord Horder and Prof. J. C. Drummond as scientific advisers. The malnutrition which followed the last war was vividly remembered. It was obvious only to a comparatively small extent in this country, but on the Continent it took a terrible shape. The rising generation was left with physical defects and abnormalities, and often with a mental twist which had played no small part in fomenting trouble during the intervening years. He determined that any repetition of such a tragedy should be prevented in this country, even, if necessary, at some sacrifice on the part of the older people.

The first step was a baby's ration. The baby was allowed the same quantities of butter, cheese, sugar, jam, and (until lately) tea as the adult. No doubt the child in his first year ought not strictly to want these things, but it was right and proper that the mother, particularly the mother who was feeding her child as well as herself, should have food for both. The first claim on the milk supply was for pregnant women and young children. If the parents could pay for it, payment should be made, but if they could not pay they must have it all the same. The issue was not the financial position of the parents but the physical well-being of the child. Child priority in milk supplies could not have been carried out but for the generous help of America. Large supplies of powdered milk were in the United States ready to be brought over to this country, so that next winter adequate supplies of milk were ensured for infants, school children, and mothers. Orange juice also was being sent over from the U.S.A. in sufficient amount to ensure a supply for all babies next winter. The other foodstuff which gave special concern was eggs. These had been in short supply, but the children had had four times as many as the adults. He added that the restrictions were not the greatest difficulty of the Minister of Food; his greatest difficulty was the variability of the situation. He never knew which cargo was going to be sunk by a submarine, nor from what part of the world this country was going to be cut off. But whatever the circumstances, the good will of the public was behind this policy of looking after the children first. It was not sentimentality, it was statesmanship.

In reply to questions Lord Woolton said that the new milk organization he was setting up would go closely into the question of standards. He promised to consult his medical advisers on a suggestion that there should be extended to women during the ante-natal period the same facilities for obtaining cod-liver oil and orange juice as were available for infants. Other suggestions from the meeting were that the growing of parsley, said to be rich in vitamins and easily grown, should be encouraged, and that more consideration should be given to the value of butchers' offal, such as liver and tripe, for young children.

An address was also delivered by Mrs. Drexel Biddle, wife of the American Ambassador to the Allied Governments in this country, who suggested a scheme whereby concentrated foods for the relief of the civil population of the occupied countries would be taken in the vanguard of the troops of the United Nations on the opening up of a Continental front.

In the annual report adopted by the Council it was mentioned that an investigation had been undertaken into the spread of infectious diseases in day nurseries and nursery schools and classes. A suggestion has been made that there is an increased incidence of such infections through these channels, or that the infections occur at an earlier age than would otherwise be the case, the sequelae and complications being correspondingly more serious. No substantial evidence was found to support the case against the admission of pre-school groups to communal life in properly constructed and well-administered nursery centres.

Reports of Societies

DELAYED UNION OF FRACTURES

At a meeting of the British Orthopaedic Association held in Liverpool on May 29 and 30 under the presidency of Mr. G. R. Girdlestone (Oxford) there was a discussion on delayed union of fractures. Most of the speakers remarked on the impression generally held that delay in union is commoner than formerly; many of them mentioned the difficulties of the statistical approach, first of all in deciding upon a standard of "union" in the consideration of the time factor, and in comparing fractures of the same bone due to different types of violence. There was agreement in stressing the evils of late reduction, of distraction, and of infection.

Mr. G. Perkins (Roehampton) differentiated between "union" when the fracture was solid and "consolidation" when this had progressed to the state of ability to withstand normal stresses. He emphasized the importance of functional restoration and the need for muscular activity from the outset of treatment.

Mr. R. Watson-Jones (Liverpool) and S./Ldr. W. D. Coltart, R.A.F., presented a detailed analysis of 500 shaft fractures of the femur and tibia treated in Royal Air Force orthopaedic units. The most important factors responsible for delay in the union of these fractures had been: (*a*) infection, which trebled the union time; (*b*) distraction of the fragments by excessive skeletal traction, which caused very marked indolence of the fractured surfaces and doubled the union time; (*c*) delayed reduction, late remanipulation, and in the case of the femur late bowing or re-fracture, which almost doubled the union time. In the absence of these delaying influences fractures united firmly enough for the removal of splints and plaster in an average time of 14 weeks. Union to clinical tests had often been present earlier than this, but immobilization had been continued in walking plasters until the stage of radiographic consolidation. The early resumption of weight-bearing in a walking plaster had been proved to be a delaying factor in cases in which minor angulation remained; the weight-bearing tended to increase the angulation momentarily, and thereby distract the fractured surfaces on the open side of the fracture. If it was recognized that union had been delayed by infection, distraction, late remanipulation, etc., and the period of plaster immobilization was extended accordingly, these factors were responsible only for slow union and not for non-union. In this series where complete and uninterrupted immobilization had been maintained there was not a single case of established non-union. In 8 cases early bone-grafting had been performed to accelerate the rate of repair, but in the whole series there was not one case of sclerosis of the fractured surfaces and established non-union, despite a high proportion of grossly contaminated and infected fractures: 10% of the cases had been invalided; 90% returned to duty.

Mr. B. H. **Burns** (London) believed that the more accurate anatomical position maintained in the modern unpadded plaster cast was possibly counterbalanced by the longer time that appeared to be taken in reaching union. Well-planned open reduction in selected cases offered perfect anatomical restoration with greater freedom of the soft parts.

Prof. **Harlan Wilson** (U.S.A.) believed that the type of initial violence might account for the greater time taken by motor-cycle injuries, where speed of impact was noteworthy. He believed that damage to the vascular supply of bone had great bearing on the time of healing. He remarked on the frequency of delayed union in cases of multiple fracture, which in consequence made greater demands upon the body's osteogenetic functions. His experience with the use of the Roger Anderson method of treatment found it subject to the same conditions and time of fracture healing as other methods.

Major **White** (R.C.A.M.C., Toronto) believed that the factors most likely to affect the rate of union were apposition of fracture surfaces with complete and continuous immobilization. In his survey of 120 cases of fractured tibia reduction was considered adequate when it was radiologically estimated that 75% of the fracture surfaces were in apposition. In 51 well-reduced and immobilized legs the average for union was 4¼ months; in 13 inadequately reduced or poorly immobilized cases it was 8¼ months. Bone grafting had resulted in union in 96% of the cases, but rehabilitation seemed to take longer than in those uniting without operation.

Mr. D. L. **Griffiths** (Manchester) made a determined plea for statistical inquiry by statistical methods. He had submitted to such inquiry 249 cases of fracture, with displacement, of both bones of the leg. Four definite conclusions were arrived at: (1) Open fractures heal more slowly than closed fractures; the two forming distinct groups. (2) Direct violence, (3) severe violence, and (4) inadequate apposition of fragments were all delaying factors. Figures indicated that only the grosser errors of treatment are important in delaying union.

Mr. F. W. **Holdsworth** (Sheffield), in a study of 399 cases of fracture of the leg, treated throughout by his own team, stated that 349 returned to their own work, 35 to modified work, and 15 had very poor function. Of 303 adults, 102 compound fractures united in an average of 16¼ weeks (the longest were 28 weeks—4 cases); the remaining closed fractures united in an average of 13 weeks. He stressed the need to concentrate upon end-results rather than upon the time taken to reach them. Continuity of treatment by one unit was the essential requirement. He and other speakers deprecated the late reduction occasioned by the slow movement of patients from one hospital to another.

Mr. R. I. **Stirling** (Edinburgh) discussed dietetic factors with particular reference to the important part played by vitamin C.

A Rehabilitation Centre

On the afternoon of May 29 the Association paid a visit to an R.A.F. Rehabilitation Centre by permission of the Air Ministry. Members were conducted round the gymnasiums, playing fields, swimming pool, etc. Mr. **Watson-Jones** gave a clinical demonstration at which he stressed the importance of carefully graduated muscle exercises, carried out initially under the guidance of the medical officer and later in the gymnasium under the control of a group of physical training instructors and masseuses; and the value of various outdoor games in which the competitive team spirit was encouraged. The meeting was then addressed by Flight Lieut. **Cantor**, who described the working of the centre and the importance of the patient's treatment being kept under the close supervision of the medical officer at all stages. Finally S./Ldr. **Dawes**, the commanding officer, said how important it was to re-create mental and moral fibre in addition to restoring patients to full physical fitness.

Amputations

On the second day of the meeting a discussion was held on amputations, based upon the different views held by surgeons in Canada and Great Britain. The former attitude was stated by Dr. **Le Mesurier** of Toronto. The Canadian preference for end-bearing stumps for leg amputations was founded upon the excellent results and superiority of this type, as compared with those depending upon lateral bearing in the socket of an artificial limb. The speaker's remarks dealt more particularly with Syme's amputation, which he was surprised to find so universally condemned in Great Britain.

Dr. R. D. **Langdale-Kelham** (Roehampton) explained the views of the limb-fitting surgeons for the Ministry of Pensions, remarking on the large number of Syme's amputations which were performed in the last war and which had been re-amputated at a higher level. Many of the patients had been unable to tolerate end-bearing for more than eight years, and of those who had had reamputation not one failed to express his gratitude at being provided with a stump which gave complete confidence. A particular advantage was the better appearance of the limb, which was of importance to a woman. Mr. W. A. **Cochrane** (Edinburgh) made a plea for further consideration by British surgeons of the advantages of Syme's amputation. [While the experience of the Ministry of Pensions is based upon an enormous amount of material, it is necessary to remark on the fact that the amputations carried out during the last war were by a great variety of surgeons, whereas the Canadian work has been done by a restricted group, as, of course, in recent years has been the practice of the Ministry of Pensions.]

The following brief communications were made: (1) Trans-trochanteric Fracture of the Femur, by Mr. **Norman Capener**; (2) Rate of Regeneration of Peripheral Nerves, by Prof. H. J. **Seddon**; (3) Fractures of the Femur, by Mr. W. S. **Diggle**; (4) Air Arthrography in Lesions of the Semilunar Cartilages, by Mr. C. H. **Cullen** and Dr. G. Q. **Chance**.

Correspondence

Social Medicine

SIR,—Prof. J. A. Ryle, in his stimulating letter (June 27, p. 801), defines social medicine as follows: "Social medicine is clinical medicine activated in its aetiological inquiries by social conscience as well as scientific intent, and having as its main purpose the education of professional and lay thought and the direction of legislation on behalf of national health and efficiency." This definition would, I feel, be bettered by deleting the limiting word "clinical" and by printing "medicine" with a capital "M"; for is it not largely because doctors have confined themselves to clinical (or bedside) medicine that the ultimate causes of disease have been neglected and the progress of preventive medicine delayed?

Social medicine is, in some part, clinical medicine, but it is also, and in greater part, preventive medicine, and in whole it is just Medicine with a capital M: the science and art of making our people healthy and of keeping them healthy. Here I offer another definition: "Social medicine is the science and art of Medicine activated and directed by the study of social conditions for the promotion of national health and efficiency."—I am, etc.,

Oxford.

R. McCARRISON.

SIR,—Prof. Ryle has developed the suggestive ideas of Sir Farquhar Buzzard in his Oxford address (June 6, p. 703), and has coined the term "applied aetiology" to describe the scope and functions of social medicine. Perhaps "applied physiology" would be a better term. In the same way sanitation might be described as applied bacteriology, for sanitary practice is the application of our knowledge of bacteria in keeping them out of our food and water and in removing them safely in our drains and dustcarts. A good deal of leeway has still to be made up in internal sanitation, which is that cleansing of bacteria from our homes and workshops and from our persons. But in the study of disease, and in tracking back its ultimate causes, we reach a point in our effort at control in which we pass from pathology to physiology, from the study of impaired or disabled life (disease) to integral and complete life (health). This extension of the field of medical study and practice is called "social medicine"—a rather vague term. Medicine has always been social; and we seem to put the word "social" in front of it when it achieves a more efficient degree of service. We might as well speak of social haberdashery and social grocery when they reach the chain-store development in supplying their commodities. Sir Farquhar Buzzard has truly said that medicine hitherto has been preoccupied with disease and is now turning more and more towards the study of health. What is meant by social medicine is really the medicine of health.

He has advised the reorientation of the medical curriculum so that the doctor may play his part in this new and wider medicine. This idea holds out the prospect of a redirected curriculum designed to give the student a new and total conception of his future work as a doctor and a training for that work. In this new curriculum the chair of social (or total) medicine should be the keystone of the whole system, supporting, and being supported by, all the other subjects; and the young doctor would begin his work informed as to the fullness of its scope, and trained to practise the medicine of disease and also the medicine of health.

The two subjects most closely related to the "health" work of the doctor are obstetrics and paediatrics. It would be difficult to say which is the more important; and indeed they both hang closely together. But paediatrics is certainly the most neglected in teaching, and offers the greatest opportunity of improvement in practice. Hitherto the medical schools have given the "young" subject paediatrics a small place in teaching and examination, a place far short of its importance in practice. On this the views of practitioners would be of great interest and value, and might assist in overcoming the conservatism of the medical schools and hastening reform. The mother, the child, and the home are the basal unit of our social structure. The family is the oldest, strongest, and best of human societies; and the health of the family is the centre and beginning of national health. The home is the place where vital problems and principles of sociology and medicine meet, and where social medicine can operate with great power; and it is the field of practice that belongs pre-eminently to the family doctor.—I am, etc.,

Edinburgh. CHARLES MCNEIL.

The General Practitioner and Research

SIR,—However long delayed may be the end of the present struggle, the essential need for co-operation in national and economic affairs in the post-war world has been fully established. The need for a like degree of co-operation between the general practitioner and what can broadly be described as the research worker seems to us to be just as necessary.

At present the wide experience of the G.P. and his intimate knowledge, extending over many years, of his patients, their families, and their ailments, which give him many advantages of which he is sometimes not fully aware, end with his retirement or death. We believe that a team of G.P. volunteers in co-operation with a laboratory team working at some specific problem—for instance, asthma, allergic diseases, endocrine disorders, etc.—could throw some light on many problems at present obscure. Such teams in different areas, under the general direction of a central body, would result in pooling the experience of many G.P.s and would, we believe, be of great value to the advancement of medical knowledge.—We are, etc.,

A. K. JAMES.
H. J. GIBSON.

The Planning Commission's Report

SIR,—The Medical Planning Commission is to be congratulated upon putting forward the interim report for survey and discussion by the whole profession. Those who have been interested in medical planning for many years will be impressed by the faults of omission rather than commission: this makes constructive criticism easier.

A broad definition might have been a complete service for the body and mind (and spirit) of every individual. Clause (*a*) should have added "and progress to a higher level of health." "Every" means of every age and every status. I would add a clause (*c*): (i) To aid research and so to advance medical science, and (ii) to promote the co-operation of doctors on the one hand and patients on the other.

Under "Discussion" the basis of the service on the family as the normal unit with the family doctor as the normal medical attendant has always been approved by the vast majority of the profession. As one who has advocated "co-operation" for over 30 years I am glad that clause 27 has been agreed.

I feel that there is some confusion in the whole report between the principles of building up from below and the "organization" from above. As an advocate of the former method I would put forward the following criticisms, which I hope are constructive. The Health Service Centre should be in relation to a small general hospital. Representatives of all branches of the services should meet here, forming local medical advisory councils, which councils should be referred to in all matters concerning the health of the district. From these should be elected representatives to regional medical advisory councils; from these again representatives to the advisory council to the Ministry of Health.

The local medical advisory councils are of the greatest importance. If they function properly they will direct or divert the creative intelligence of extreme individualism into the common council on the one hand, avert the danger of stereotyped or standardized methods, which will always tend to be imposed by higher authorities, on the other, give opportunities for the exchange of ideas and views and so help the advance of science, and, if one may tread into the political sphere, they are "rational democratic."

Satisfaction with or complacency with regard to the working and terms of the National Health Insurance Act appears to me worse than dangerous. The best that can be said is that this Act has done little positive harm. It has been negative as regards the progress of medical science. It has been of financial benefit to the members of the profession who have large panels. In 1911 I levelled many criticisms against it and also prophecies, most of which have been justified. At that time I opposed the Act as not worthy of the intelligent planning by the medical profession of this country; I put forward the alternative scheme based upon group practice at centres; I was ruled out of order. I have regretted since that I did not move amendments which could have been woven into its framework, now suggested over 30 years later.

One other criticism: I should like to think that more attention had been given to the psychological aspect, but I have endeavoured to restrict myself to fundamentals only.—I am, etc.,

Teddington. P. W. L. CAMPS.

SIR,—Having just read the interim report of the Medical Planning Commission in your issue of June 20, I feel I should like to offer certain comments.

The first is in connexion with paragraph 38. Surely the admission that certain corrupt practices in our present system are likely to continue in any other system we may envisage or attempt to carry out is as damning an indictment as it is possible to find. Are we then to admit ourselves defeated, before we even begin, in any attempt to better our ideals? Are we just to admit the presence of such graft and not try to do anything about it? No reform of any worth was ever carried out in such a tame spirit. Or is this merely a symptom of our gradual moral decline and softness? Why should we assume that we simply have not the strength of mind to eliminate these evils?

I do not admit the argument set forth in paragraph 39. Surely it should be possible to have men trained specially in medical administration who would be eligible for administrative posts. I understand that in Canada a doctor has to undergo special training in medical administration before he is eligible for such posts as medical superintendent of any large hospital.

Paragraph 48 says: ". . . We could not, if we would, start with a clean slate." Why not? The whole point lies in that "if we would." There seems to me to be a lack of punch in the statement. If we have the necessary will and the necessary perseverance, we *can* start with a clean slate. Indeed we shall have to by very force of circumstances. What is the use of thinking up half measures when we are going to be forced to go the whole way? No one can be so short-sighted as to imagine that the end of the whole scheme will not be a whole-time salaried medical service.

Paragraph 48 also says: ". . . What is wanted is the adaptation, augmentation, and reorientation of existing services. . . ."

Fine words which mean plainly a patched-up affair, rather similar to nearly all our voluntary hospitals. Cumbersome buildings with additions, alleyways awkward to run with dozens of inconveniences—these have also been "adapted, augmented, and reorientated" when many of them ought to have been completely rebuilt. The type of mind which has made these ideas is the type of mind which has been responsible for our policy in the pre-war years. Always patch and hope for the best. Let us have something new: it has to come anyway.

I feel that so many of the objections to the whole-time salaried medical service are based on a spirit of complete materialism. The criterion of a man's ability is being accepted—as it has up to now very often—as the extent of his income. Surely it should be possible for our profession to show that we judge men by the quality of their work rather than the size of the income. Indeed, until we can infuse this spirit into ourselves any scheme can fail.—I am, etc.,

Ledbury. GEOFFREY G. AIREY.

SIR,—I have been interested in medical planning for some years and have done some work in that direction; as a result I have eagerly awaited the interim report of the Medical Planning Commission. There were moments while reading the report when I felt that a bold and constructive progressive policy was being taken, but, alas! I was quickly disillusioned when I reached the paragraphs on "Immediate Proposals."

It is known to all that our present health services are uneconomic, lack integration, and are very unwieldy, to say nothing of the overlapping and duplication; yet the Commission after many months of deliberation proposes nothing more than an immediate extension of N.H.I. to include the dependants of the insured persons. To begin work with the object of providing and making available to every member of the community a complete medical service, and incidentally improve the working conditions of the medical practitioner, and then to do no more than propose the extension of N.H.I. is, I feel, evidence of moral cowardice.

There is little doubt among the many doctors I have discussed this matter with that the only service which can remove the existing defects and introduce the essential improvements is a 100% State Medical Service. As I expected, the usual "bogy" of bureaucratic control and the platitudes of free choice of doctor and the lack of initiative in safe jobs have been resuscitated, but they will deceive no one—certainly not the community who want a complete medical service, or the doctors who are prepared to work the scheme as whole-time salaried officials. What choice of doctor is there in the public health service, in ante-natal, child welfare, and school clinics, also in the hospitals, whether voluntary or public? In what way has bureaucratic control adversely affected these services? The chief criticism which can be made is their lack of co-operation with the general practitioner, and this is not due to bureaucratic control.

Then there is the usual loose thinking about the cost of a complete service. We are told that the country cannot afford it. At the risk of being accused by some of holding doctrinaire views, I maintain that the service would cost no more and probably less than the present uneconomic and patchwork system. The money could be raised by taxation and compulsory contributions, and the funds pooled so that the money could be distributed to regions on the basis of population. The cost of the present medical services (excluding workmen's compensation, environmental and cash benefits under N.H.I.) is about £150,000,000 made up as follows:

Voluntary hospitals	£16,000,000
State-controlled hospitals	£43,000,000
Municipal health services	£13,000,000
National health insurance	£16,000,000
Private practice	£60,000,000
Nursing services	£2,000,000

The money is derived from many different sources—e.g., charity, fees from patients, contributory schemes such as the H.S.A., insurance as N.H.I., rates as the block grants to public hospitals, and finally from taxes such as the State and municipal medical services. Surely it would not be difficult to employ an expert to work out a scheme for raising the sum of £150,000,000 per annum, the amount required for a State Medical Service for the country as a whole, especially as it is shown that the bulk of the money is not drawn from taxation.

It is axiomatic that national survival in times like the present depends more than ever before on the health of the community, and upon the health of the community depends the health of each individual. Yet in the most essential of all services the medical practitioner is not allowed the economic security which is guaranteed to teachers or civil servants. To preach health to the underfed and to those to whom medical services are not freely available, and to praise the doctor who "unselfishly" gives of his best when in reality he is being hampered by the impending fear of economic and social insecurity, is sheer hypocrisy. A nation's health is its greatest asset, so let us have the best possible service for the community and the best possible conditions for the medical and lay personnel who will unhesitatingly maintain the high standard so essential for its success.—I am, etc.,

London, E.10. A. ROBERT FOX.

SIR,—Careful perusal of the interim report of the Medical Planning Commission leads one to the conclusion that (in this Utopia?) the salaries of the greater part of the medical profession as well as those of innumerable lay officials are to be paid by the State; but it is not therein apparent how the State, either by taxes and/or rates, is to raise these enormous sums. Some enlightenment on this matter might be perhaps helpful.—I am, etc.,

Rayleigh, Essex. C. H. BATEMAN.

Treatment of So-called "Crush Syndrome"

SIR,—In June of last year we brought forward evidence to suggest that the approach to the problem of the "crush syndrome" had previously been from a wrong basis, and that the condition, including its renal manifestations, was the result, primarily, not of toxaemia, but simply of the loss of blood constituents into the injured limb the capillaries of which had temporarily lost their function. Applying this conception therapeutically, we argued that the primary principle of treatment should be to stop the limb swelling, or, if it was swollen, to reduce the oedema. This we achieved by applying positive pressure of 60 mm. Hg to the limb. We published details of two cases successfully treated on these lines (*Lancet*, 1941, 1, 780).

Strong experimental support for our theory has recently been furnished by Duncan and Blalock (*Ann. Surg.*, 1942, 115, 684). By compressing the limbs of dogs in a special clamp they have produced a syndrome similar to the "crush syndrome" of man, including shock and renal failure. Untreated, 18 out of 19 dogs died. But when the damaged limbs immediately after release from compression were enclosed in a pneumatic tube with a pressure of 40 mm. Hg 15 out of 21 dogs survived.

Further experimental work is clearly required, particularly to elucidate the mechanism of production of the renal symptoms We suggest, however, that there is now sufficient evidence to justify routine prophylactic treatment being standardized on the lines advocated in our article. If this view is accepted, first-aid workers should be instructed to bandage firmly the limb as soon as it has been released. Immediate treatment on the same lines should be carried out in hospital, either with the apparatus we suggested or some modification which fulfils the same principles.

The present lull in aerial bombardment in many districts offers a suitable opportunity for working out the requisite measures of organization.—We are, etc.,

D. H. PATEY, F.R.C.S.
J. DOUGLAS ROBERTSON, M.D.

The Middlesex Hospital, London, W.1.

Syme's Amputation

SIR,—Sir William Wheeler (June 20, p. 770) mentions the late Mr. R. C. Elmslie's advocacy of Syme's amputation. The operation which Elmslie devised and practised was a modified Syme's amputation, the essential points being a small heel-flap and a high division of bone just where it begins to flare out. The modern operation was designed to avoid the undue bulbousness and poor ground clearance of the old Syme stump, which rendered impossible the fitting of a neat, light, durable, and efficient prosthesis. With the newer stump this is easy, and, furthermore, the skid, which was inevitable with the older limbs and played havoc with end-bearing, seems to have been eliminated. The only trouble we have had with this operation, properly performed in suitable cases, has been, curiously enough, to persuade any firm of limb-makers, but one, to construct the correct limb.—I am, etc.,

H. JACKSON BURROWS.

Standardized Wassermann Reactions

SIR,—The letter of Dr J. L. G. Iredale and Dr. H. R. M. Richards (June 27, p. 804) suggests the possibility that other directors of approved laboratories may not be aware that, as they were informed in Ministry of Health memoranda dated April 4, 1941, and January 11, 1942, the special laboratory of the Ministry of Health for comparisons of serum tests makes and supplies antigens for Wassermann and Kahn tests, haemolytic amboceptor (rabbit *v.* sheep), and preserved guinea-pig serum for complement, all of which are carefully tested before issue. As regards the preserved complement-serum, an inquiry which I made a year ago of the laboratories approved for tests under the V D. scheme to discover if they were finding difficulty in obtaining guinea-pigs for complement elicited replies which suggested that a number of them must be using complement of poor quality, a more potent cause of indifferent results than is often imagined; this gave another reason besides the guinea-pig supply problem for pushing on with the production of preserved complement-serum. Each ampoule of this serum is from a pool of 100 mature (600 g) healthy boars, and is tested for suitability of titre and for freedom from native amboceptor and undue sensitivity to antigen; it is probably, therefore, of better quality than the complement used in most laboratories. It is preserved by Dr. Richardson's method as described in the *Lancet*, 1941, **2**, 696—I am, etc.,

London, S W 1 L. W. HARRISON.

SIR,—Three things used in the performance of the Wassermann reaction can be standardized—namely, the technique, the antigen, and the saline.

Unfortunately for the man doing the test, the complement, the amboceptor, and the red blood cells cannot be dealt with in this way. It must be realized that this test requires the whole of the attention of the pathologist, who should do every step of the test from start to finish. The deplorable habit of deputing technicians to do part of the routine work should cease if reliable results are required. Thus it is apparent that no one should perform Wassermann reactions for clinicians until he has received proper and adequate training.

Furthermore, I would tentatively suggest that this country be divided up into four areas, each with its central V.D. laboratory, part of whose function would be to check and be checked by other laboratories doing V.D. pathology. In this way I feel certain the standard of the performance of the W.R. and allied serological tests would be immensely improved.—I am, etc.,

London, E 1 I N. ORPWOOD PRICE.

Sterilization of Surgical Rubber Gloves

SIR,—In the technique section of Dr. W. J. Stuart's article on the sterilization of gloves (June 6, p. 694) he remarks upon his own particular method and upon that obtaining in conjunction with high-pressure sterilizers. He does not subscribe to the principle of inducing a primary negative pressure, and instances the effective difference through first and second exhaustings as shown from the tests of Sandford and Cookson. I am venturing to comment upon his own practice, with slight modification.

Admittedly in a partial vacuum of 24 in. Hg an unknown air content is contained. This void is static except for a slight circulation of heated air. The admission of steam produces rapid movement and the entire content is in a state of minus pressure equilibrium per gauge until zero is reached. On attaining plus pressure the volume is progressively constant, while the heat and weight factors are now variable. The hottest steam occupies the upper stratum, while the heavier and more saturated descends and forces below it the heavier atmospheric air content until ultimate pressure is attained. Thus in the volume we have a graded gravity weight content under compression—the warmed saturated air, being the cooler and heavier, is precipitated to the lowest stratum. This can be cleared by opening the valve on the conduit from the bottom of the chamber, allowing a free discharge of air and steam, for the space of half a minute. It may be questioned whether the same gravity condition would be effected without the primary vacuum. The answer is (this process applying particularly to the treatment of dressings, that with the primary vacuum the steam is attenuated and absorbed into every part and particle of the void, penetrating the most remote interstices of the fabric Without vacuum the steam would expand in an erratic course and bottle up globules of air within the fabric by a compression surround.

With gloves, however, conditions differ—we are concerned with surface sterilization, outer and inner enclosed. The outer presents no difficulty, the inner does Assuming an unwrapped glove to be deposited in an autoclave, and a vacuum induced, air blisters would be raised on the fingers as by blowing into them, external minus pressure producing the same effect as internal impulsion. It is impossible to say whether these blisters would be arrested in a state of compression or whether the air would be driven out; hence a primary vacuum is attended with that risk and not to be commended for this particular purpose. As Dr. Stuart explains, the gloves are contained in a canvas cover, and as the impulse of pressure steam would impress the surfaces tightly together he inserts a piece of gauze to prevent apposition of the surfaces My own idea is (and I don't know if it is really practicable) to draw the rubber gloves over common cotton ones. The surfaces would be kept apart more effectually and the fabric would serve as a conductor to the steam. Moreover the material would absorb any water precipitated by condensation, which, when formed, is not entirely evaporated but mixes with the chalk and resolves an undesirable cement content in the fingers.

Dr. Stuart remarks casually on the drying, and in his own practice it may be convenient to leave the gloves within the heated chamber for some time to complete evaporation. In hospital routine, however, the complete process would be effected rapidly. For this final rendering I incline to mechanical extraction by inducing atmospheric air through a cotton-wool filter at a tension of 15 in. Hg at seal, breaking down to 5 in. with the air current passing. I am quite in accord with the pressure and time factors Dr. Stuart stipulates.—I am, etc.,

London, E 7 J CHARLTON ROBINSON.

Complacency in Anaesthetics ?

SIR,—In reply to Dr. Atkinson's request (June 20, p. 774), I can furnish statistics for orthopaedic anaesthetics. In the orthopaedic department at Botleys Park during the last 18 months 2,000 anaesthetics have been administered for all types of case without a fatality. The standard technique employed is induction with pentothal up to 1 g., followed by nitrous oxide and oxygen. In the cases (about half) anaesthetized by me personally N_2O and O_2 are delivered from rotametres, reinforced when necessary (which is rarely) by cyclopropane. CO_2 is absorbed by a Water's to-and-fro canister, which I consider is the most efficient method of absorption generally available. This technique is simple, safe, and very pleasant indeed for the patient, as sequelae such as vomiting rarely occur.

I do not think the greatest "rag-and-bottle" expert could better these results from any point of view.—I am, etc.,

F G ETHIRAJ, B M., B.Ch , D.A.

Mass Radiography

SIR,—Dr. Lavelle in his letter on the above subject (June 20, p. 773) misinterprets me, and appears to have missed the real point of my recent letter (May 30, p. 678).

I am fully aware of the trend of development of miniature radiographic technique in this country, and that is the very reason why I wrote calling attention to the merits of the 5 in by 4 in. film method, which I believe will in the long run hold the field My main contention was that it would be a mistake to supply apparatus for 35-mm. work on a large scale and thereby establish standards which are not the highest.

One of the first essentials in any nation-wide scheme of mass radiographic survey should be the standardization of apparatus and technique, and that is why I disagree with Dr. Lavelle that existing apparatus should be adapted. As regards high-tension generators I do not agree with him that an output of 100 mA is enough if the best results are to be obtained; I would say that 200 mA should be the minimum.

Mathematics was never my strong suit, and I must confess that the "few simple calculations" which will prove that 76 mm. by 35 mm. film when enlarged will show greater photographic sharpness than 5 in. by 4 in. film are not immediately obvious to me; all the calculations I can think of lead to the opposite conclusion. In any event, one of the principal advantages of the 5 in. by 4 in. film is that it is suitable for direct viewing and does not require enlargement.

As to stereoscopic views, I am in entire agreement with Dr. Lavelle as to the unjustifiable expense of routine full-size stereoscopic films of the chest, but I do maintain that when it is purely a question of accuracy two films taken from a slightly different viewpoint are better than one. In miniature radiography the very slight extra expense of stereoscopic views will probably prove to be justified.—I am, etc.,

Hull. R. HERMON.

SIR,—The recent publications and correspondence on mass radiography appear to centre on the production of the required picture, with details of apparatus and organization needed for the purpose and the results to be expected from surveys. We do not suppose that there are any radiologists or chest physicians who would dispute the ability of such a procedure to disclose many cases of symptomless tuberculosis, and neither do we consider that, granted all the necessary staff and apparatus, the administrative machinery could not be devised speedily for its use. We do dispute, however, that these should be the sole criteria for launching a campaign among the general public to popularize mass radiography at the present time.

Mass radiography has become a scientific possibility, a short jump ahead of our social progress. This gap must be closed before the public are asked to submit themselves to a process which may mean social disaster to many of them. It is not possible for tuberculosis physicians or radiologists to say by a glance at a film whether a patch of infiltration is due to tuberculosis or not, and several weeks or even months may elapse before any confident statement can be made to this effect. What is to happen to the patient in the interval? Observation in an institution, substandard work, repeated attendances at a tuberculosis dispensary? Such procedures may mean the loss of the individual's employment, and in many cases this may happen when the patient is not suffering from tuberculosis at all.

If we could be certain that mass radiography would eliminate tuberculous disease and that only, then we might have some justification for pressing our claim on the grounds that serious spread of the disease has been prevented. But this assurance cannot be given. Consequently, it is our considered opinion that: (*a*) the State must grant social security to those found to be suffering from the disease and to their dependants; (*b*) those requiring observation must be safeguarded in respect of their employment; and (*c*) the principle of substandard work must be accepted for those under observation or suffering from tuberculosis. When these principles are accepted by the State, then the door will be open to mass radiography and the medical sociologist will have happy hunting. Until these safeguards are introduced we feel the public will be asked to co-operate in a scheme the pitfalls of which they do not realize. If the general public once realized the implications we feel they would demand security before submitting themselves to mass radiography.—We are, etc.

Oxford.

NORMAN ENGLAND.
F. H. KEMP.

Declining Population and Preservation of the Race

SIR,—In all the correspondence hitherto published on this important topic nobody has said that there is presumably an optimum, as opposed to a maximum, density of population for the British Isles. When Nazism has been defeated we may presumably look forward to a time when the bulk of mankind will be united under some centralized or federal form of government for purposes of social, economic, and military security. When that is achieved it may be possible to decide what size of population can conveniently and comfortably be accommodated in the various territories of the globe. Such a conception may seem hopelessly idealistic while the principle that might is right still dominates human action, but if we may assume for the moment that mankind were to become sane would it be essential or desirable that the population of these islands, for example, should be maintained at its present or an even higher level? It is well to remember that in the past the British stock attained a pretty high standard of achievement in divers directions with a population rather less than a third of what it is to-day. When we are in a position to consider our population figure with less emotion and without fear of being crushed by a numerically superior potential enemy, those competent to judge will be able to gauge, with some degree of accuracy, what our optimum population should be. Then and then only shall we be able to advise parents as to how many children they ought to have. Contraception has been cited as a primary cause of the decline in the birth-rate, but this is a preposterous argument. The fact is that many persons are shying away from parenthood for a variety of reasons, some worthy, others less worthy. Many less desirable means of avoiding parenthood exist and would be resorted to in increasing measure if contraceptives were abolished by law. A radical change of social values and, still more, liberation from fear are necessary before we shall see the return of large families—if, indeed, these are desirable.

One other matter has received only scant attention from previous correspondents, and that is the treatment of sterile marriages. Whether subfertility is actually increasing or whether the public is becoming more aware that something can be done about it is an impossible question to answer at present, but it certainly seems that in this country the laity are, generally speaking, more alive to the matter than the medical profession. Except in a few large centres organization for the investigation and treatment of sterile matings is sadly inadequate and out of date. Children, perhaps from specially desirable potential parents, are thus being denied to the nation. The Family Planning Association has made a small beginning in this direction, and the medical officers at its clinics are ready to give advice and help on sterility to any who need it. The usual procedure is to refer them to hospitals or specialists who are competent to deal with the many and complex problems involved; but in one or two provincial clinics facilities for investigation and treatment (including tubal insufflation and salpingograms, endometrial biopsies, seminal fluid examinations, artificial inseminations, etc.) are already available.—I am, etc.,

MARGARET HADLEY JACKSON,
Member of the Medical Subcommittee, Family Planning Association.

Crediton, Devon.

Treatment of Scabies

SIR,—Prof. R. M. Gordon and Dr. D. R. Seaton (June 6, p. 685) quote results of treatment of scabies with derris powder. The successful treatments were among Service personnel subject to discipline, but Forman (1942) in a series from a civilian out-patient department did not have successful results. Prof. Gordon and Dr. Seaton consider that proper supervision is therefore essential, and also that treatment dermatitis, especially of the scrotum, may occur.

May I quote the results of the treatment of 62 school children whose infection with scabies was discovered between Sept. 1 and Christmas, 1941. The lotion used was: derris 1 oz., soap flakes 2½ drachms, water 1 pint. This was applied by parents or guardians at home, with the aid of written instructions, 3 times daily for 4 to 5 days. In some severe cases the treatment was continued for 7 to 10 days, but only 1 boy developed any treatment dermatitis. No disinfection of bedding or clothes was done and no extra baths were given, except to patients showing secondary septic "scratch" dermatitis. (Some evacuee patients were unable to obtain any baths in their billets.)

Eight children were not seen again after the initial diagnosis and beginning of treatment. Infectious illness or truancy accounts for most of these. The remaining 54 cases were found to be cured on inspection 4 to 10 days after starting treatment, and the children were returned to school within 7 to 10 days of their initial exclusion. In my experience this represents a great shortening of the period of exclusion found necessary when sulphur preparations are used for home treatment.

Of these 54 children, 28 were still clear when inspected 3 to 4 weeks later. Fifteen failed to appear for further inspection and 11 were found to have relapsed. Of these 11, 7 gave definite histories of sleeping with infected relatives over whom the public health department had then no control.—I am, etc.,

Public Health Department, Worcester. MARGARET SPENCER.

Obituary

FRANCIS JOSEPH BIRKS, M.B.

Dr. Francis Joseph Birks, who died on June 19 at the age of 67, was for many years one of the leading general practitioners in Sheffield. Educated at Wesley College, Sheffield, he entered the medical school of the old University College. He qualified L.S.A. 1901, taking the M.B.Lond. in 1913. He held all the resident posts in turn at the Infirmary, finally becoming house-surgeon, then the senior post. He started practice in Leeds, but in 1910 returned to Sheffield in partnership with the late Dr. C. W. Smith. He was a most careful and successful anaesthetist and at different times held posts as anaesthetist to the General Infirmary and Public Dispensary at Leeds, and in Sheffield to the infirmary, hospital, and Jessop Hospital. Always a loyal member of the B.M.A., he was honorary secretary from 1912 to 1915, and chairman of the Sheffield Division 1937-8. He leaves a widow and four children.

The writer of this note knew Birks first as a senior student, an influence for good in a school which was passing through a very difficult period. Later, as a resident, Birks acted as an unofficial tutor and mentor, and finally as a senior colleague. Invariably courteous and kind and helpful, he set an example to all of conscientious adhesion to duty. Later he became an ideal family doctor, equipped with hospital experience in all branches of medicine, supplemented by a high sense of duty and never-ceasing industry. He gave his patients not only good treatment but wise counsel on all kinds of problems. Perhaps the predominant impression left on one's mind was staunch loyalty to friends. After an over-strenuous life and looking forward to retirement, he was working at full capacity till a few days before his death. Men like Birks form the backbone of the profession, and to such as he it owes what popularity it enjoys among the general masses of the population.

A. E. B.

Lieut.-Colonel E. D. Caddell died at Farnham on May 27, aged 60. He was educated at King's School, Coventry, and Portora School, Enniskillin, and studied medicine at Trinity College, Dublin. Soon after graduating M.B., B.Ch. in 1906 he joined the R.A.M.C. and served in India, West Africa, Hong Kong, and Jamaica. In August, 1914, he went to France, and in the following year was awarded the Military Cross for a gallant act in saving a number of his patients when a hospital of which he was in charge was heavily shelled. After retiring from the R.A.M.C. he was for some time Secretary-General of the National Association for the Prevention of Tuberculosis. He rejoined the Army in August, 1939, to become S.M.O., Chatham. A correspondent writes: "Tommy," as he was named, was one of the finest scrum-halves of his day. He played for Trinity College, Dublin, for Ireland many times, and for the Barbarians and Blackheath. Those who knew him and played football with him will be deeply grieved to hear of his death; while many hundreds must still be alive who saw him play and will be sad to know that he has gone. His popularity was unbounded and everyone loved him. He was gay, brim-full of courage, and generous. No one could tell an Irish story better than he.

We regret to record the death of Dr. William Brand, formerly senior tuberculosis officer for Camberwell, and for three years chief medical commissioner to the National Association for the Prevention of Tuberculosis. He graduated M.B., C.M. of the University of Edinburgh in 1910 and early devoted himself to the study and treatment of cases of tuberculosis. At the Annual Meeting of the B.M.A. in Edinburgh in 1927 he was vice-president of the Section of Tuberculosis. Dr. Harley Williams writes: Popular health education was a neglected infant in 1927, when William Brand breathed new life into the propaganda work of the N.A.P.T. Horse caravans with leaflets and exhibits had previously toured England and Ireland, but Brand created something quite new. I well remember my first meeting with him one Sunday morning, when mysteriously he opened the door of a half-empty building where the present Tavistock House stands. William Brand was something of a Viking, with deep-blue eyes and an unhurried impressive manner, perhaps an atavism of his Shetland ancestry, and an artificial limb made his movements slow and deliberate. He began to speak about non-inflammable films, portable models, and travelling cinema projectors. After an hour or two's talk, he produced and solemnly laid out on the table a bottle of wine and a remarkable lunch, and we continued to discuss films and health exhibitions. He had spent months of patient work building up the best equipment and evolving most telling methods of display, and as the lecture tours developed and eventually covered England and Scotland his careful planning showed results. He had flashes of originality and dogged independence, and he was the most unselfish man I ever met. Never quick at forming judgments, he reasoned everything to the end, and always acted in a way that showed charity and concern for others.

The Services

Major-General G. A. Blake, late R.A.M.C., has been appointed Honorary Surgeon to the King, vice Major-General C. M. Finny, O.B.E., late R.A.M.C. (ret.).

Surg. Cmdr. D. C. Wilson, V.D., and Prob. Temp. Surg. Lieut. D. W. Wallace, R.N.V.R., have been mentioned in dispatches for gallant and distinguished service in the Middle East.

The King has approved the Mention of the following officers in recognition of gallant and distinguished services in the Middle East during the period July to Oct., 1941:

Royal Army Medical Corps: Acting Brigadier E. D. Pridie, C.M.G., D.S.O., O.B.E.; Brigadier (Local) C. W. Graham; Temp. Col. N. Cameron; Lieut.-Cols. R. McKinlay and L. S. C. Roche, M.C.; Majors (Temp. Lieut.-Cols.) C. E. W. Bower, D. Crellin, M.C., K. Fletcher-Barrett, C. A. Levy, A. R. Oram, M.C., G. W. Wigg, T.D., and D. C. Muir; Major N. Capstaff; Capts. (Temp. Majors) J. C. Dick, R. D. Forsyth, and J. D. W. McCracken; and Capts. P. W. Dill-Russell, A. Menzies, and T. St. J. H. Silvester.

Indian Medical Service: Major (Acting Lieut.-Col.) B. N. Hajra; Capt. and Brevet Major V. A. Edge; Capt. (Acting Major) G. B. Jackson; Capts. M. R. Chowdhury, K. S. Pillai, W. J. Young, M. Abbas, and S. Kapila.

Australian Military Forces: Col. J. K. Adey, O.B.E., E.D.; Lieut.-Cols. E. B. Jones, L. C. E. Lindon, T. A. Parry, and A. S. Walker; Majors R. V. Graham, I. M. Mackerras, J. S. Peters, and J. H. Stubbe; Capts. (Temp. Majors) R. G. Champion De Crespigny and R. H. Macdonald; Capts. W. H. Campbell, A. K. Green, and K. H. Heard.

East Africa Army Medical Corps: Lieut. (Temp. Capt. and Local Major) J. McC. Caldwell.

CASUALTIES IN THE MEDICAL SERVICES

Capt. William Elliott Young, R.A.M.C., was killed in action in Libya in May. He was born on September 6, 1910, and was the only son of Sir Alban Young, Bt., K.C.M.G. He was educated at Marlborough and Balliol, and after qualifying L.M.S.S.A. in 1937 took the degrees of B.M., B.Ch. of the University of Oxford. Soon after the outbreak of war he entered the R.A.M.C. as temp. lieut. and served in India before being posted to Libya. He leaves a widow.

Capt. Prabhas Chandra Banerjee, Army in India Reserve of Officers, who is recorded as died in an India Office Casualty List published on June 17, graduated M.B. of the University of Calcutta in 1932, and became a member of the B.M.A. in the same year.

War Subs. Capt. Shaikh Abdul Hakeem Qureshi, R.A.M.C., who is posted as died in an Army Council Casualty List published on June 27, was born on July 3, 1892, and received his professional education at St. George's Hospital, qualifying M.R.C.S., L.R.C.P. in 1924. He was in general practice in the London area until June, 1940, when he entered the R.A.M.C. as temp. lieut.

Missing.—Capt. H. M. S. G. Beadnell, R.A.M.C., Capt. G. M. Davies, R.A.M.C., Lieut. W. Donaldson, R.A.M.C., Major E. L. Ellis, R.A.M.C., Capt C. He[illegible]nt, R.A.M.C., Lieut. E. Leigh, R.A.M.C., Capt. D. Longbottom, R.A.M.C., Lieut.-Col. L. R. S. MacFarlane, R.A.M.C., Col. E. Percival, D.S.O., M.C., Capt. T. B. Smiley, R.A.M.C., Lieut.-Col. J. K. Steel, R.A.M.C., Brigadier C. H. Stringer, D.S.O., O.B.E., Lieut. H. B. Thomson, R.A.M.C.

Wounded.—Temp. Major E. E. Evans, R.A.M.C

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on June 25 the following medical degrees were conferred:

D.M.—*O. H. J. Maxwell Telling.
B.M.—J. K. G. Webb, *M. Evnine.

* In absence.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—*Part II (Principles and Practice of Physic, Pathology, and Pharmacology)*: B. G. C. Ackner, W. B. Alexander, V. R. Arulanandom, W. E. S. Bain, G. P. Baker, R. C. Barclay, A. D. Barlow, G. M. Barrett, J. A. V. Bates, A. O. Bech, N. L. Birkett, J. A. Black, G. G. B. Blackman, P. F. Borrie, B. F. Brearley, M. M. Brown, R. J. K. Brown, P. H. Buxton, C. D. Calnan, T. O. Candler, F. S. Carter, W. E. Church, N. D. Compston, E. G. A. Crawshaw, N. F. Crofts, M. C. Cross, C. H. K. Daly, R. E. Danckwerts, P. M. Daniel, H. G. Danziger, R. W. Danziger, I. N. Darbyshire, J. Dean, G. H. Dhenin, R. Dobson, C. O. Edwards, R. M. Emrys-Roberts, W. F. Felton, J. H. L. Ferguson, G. E. Ffrench, J. L. Fluker, J. B. Foote, J. A. S. Forman, D. G. R. Fox, F. S. Glassow, E. C. E. Golden, N. J. Goorney, J. A. B. Gray, G. F. Green, E. J. Harrison, E. J. Holborow, R. A. Holden, P. Hughes-Jones, A. Hulme, W. P. U. Jackson, E. B. Jarrett, M. R. Jeffrey, D. M. Jeffreys, H. W. F. Jones, H. D. Juler, T. D. Kellock, D. E. R. Kelsey, J. M. S. Knott, H. P. Konig, H. M. Lawson, A. G. Leacock, T. L. T. Lewis, K. H. Lim, K. T. Lockhart, H. E. Lockhart-Mummery, A. Lyell, I. Macdonald, L. R. McLaren, S. J. R. Macoun, H. G. McQuade, R. G. Mathers, R. M. S. Matthews, L. H. H. May, R. H. Meara, R. B. Meyer, R. G. Miller, W. K. S. Moore, C. R. Naish, A. W. N. Oatway, R. A. Palmer, T. P. Pattinson, J. P. Paul, J. A. Peters, C. M. Phillips, J. S. Pippard, E. C. Poulton, J. R. K. Preedy, E. J. T. Prettejohn, P. M. M. Pritchard, S. H. Purser, J. F. P. Quinton, P. K. Renshaw, D. Rice, A. J. Rook, H. M. J. Rowan, J. H. B. M. Rowlands, J. G. Salter, D. L. Sandes, T. O. Scudamore, D. S. Short, E. G. Sita, J. F. P. Skrimshire, J. L. S. Smith, J. B. Stanton, J. C. Swanson, R. D. Sweet, H. D. Teare, J. R. Thompson, J. K. Wagstaff, R. J. Walker, J. C. Waterlow, R. B. Welbourn, J. C. N. Westwood, G. Wetherley-Mein, R. H. Wheeler, R. U. Whitney, J. J. Wild, D. I. Williams, H. I. Winner, J. F. R. Withycombe, J. B. Wyon. *Women:* A. Bolton, G. E. L. Cummins, P. Eskell, F. H. Lomax, V. U. Lutwyche, M. L. Macalister, H. C. Mason.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

On July 2 three Fellows were elected into the Council to fill the vacancies caused by the retirement in rotation of Prof. E. W. Hey Groves, Prof. G. Grey Turner, and Sir Hugh Lett, Bt. The following Fellows were elected:

	Votes
HUGH WILLIAM BELL CAIRNS (Oxford)	502
GEORGE GREY TURNER (British Postgraduate Medical School)	495
Sir HUGH LETT (The London Hospital)	399

The following were the other candidates:

Lambert Charles Rogers (Cardiff)..	383
Philip Henry Mitchiner (St. Thomas's Hospital)	342
Sir Harold Gillies (St. Bartholomew's Hospital)	296
Lennox Ross Broster (Charing Cross Hospital)	212
Sir Lancelot Barrington-Ward (Great Ormond Street Hospital) ..	180
Charles Aubrey Pannett (St. Mary's Hospital)	143

In all 1,143 Fellows voted; in addition 17 votes were found to be invalid. Prof. Grey Turner, Sir Hugh Lett, and Prof. Cairns are all elected for the full period of eight years.

SOCIETY OF APOTHECARIES OF LONDON

At a meeting of the Court of Assistants held on June 23, with Sir Hugh Lett, Deputy Master, in the chair, Mr. Duncan C. L. Fitzwilliams was welcomed to a seat on the Court. A committee was formed to prepare evidence for submission to the Ministry of Health in connexion with post-war hospital policy and the organization of medical schools. Sir Stanley Woodwark and Dr. Geoffrey Bourne were reappointed adjudicators for the Gillson Scholarship in Pathology, and Sir Hugh Lett was re-elected as the Society's representative on the governing body of the British Postgraduate Medical School. Mr. L. Vernon Cargill and Dr. Arthur P. Gibbons were appointed to serve on the special committee of the Board of Registration of Medical Auxiliaries to discuss post-war planning, and Mr. Cargill to the Central Pharmaceutical War Committee. The Society's Gold Medal in Therapeutics was not awarded for 1942.

The following candidates have satisfied the examiners in the subjects indicated:

SURGERY.—P. L. McN. Armstrong, R. S. Gunewardena, L. D. Miller, W. C. Salter, P. R. Green, F. A. Rutland.

MEDICINE.—L. D. Miller, N. F. Murphy, C. J. O. Taylor, J. J. Wild, G. E. Barnard, M. M. El Badri, M. Fishman, H. G. King, E. E. Lieber, S. B. Nelles, Pak So, R. Powell.

MIDWIFERY.—G. R. S. Jackson, D. S. Jones, F. A. Rutland, R. M. B. Talbot, C. Fares, D. I. Fullerton, H. Gottschalk, W. H. Lillywhite, H. V. T. Payne, R. Powell.

The diploma of the Society was granted to L. D. Miller, N. F. Murphy, C. J. O. Taylor, J. J. Wild, G. E. Barnard, P. R. Green, M. M. El Badri, H. G. King, C. Fares, S. B. Nelles, M. Fishman, Pak So, and D. I. Fullerton.

Medical Notes in Parliament

Wartime Health

In a debate on the health of the nation, in the House of Commons on June 30, Mr. ERNEST BROWN said that all his reports showed that after 1,000 days of war the health of the nation was, in many respects, even better than it was in peacetime. The birth rate for 1941 was 14.2, compared with 15.1 in 1938 and 20.9 in 1916. For the first quarter of 1942 the rate was 15.5. This was the highest in any March quarter since 1931. The infant mortality rate for 1941 was 59, compared with 53 in 1938 and 91 in 1916. The rate for the first quarter of 1942 was 61, the lowest March quarter rate on record. The maternal mortality rate was 2.77, compared with 2.97 in 1936 and 4.12 in 1916. These figures showed that while over a long period of time the birth rate had been falling, over the same long period the survival rate had increased. The crude general death rate was 12.9 in 1941, compared with 11.6—the lowest on record—in 1938 and 14.4 in 1916.

Infectious Diseases: A Good Report

The risk of epidemic disease called for special care in wartime. Statistics showed that during the past 2¼ years of war the infectious disease rate had been normal, and on the whole, with certain exceptions, below the average. Apart from tuberculosis the only infectious disease which had risen during the war was cerebrospinal fever. In 1916 there were about 2,000 cases, and in 1938 and 1939 about 1,300 and 1,500 respectively. In 1940 nearly 13,000 cases were notified and in 1941 over 11,000. In the first half of this year there had been approximately 4,000 notified cases, compared with 7,000 in the first half of 1941. Although cerebrospinal fever was essentially a disease of wartime, a less marked but progressive increase had been taking place since 1935, and before the war it was thought that in any event a period of epidemic prevalence might possibly be approaching. It turned out that the fatality of the disease had been greatly reduced. In 1935 deaths rose to 69% of the cases notified, but during the last few years the mortality had fallen to 34% and 20%.

There were 50,000 cases of diphtheria in 1941, but the number of deaths had fallen from 5,300 in 1916 to 2,600 last year. During the last year or so the Ministry had been pressing a campaign for the immunization of children, both as a long-term policy and as a more immediate precaution against the risks of wartime conditions. Experience in other countries had shown conclusively the reduction in both the incidence of and mortality from this disease among an immunized child population. By the end of 1941 one-third of the child population under 15 in England and Wales had been immunized; but he was not yet satisfied. He was pressing the campaign, since experience justified the hope that if three-quarters of the children at each year of age below 15 could be made immune diphtheria might well-nigh disappear as a fatal children's disease.

Enteric fevers were natural sources of anxiety in wartime with the risk of disturbance of water supplies by air attack. We had done much to protect these supplies, and medical officers of health were prepared to offer inoculation against typhoid if circumstances called for it. There were in 1941 under 5,000 cases and 148 deaths, compared with 6,000 cases and 1,100 deaths in 1916. Not one of the deaths during the bombing was due to pollution by water-borne infection. Our comparative freedom from typhoid fever in a time of continuous bombing was something at which our American visitors marvelled.

In 1941 cases of pneumonia numbered 50,000 with 26,000 deaths (compared with 23,000 deaths in 1939 and 29,000 in 1940). New methods of treatment had been adopted, and, serious as this disease must remain, continued improvement was hoped for. The health services, preventive and curative, built up in the last two or three generations to cope with infectious diseases had stood up remarkably well to the conditions of war, but continued vigilance would be required. It was the desire of the Chief Medical Officer of the Ministry to get expert knowledge of how health could be maintained "put over" in language which ordinary people could make part of their common discussions. With regard to venereal diseases, steps were taken at the outset of war to expand the existing services and see that adequate supervision was available. Propaganda was being continued and developed along the lines thought most likely to be effective. It had always been on propaganda and education that we had relied, but work on limiting the spread of infection was hampered by lack of powers for dealing with those who were unwilling to submit themselves to examination and treatment, and who were known to infect numbers of others. While the increase in venereal diseases had not been so serious as might have been expected, its control must continue to receive close attention. Scabies had continued to increase during the war, and with the redistribution of population had become more widespread. It was really a household disease, and investigation of home conditions and the following up of contacts were essential measures in a campaign to limit the spread of infection. Powers taken by an Order under the Defence of the Realm Act, accompanied by improved methods of treatment, were facilitating the task of local health authorities. His impression was that the increase had been checked.

Referring to the problems of mental health, he said that institutional service had its own wartime difficulties. A number of institutions were surrendered at the beginning of the war to the needs of the E.M.S. with consequent overcrowding in others. In many of them, as in other hospitals, there had been and were serious problems of nursing and domestic staff, but there was a gratifying decline in the number of new cases requiring admission. At the beginning of the war it was feared that the strain of war conditions, particularly under aerial bombardment, would lead to a serious increase in mental disorders. The contrary had proved to be the case. In 1938 the number admitted was 30,000 and in 1939 the same; in 1940 it fell to 28,000 and in 1941 to 26,000.

Tuberculosis

In 1941 the number of deaths from tuberculosis was 28,669, compared with 28,144 in 1940 and with 26,176 in 1938. There was a jump in 1938-9, from which we had not recovered, but it had not gone further. In 1916 there were 53,858 deaths from tuberculosis. The black-out and overcrowding had made progress difficult. We needed to review our general approach and to give greater practical effect to the need for early diagnosis. In the past we had tended to concentrate on treatment rather than on early diagnosis, but the developments in miniature radiography during the last few months seemed to give a new and useful weapon as a means of detecting those cases in which more detailed examination should be undertaken. We now had the opportunity of getting British-made machines, and the fullest possible advantage should be taken of this development. He had ordered a number of sets of equipment through the Ministry of Supply both from America and from the makers in this country. When these could be secured he would make them available for use by local authorities as a part of their tuberculosis scheme. He was taking steps to see that trained teams were available for handling these machines, and he hoped that towards the end of the year we should be able to begin to use them on a carefully planned basis. In this way he hoped they would be able to detect and treat tuberculosis at an early stage, when they could, by a period of suitable treatment, restore a man or woman to health and self-sufficiency with the shortest possible interruption of normal life. Greater attention must also be given to the problems of after-care. This ought to be tackled on more comprehensive lines. No doubt both these points with others were engaging the attention of the committee of the Medical Research Council. To provide adequately for the treatment of tuberculosis there must be the necessary number of beds in both hospitals and sanatoria, and the necessary medical, nursing, and domestic staff for those beds.

Coming thus to the subject of nursing, Mr. Brown said that in 1939 there were 94,200 State-registered nurses, and 103,700 in April last. The Ministry's present difficulty in increasing accommodation for tuberculosis lay not in providing the beds but in finding nursing and domestic staff. They had sought to secure the necessary staff through propaganda, persuasion, and the good will of the professional organizations. The Minister of Labour was willing to direct women to service of all kinds in hospitals. There were many calls on the nursing profession in wartime, and over the whole field of the nation he could do with another 12,000 nurses. Nursing was a profession which, like that of medicine, had its special risks, and they were willingly faced. There was no ground, however, for the belief that nursing in sanatoria need involve any greater risk of contracting tuberculosis than nursing in other hospitals.

Medical Man-power

The amount of medical attention that the civil population could ask for must be less than in peacetime. The medical profession has had to meet very large calls for the Forces. The fact was that there was a shortage of doctors for the civil population, and the public must do what they could to get along with less medical attention. The Government could not ration doctors and limit everyone to, say, two visits a quarter, but everyone could make sure that no call was made on doctors that was not really necessary, and that when the doctor's services were required as full notice was given as possible, so that he could organize his daily rounds economically. He appealed to the public to recognize the difficulties of a grand and hard-worked profession, and do what they could to help them to carry out their essential duties. The medical, nursing, administrative, and technical staffs of local authorities had made, and continued to make, large contributions to the Services. We had been bound to recognize that this must be so, but at the same time there was a limit to the extent to which an increasing range of services could be discharged by a decreasing number of skilled staff. It would be the Government's object to concentrate on the effective maintenance of those essential services which were vital to the health of the nation.

Referring to post-war policy, he said that he had examined the interim report of the Medical Planning Commission, which had now been circulated to B.M.A. Branches throughout the country for discussion. Under Lord Rushcliffe the two committees on nurses and on midwives were making great progress. The Ministry were also preparing plans so that the moment the labour situation permitted and material was available they might resume their onward march in housing reform. The Ministry were playing an active part in connexion with post-war relief in Europe, which was being considered by an inter-allied committee on post-war requirements under the presidency of Sir Frederick Leith Ross. The technical aspects of medical relief and nutrition were to be examined by expert subcommittees. The Ministry were specially interested, and a good deal of preliminary work had already been done on the requirements of essential drugs in the immediate post-war period, and on plans for the campaign against epidemics, notably typhus and malaria, which became such a menace after the last war. In addition, diseases directly due to malnutrition were being studied.

Medical Views

In the subsequent debate Sir **FRANCIS FREMANTLE** said that the Medical Planning Commission's report was not a complete scheme; it should be regarded as a basis, and they should all study it carefully. With regard to the shortage of doctors, they must, in existing conditions, have regard to the needs of the Services. Up to last January no less than 20% of the general practitioners had been called up: that was one in five of the doctors, and those the healthiest, youngest, and keenest of general practitioners. Since then 1,400 more had been called up. It was a tremendous inroad into the profession and the health services. He commended the appeal which had been made to the public to help the doctors who were remaining in practice. The Priority Committee had gone ahead in recommending the concentration of practices. They might need the power to transfer doctors compulsorily from place to place. He hoped that that would not be necessary, and it should be done only in the last resort. He urged compulsory treatment for venereal disease.

Dr. **RUSSELL THOMAS** contended that the national health should be considered from the angle that good food was the basis of good health. The Minister should hesitate before he brought in some new system which might be disastrous to medical practice, with a resulting evil effect on the battle against disease. Dr. **EDITH SUMMERSKILL** urged that the Minister of Health should not consider discussing with the Minister of Labour the question of directing girls into tuberculosis sanatoria. The conditions and pay should be improved, and the girls allowed to know the danger. She was sure they would volunteer if the conditions were improved. During the war the increase in tuberculosis in young children had been very great, and the incidence of non-pulmonary tuberculosis, at least 40% of which was of bovine origin, should be carefully considered by the Minister. Mr. Brown ought also to make it compulsory for local authorities to teach their midwives to administer anaesthetics. There must be a big increase in diphtheria immunization. Dr. **MORGAN** urged the need for one unified national system of hospitals. He asked what national scheme the Minister had for the four essentials in a good tuberculosis scheme—early diagnosis, treatment, care, and prevention.

Miss **HORSBRUGH**, replying to the debate, said that both on the subject of health service for those between 14 and 18, and on that of dental treatment, the Ministry would examine what Sir William Beveridge reported on the insurance scheme and the whole of the social services. Of those in insurance societies where there was free dental treatment only 6% used it, and more education was wanted. There was a great shortage of dentists and dental mechanics. The Minister had no power to force local authorities to instruct midwives in the use of anaesthetics for mothers. The subject could be discussed, but then it must be left to the local authorities. They were awaiting the report on tuberculosis from the committee of the Medical Research Council, which would be examined as soon as possible. With good will it would be possible to launch a scheme by which people would be able to take up light work gradually after their treatment in sanatoria.

The debate was adjourned.

No. 24

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 20.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	104	8	34	2	5	236	13	42	2	10
Deaths		—	1				—	4		
Diphtheria	660	20	138	42	9	853	36	200	21	29
Deaths	10	—	4		3	26	1	1	1	—
Dysentery	11	5	36	—	—	97	8	43	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	1	—	—	3	1	—		—
Deaths		1	—				—	—		
Enteric (typhoid and paratyphoid) fever						146	4	26	3	4
Deaths						—	—	—	—	—
Erysipelas		—	33	6	1		—	41	8	3
Deaths										
Infective enteritis or diarrhoea under 2 years										
Deaths	33	3	13	7	2	28	1	4	4	1
Measles	6,629	773	860	80	356	11,145	324	112		12
Deaths	8	3	4	1	2	9	2	—	1	—
Ophthalmia neonatorum	90	5	22		1	81	6	23		—
Deaths										
Paratyphoid fever	9	—	3							
Deaths	—	—	—		—					
Pneumonia, influenzal*	593	28	3	2	14	804	33	2	—	2
Deaths (from influenza)	13	2	—	2	—	19	2	2	—	1
Pneumonia, primary			188	24				195	8	
Deaths		16		11	6		28		7	8
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	5	—	1	—	—	5	1	—	2	2
Deaths		—	—				—	—		
Puerperal fever	—	4	13	1	2	1	1	7	2	1
Deaths										
Puerperal pyrexia	169	11	16		2	109	11	16		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,317	67	239	68	28	973	30	131	49	27
Deaths	—		—	—	1	1	—	—	—	—
Small-pox	—	—	2		—	—	—	—		—
Deaths				—	—				—	—
Typhoid fever	7	1	2	8	7					
Deaths	1	—	—	1	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough	1,389	143	37	59	31	4,764	140	339		5
Deaths	4	1	—	4	—	19	2	10	2	—
Deaths (0–1 year)	312	38	63	25	18	299	21	77	28	15
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,833	529	635	191	136	4,210	515	638	204	152
Annual death rate (per 1,000 persons living)			14·3	12·8	†			13·9	13·5	—
Live births	5,947	672	900	532	286	5,158	396	904	362	184
Annual rate per 1,000 persons living			18·6	35·5	†			18·4	24·0	—
Stillbirths	219	18	47			194	10	34		
Rate per 1,000 total births (including stillborn)			50					36		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the only large variations in the totals of notifications were for scarlet fever, with an increase of 292 over the preceding week ; and acute pneumonia and cerebrospinal fever, with decreases of 94 and 36 respectively. The largest rises in the incidence of scarlet fever occurred in Lancashire and Yorks West Riding.

The small increase of 39 in the notifications of whooping-cough was the result of the experience of Hertfordshire and Middlesex, where there were 81 and 20 cases more than in the preceding week. In the other counties the general tendency was for a slight fall in incidence.

Although the figure for measles was only 26 below that for last week, several counties showed considerable fluctuations. The largest decreases were those of Warwickshire 118, Yorks West Riding 113, Middlesex 97, Kent 80, Essex 74. The largest rises were those of Hertfordshire 121, and London 74.

Over half the notifications of dysentery were recorded in Lancashire and Yorks West Riding—16 in the former county from 7 administrative areas, and 23 from the latter (15 of them from the outbreak in Wortley R.D.).

In *Scotland* there was a slight rise in the incidence of measles and scarlet fever, 30 and 39 respectively more than in the preceding week. The largest rise in measles was that of Dundee, from 24 to 49 cases.

In *Northern Ireland* the epidemic of measles in Belfast continues, 350 cases—an increase of 8—being recorded during the week. The remaining 6 cases were notified in Lisburn.

Small-pox

An outbreak of small-pox has occurred in Glasgow. On May 29 a ship arrived in the Clyde from Bombay with a case of variola major, probably acquired at Capetown. All the 1,200 civilians and Service personnel aboard were vaccinated or revaccinated. Of the 12 known contacts, all except 2 were successfully vaccinated whilst incubating the disease, and the attacks were modified. In one case the vaccination was unsuccessful and the child developed small-pox in Swindon; 2 further cases have occurred among the population of Swindon. In Glasgow the disease has spread among the general population, and by the end of June there were 26 cases, 12 of which were from the ship's crew. Further cases, severe and modified, have been reported during the past few days and the disease has spread to the coastal town of Ardrossan. Up to the end of June, 3 patients—1 woman and 2 members of the crew—had died. Since then another death has been reported. The Department of Health for Scotland does not recommend that a national campaign for vaccination should at present be undertaken: so far some 300,000 vaccinations have been carried out in Glasgow.

Quarterly Return of the Registrar-General for England and Wales

The vital statistics for the first quarter of 1942 show a very satisfactory position. The largest birth rate for a first quarter since 1931 was recorded, being 15.5 per 1,000 ; in the March quarter of 1941 it was 14.4. The infant mortality rate was 61 per 1,000 live births, the lowest rate ever recorded in a first quarter and 15 below the average of the ten preceding first quarters. Stillbirths represented 3.5% of the total births registered, and, with the exception of 1941, when the rate was the same, was below the rate for recent years. The general death rate was 14.8 per 1,000, compared with 17.5 for the corresponding quarter of 1941, and 16.0 for the average of the five preceding first quarters. The births exceeded the deaths by 7,131 ; in the first quarters of the three preceding years the number of deaths was larger than the number of births by 850, 50,838, and 31,610.

Quarterly Return of the Registrar-General for Northern Ireland

A birth rate of 21.0 per 1,000 of the population was recorded during the March quarter of 1942, exceeding the average of the five preceding first quarters by 1.5. The infant mortality was 97 per 1,000 registered births, compared with 91 in 1941 and 100 for the five-year average 1937-41. There was a considerable reduction in the death rate, which was 16.1 per 1,000 of the population, or 3.2 below the value for the corresponding quarter of 1941, and 2.6 below the average rate for the first quarter of the five preceding years. The death rate of 1.08 per 1,000 for tuberculosis showed no change from the five-years average. Deaths from the principal epidemic diseases were below the average of the first quarters of 1937-41, with the exception of diphtheria, which caused 31 deaths compared with an average of 29.

Quarterly Return of the Registrar-General for Eire

The birth rate during the first quarter of 1942 was 19.2 per 1,000 of the population, an increase of 0.9 compared with the March quarter of 1941 and 0.3 above the average of the first quarters of 1937-41. An infant mortality rate of 80 per 1,000 registered births was recorded, compared with an average of 84 for the five preceding first quarters. The general death rate was 16.2 per 1,000, being 3.4 below the rate for the March quarter of 1941. The death rate from tuberculosis increased to 1.5 per 1,000. The numbers of deaths were 904 from pulmonary tuberculosis and 224 from other forms, compared with 765 and 207 for the average of the first quarters of 1937-41. Mortality from the principal epidemic diseases was below the average of the preceding five March quarters.

Returns for the Week Ending June 27

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,320, whooping-cough 1,394, diphtheria 719, measles 6,375, acute pneumonia 655, cerebrospinal fever 108, acute poliomyelitis 12, dysentery 151, small-pox 2, paratyphoid 8, typhoid 6.

Medical News

The combined summer meeting of the Sections of Laryngology and Otology of the Royal Society of Medicine will be held at the Radcliffe Infirmary, Oxford, on Friday and Saturday, July 17 and 18.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, July 16, immediately following the annual general meeting (which has been fixed for 5.15 p.m.), when Dr. G. Roche Lynch will deliver his presidential address on "Poisons and Poisoning." The president and Miss Roche Lynch will receive members and their guests at 4.15 p.m. and tea will be served.

A meeting of the executive committee of the Cancer Control Organization for Edinburgh and the South-East of Scotland was held in Edinburgh on June 23. One of the matters considered was the fuller use by doctors of the system of travel vouchers to enable their patients suffering or suspected to be suffering from malignant disease to attend at Edinburgh Royal Infirmary for treatment or for full examination. The honorary treasurer of the Organization is Prof. Annan, 22, Charlotte Square, Edinburgh, to whom subscriptions, donations, or bequests should be sent.

At the Central Criminal Court on June 30 Dr. Eustace Chesser and the Eclipse Press Services Ltd., trading as Rich and Cowan, publishers, were found not guilty of publishing an alleged obscene book and they were discharged. Both defendants pleaded "Not Guilty." Dr. Chesser in evidence said he wrote the book entitled *Love Without Fear* because he realized from his practice that physical ills were as nothing compared with mental troubles and difficulties. Fully 95% of the book consisted of quotations or restatements from previously published books. Three doctors who were called for the defence expressed the opinion that the book served a very useful purpose. The Common Serjeant, Mr. Cecil Whiteley, K.C., in his summing-up, said the defence had pointed out that people were much more open-minded now than they used to be, and that all the "hush-hush" about sex experience in Victorian times did a great amount of harm.

Representatives of the Empire Rheumatism Council and of the British Orthopaedic Association met in London last week to discuss means of co-operation in regard to the treatment of patients suffering from rheumatic disease. It was decided to appoint a Joint Standing Advisory Committee to achieve co-operation between the two constituent bodies; the committee to consist of Lord Horder (chairman); Mr. G. R. Girdlestone (vice-chairman); Dr. Hugh Burt (acting for Lieut.-Col. W. S. C. Copeman); Mr. Norman Capener; Mr. W. A. Cochrane; Squadron Leader W. D. Coltart; Prof. L. S. P. Davidson; Mr. A. G. Timbrell Fisher; Mr. S. L. Higgs; Brig.-Gen. F. D. Howitt; Prof. H. J. Seddon. The joint secretaries are Mr. Norman Capener and Sir Frank Fox.

A hospital pathological service, similar to that already functioning in the London Sectors, is to be provided for E.M.S. hospitals in the Provinces. Certain laboratories in each Region are to be recognized as area laboratories—that is, they will take work from other hospitals (to be specified by the Hospital Officer) as well as from their own, and will be staffed by whole-time pathologists. In addition "side laboratories," staffed only by technicians but supervised by a pathologist from the nearest area laboratory, are to be established as part of the upgrading of some E.M.S. hospitals.

The Department of Health for Scotland has now issued a booklet "Information Centres—A Handbock on their Organization" (price 6d.), which is a companion production to the recently published booklet, "Emergency Relief Organization, 1942," and, like it, is based on the experience of past air raids. The booklet shows how information centres should be organized and staffed, tells what sort of premises should be used and how they can best be adapted for their new purpose, and indicates the equipment required. Directors of information centres are told what their duties are, and staffs are given guidance on how to deal with the inquiries made to them.

Letters, Notes, and Answers

QUERIES AND ANSWERS

Duration of Anuria

Dr. Godfrey Lowe (Lincoln) writes: As a matter of interest, what is the longest period of anuria on record? A man of 75 has been laid up in bed for several months suffering from angina, sometimes of a very severe type; blood pressure averaging 160/100; very little albumin in urine. Suddenly he stops passing urine, no pain, no distension of the bladder. This goes on for eight days exactly. During this time he feels better than usual and the bowels act every other day or so. One morning he passes a small quantity of very pale green urine, and in a few hours the flow is normal, not excessive, and the colour becomes normal. There is a small amount of albumin present; the blood pressure is not raised any more; no oedema. He certainly had no drug to produce the green urine: a simple diuretic only was given. All this happened about three months ago. The patient is now very much better, sits up for meals, and even gets out in the garden; no stairs are allowed. I might add that he lives well out in the country and it was considered inadvisable to bring him into hospital for more thorough clinical investigation.

LETTERS, NOTES, ETC.

Herpes Zoster and Varicella

Dr. S. L. Brimblecombe (Stoke-under-Ham, Somerset) writes: Recently I have had two cases further suggesting a relation between these two diseases, and which also raise an interesting point. On May 2 I was asked to go to see a boy of 18 working on a farm, as he had a rash. I found him to be suffering with a severe attack of herpes zoster involving the right shoulder and upper arm. The people at the farm, who are milk producers, were much concerned to know whether it was infectious, and I told them that it was not. On May 20 I had a message to go to the same farm to see another boy of 12, as he had now developed a rash. On arriving there I was told rather reproachfully that, as I had said the first case was not infectious, the two boys had been allowed to sleep together in the same bed, with the result that the second boy now had a rash. Up till then I had not known of his existence as he is a recent evacuee. I found him with a well-developed chicken-pox. I was unable to get any evidence that he had been exposed to any other source of infection to this disease. The point arises whether in cases of herpes zoster one ought, while saying that the disease itself was not infectious, at the same time warn the occupants of the house that any of them who had not previously had chicken-pox may be liable to contract this disease as a result of contact with the patient.

Identical Twins in Different Environments

Dr. T. C. Scott Webb (London, S.E.18) writes: With reference to your annotation (May 23, p. 646) describing recent investigations into another case of identical twins, may I mention for the benefit of those who wish to read more on this subject the work by Prof. Lange, *Crime as Destiny*. A translation by Charlotte Haldane is published by Allen and Unwin at the modest price of 6s. I have not for many years read any book or article on any subject that has interested me so much as this. An excellent summary is given in *The Inequality of Man*, one of the Pelican series.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* of July 9, 1842:

"The self-elected and irresponsible Council of the College of Surgeons, and a chosen few from the fellows of the College of Physicians, the representatives of the whole profession! Is our contemporary serious? By whom have they been chosen to represent the *whole* profession? What connexion has the College of Physicians with the body of the profession? Does any one to the east of Oxford-street—to say nothing of the rest of London, the seven miles round it, and the whole of England and Wales—regard the College of Physicians in any other light than as a corporation to which resort is had for the enjoyment of certain privileges? How many members of the College are scattered throughout the provinces? How many towns and counties are there in which a single representative of the College is not to be found—has ever been heard of? The pretension of the College to represent the profession is a pleasantry, nothing more. For the Council of the College of Surgeons it is unnecessary to say a single word, because the Council itself has pleaded 'guilty,' and we do not conceive that the gratuitous assertions of the Gazette can counterbalance the confessions of the criminal, or set aside the unanimous verdict of the public."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 18 1942

THE DIAGNOSIS AND TREATMENT OF MALARIA IN ENGLAND

BY

WARRINGTON YORKE, M.D., F.R.C.P., F.R.S.

Professor of Tropical Medicine, University of Liverpool

One of the consequences of the war is the arrival in this country of a considerable number of cases of malaria, especially among members of His Majesty's Forces and the Mercantile Marine. As malaria is very amenable to treatment if recognized in time, and as it is highly dangerous and often fatal if not recognized and adequately treated, it is obvious that its diagnosis and treatment are matters of great importance. The object of this article, which has been written at the request of the War Office and Ministry of Health, is to set out briefly and simply the main points in the diagnosis and treatment of the disease.

Diagnosis

There are three common forms of malaria, caused by three different but closely related malaria parasites—viz., simple or benign tertian malaria, due to *Plasmodium vivax*; quartan malaria, due to *Plasmodium malariae*; and malignant or subtertian malaria, due to *Plasmodium falciparum*. These parasites inhabit the red blood cells. They have a regular cycle of multiplication, which in the case of simple tertian malaria is complete in 48 hours, in quartan malaria in 72 hours, and in malignant or subtertian malaria in about 36 hours. When multiplication is complete the young parasites escape from the infected red cells into the plasma and invade new red cells, and the patient experiences a malarial paroxysm.

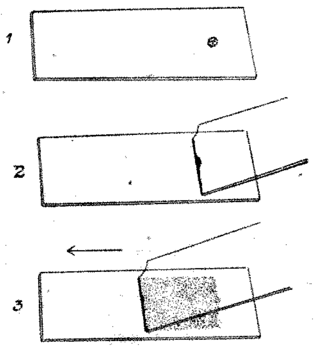


FIG. 1

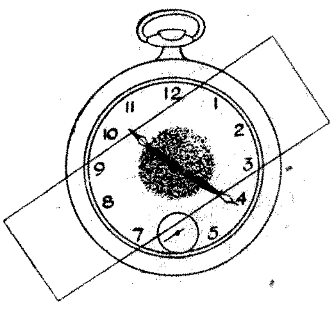


FIG. 2

FIG. 1.—Diagrams illustrating method of making thin film. 1. Place a small drop of blood near end of slide. 2. Apply spreader slide at an angle of about 30° and allow blood to flow across angle formed by the two slides. 3. Push spreader forward at uniform rate, drawing the blood after it; a thin evenly distributed film will result.

FIG. 2.—Diagram illustrating method of making thick film. Place a small drop of blood on centre of slide and spread with needle until it occupies about the area of a sixpence. N.B.—The film should not be so dense that the hands of a watch cannot be seen through it.

A definite diagnosis of malaria can be made only by microscopical examination of the blood and recognition of the parasite. While this may be beyond the scope of the general practitioner, it should at least be possible to make suitable blood films and send them to a pathological laboratory for a report. A method of preparing thin and thick blood films is shown in Figs. 1 and 2. Since the parasites disappear quickly from the blood as the result of treatment it is important that blood films should be made before any antimalarial drug is given.

Simple Tertian Malaria

Broadly speaking, acute malaria consists of a series of malarial paroxysms associated with progressive blood destruction, debility, and enlargement of the spleen. The paroxysms of simple tertian malaria are very characteristic. They consist of three stages:

Cold Stage or Rigor.—During this stage the patient complains of a sensation of intense cold, his teeth chatter, and he shivers violently; the feeling of cold is, however, entirely subjective, and if the temperature is taken it will be found to be raised. The cold stage lasts about an hour.

Hot Stage.—The feeling of cold gives place to a sensation of intense heat; the skin is hot and dry, the face flushed, the pulse full and bounding; headache and vomiting are often severe, and the temperature is raised to from 103° to 106° F. or even higher. This stage lasts 3 to 4 hours.

Sweating Stage.—The patient breaks out into a profuse perspiration, his temperature falls rapidly, the headache disappears, the vomiting ceases, and the paroxysm is over, leaving the patient somewhat exhausted but otherwise little the worse for his experience. This stage lasts 2 to 4 hours.

The duration of the complete simple tertian paroxysm varies, therefore, from about 6 to 10 hours. Typically in this type of malaria a paroxysm recurs with almost clocklike regularity every 48 hours, and the temperature chart can hardly be confounded with that of any other complaint (Fig. 3). Unfortunately, however, all the parasites in the blood of a case of simple tertian malaria may not complete the cycle of multiplication on the same day, some of them reaching maturity on Monday, Wednesday, Friday, and Sunday, and the remainder on Tuesday, Thursday, and Saturday. In such cases of so-called double infection there is a malarial paroxysm every day, and the temperature chart is of the quotidian instead of the tertian type (Fig. 4). But even here the chart exhibits certain striking characteristics—viz., the regularity of the daily febrile paroxysms, their short duration (6 to 10 hours), and the fact that the febrile disturbances are separated by a definite afebrile period lasting at least 12 hours. Except at the beginning of the attack before the paroxysms have become fully developed, when the temperature tends to be irregular, the simple tertian temperature chart is characteristic enough to suggest to the physician the true nature of the complaint.

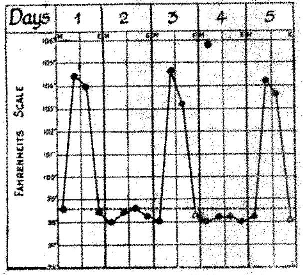


FIG. 3

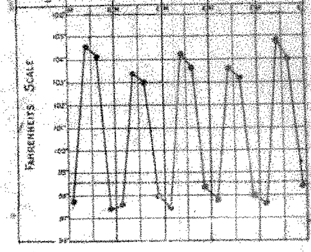


FIG. 4

FIG. 3.—Typical simple tertian temperature chart.
FIG. 4.—Quotidian simple tertian temperature chart.

If treatment is withheld and the disease is allowed to run its course, successive paroxysms result in progressive anaemia and debility; the spleen enlarges, the patient becomes icteric (haematogenous jaundice), and he often develops herpes, especially of the lips. If still untreated he may die of exhaustion, or the paroxysms may become less severe and finally cease and the disease become chronic. In this condition the patient remains in poor health; he is anaemic, the spleen is palpable, he often suffers from slight febrile disturbances, and is liable to relapse into the acute stage.

Quartan Malaria

Quartan malaria shows no essential differences from simple tertian malaria except that the cycle of multiplication of the parasite occupies 72 hours, and consequently the patient has a paroxysm, which is in all respects similar to that of the simple tertian paroxysm, every 72 hours—i.e., on the 1st, 4th, 7th, 10th days, and so on. Here again so-called double infections are not uncommon, so that not infrequently patients suffering from quartan malaria may have paroxysms on the 1st and 2nd, 4th and 5th, 7th and 8th days, and so on.

Malignant Tertian

Malignant tertian malaria is, however, a widely different and highly dangerous infection. The paroxysms are atypical; the cold stage is of short duration and ill defined or even absent, whilst the hot stage is greatly prolonged and is associated with intense headache, frequent vomiting, and severe constitutional disturbance. The ill-defined nature of the cold stage or rigor in malignant tertian malaria is a common cause of failure to suspect the true nature of the condition by medical men who have no special knowledge of the disease, and by the patients themselves, in whose mind the rigor is so firmly associated with malaria that a rigor and a malarial paroxysm have come to be synonymous.

The temperature chart of malignant tertian malaria bears little resemblance to that of simple tertian and is consequently a common cause of failure to diagnose the condition correctly. Owing to the prolongation of the hot stage the length of the febrile disturbance sometimes exceeds 24 hours. Moreover, as the interval between successive paroxysms is nearer 36 than 48 hours, the afebrile period between successive febrile disturbances is relatively short (Fig. 5). The greatest difficulty, however, is met with in cases of so-called double malignant tertian infection, in which the various paroxysms tend to run one into another, so that the temperature merely remits or is actually continuous (Fig. 6). It cannot be too strongly emphasized that a continuous temperature in malaria is a grave sign, and indicates that unless adequate treatment is promptly given the disease will soon end fatally.

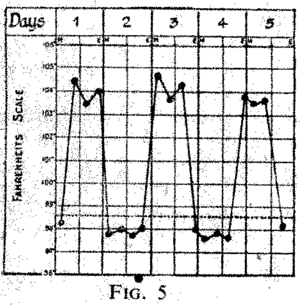


FIG. 5

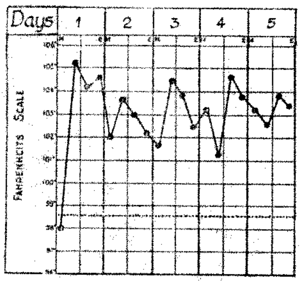


FIG. 6

FIG. 5.—Malignant tertian temperature chart.

FIG. 6.—Malignant tertian temperature chart, showing continuous fever.

In untreated acute malignant tertian malaria the general condition of the patient deteriorates much more rapidly than in the other forms of the disease. Persistent bilious vomiting (bilious remittent fever) is common, and the patient may quickly pass into a state of low muttering delirium (typhoid remittent fever).

The red corpuscles infected with the malignant tertian parasite show a marked tendency to stick to one another and to the endothelial lining of the capillaries, thereby occluding the lumen of the minute blood vessels. When this occurs, as is only too likely to be the case in untreated patients, there develop pernicious signs of the most diverse character depending on the site of the capillaries most damaged. Unfortunately, the brain capillaries are often involved, thus giving rise to the cerebral forms of the disease, one of the commonest manifestations of which is coma. The alimentary canal may be particularly involved, resulting in the gastric form of the disease associated with severe epigastric distress and incessant vomiting of blood-stained material, or in the dysenteric form associated with diarrhoea and the passage of blood. It is important to note that in these very severe forms of the disease the skin may be cold and the patient collapsed, although the rectal temperature is raised.

Rules for Guidance in Diagnosis

From the foregoing brief summary of the disease it is clear that clinical diagnosis, especially in the severest cases, is merely a matter of surmise in the absence of a blood examination. In these times, when so many cases are arriving at the main ports and are being distributed all over the country, it is imperative for the saving of life that medical practitioners should be on the look out for the disease and should know how to proceed. For their guidance the following rules are suggested.

1. Every sick individual recently returned from a malarial country should be suspected to be suffering from malaria, even in the absence of a history of previous attacks, unless some other diagnosis is obvious. This generalization applies even though the patient's temperature is normal at the time he is seen.
2. Ascertain whether the patient is obviously anaemic and whether the spleen is palpable; if these signs are present the suspicion that the case is one of malaria is strengthened, but their absence does not exclude malaria.
3. Make thin and thick blood films according to the directions given above and send them to a pathological laboratory for examination.
4. If the patient is ill, or if several days must elapse before the pathologist's report can be received, treat the patient on the assumption that he is suffering from malaria.
5. If the pathologist's report turns out to be negative, no harm has been done beyond the wastage of a certain amount of an antimalarial drug; whereas if it turns out to be positive the prompt treatment may well have prevented a catastrophe. In the event of a positive report the treatment of the acute attack must be followed by suppressive treatment as described below.

Treatment

There are two drugs which are invaluable in the treatment of malaria: (1) quinine, an alkaloid from cinchona bark; and (2) mepacrine, a synthetic compound. There is also another synthetic compound, pamaquin, which possesses certain special therapeutic properties, but, as it has no curative action on malignant tertian malaria and is highly toxic, it is unsuitable for general practice and need not be considered here. Unfortunately, although everybody of experience is agreed about the value of quinine and mepacrine, there is not a similar unanimity of opinion regarding the way in which they should be used. Little seems to be gained by discussing here the merits and demerits of the numerous courses of treatment that have been recommended, and it seems best to confine ourselves to methods which have been employed with uniform success for many years in the treatment of thousands of cases at the Liverpool School of Tropical Medicine.

Quinine

In the ordinary case quinine is best given in solution by the mouth. In Liverpool the following mixture, which is known as *mistura tropica*, is used:

℞	Quinin. sulph	gr. x
	Acid. sulph. dil.	♏xx
	Aq. chlorof.	ad ℥ss

A tablespoonful—i.e., 10 gr. of quinine—is given thrice daily for 4 days. If the patient is gravely ill, with persistent vomiting, oral treatment should be preceded by an intramuscular injection of quinine. The best salt for this purpose is quinine bihydrochloride, which is 50% soluble in water. Ampoules containing 10 gr. of quinine bihydrochloride in solution are supplied by the wholesale houses, and the contents of one of these ampoules should be injected into the muscle with aseptic precautions. Except in cases of cerebral malaria with coma, it is rarely necessary to give more than one injection, and treatment should be completed by the oral route as outlined above.

The outlook in cerebral cases with deep coma is notoriously grave, and in such cases an intravenous injection should also be given. The contents of the ampoule containing 10 gr. of quinine bihydrochloride should be diluted with 1/2 to 1 pint of hypertonic saline (3%) and run very slowly into the vein. If within 12 hours the patient has recovered consciousness and is able to swallow, the usual oral treatment should follow. If, however, he is still unconscious the intravenous injection should be repeated; but, as already stated, the outlook in such cases is bad—a fact which indicates the urgent necessity for diagnosis and treatment before this calamity develops.

In our experience, provided the patient is not comatose and moribund, this line of treatment invariably causes the parasites to disappear from the blood, the temperature to subside, and the general condition to improve enormously within 3 or 4 days; if this has not happened there is something wrong with the diagnosis, and some other cause for the illness must be sought.

Although this short course of quinine treatment cures the attack in a dramatic manner the infection is not sterilized, and if nothing more is done a relapse will occur within a few weeks in a large number of cases. With the object of preventing relapses and enabling the patient to return to work in safety, "suppressive" treatment must be administered. This consists in the oral administration of a small dose of quinine daily or of larger doses on each of two consecutive days each week. In Liverpool it is our custom to discharge the patient from hospital a few days after the treatment of his acute attack and to instruct him to take 20 gr. of quinine—i.e., one tablespoonful of *mistura tropica* twice daily—each Saturday and Sunday, for a period of 8 weeks. No other treatment is necessary, and the vast majority of patients are able to carry on their ordinary activities perfectly well and without further trouble. A few may have occasional slight relapses while taking this suppressive treatment, but these are not serious, and are dealt with by the subsequent week-end doses. Some cases, especially those of simple tertian and quartan malaria, relapse after the end of suppressive treatment, and in such cases treatment must be continued.

Mepacrine

This synthetic compound is supplied in tablets suitable for oral administration. The course for the treatment of the acute attack is 1 tablet (0.1 g.) thrice daily for 7 days. Its action is similar to that of quinine, and the 7-day course suffices to cause parasites to disappear from the blood and the signs and symptoms to subside. In the very severe cases referred to above, mepacrine treatment should be preceded by one or two intramuscular or intravenous injections of quinine bihydrochloride, as the salt of mepacrine suitable for injection may not be obtainable. With the object of preventing relapses, suppressive treatment must be administered in the form of 2 tablets (0.2 g.) of mepacrine each Saturday and Sunday for 8 weeks.

Conservation of Quinine.—In these days it is very desirable to conserve the limited stocks of quinine, and consequently whenever possible mepacrine should be used instead of quinine. Even if quinine is administered for treatment of the acute attack, mepacrine should be given for the subsequent suppressive measures, and the more so as there is some evidence to suggest that this drug is a more efficient suppressive than is quinine.

Toxic Effects of Quinine and Mepacrine

Apart from temporary tinnitus and deafness and sometimes slight gastric disturbance, there are no ill effects from quinine in the doses mentioned. Mepacrine is a dye, and even in the doses recommended may produce a yellow discoloration of the skin, which must not be mistaken for jaundice; the discoloration usually fades in the course of a week or two after the drug is stopped, but it may persist for as long as three months. A few patients suffer from mild gastro-intestinal effects, and very occasionally mepacrine acts as a cerebral excitant and produces mental disturbance and even mania, but these unpleasant effects are temporary, and soon disappear when the drug is stopped.

FACTORS INFLUENCING THE INCREASED INCIDENCE OF PULMONARY TUBERCULOSIS IN GLASGOW

BY

STUART LAIDLAW, B.Sc., M.D., D.P.H., D.P.A.

AND

DUNCAN MACFARLANE, M.B., Ch.B., D.P.H.

(*From the Public Health Department, Glasgow*)

Following our previous investigation into the increased incidence of and mortality from tuberculosis in Glasgow (*Journal*, Sept. 27, 1941, p. 436), we have recently carried out a detailed investigation into the first 1,600 confirmed cases of pulmonary tuberculosis notified during the year 1941, with special reference to the effect of occupation and hours of work.

The Rise in Notifications

During 1941 the number of notifications of pulmonary tuberculosis again rose in Glasgow from the previous year's high level of 1,908 to 2,066. Table I compares the age and sex distribution of the cases notified during the two war years, 1940 and 1941, with the average of the last two peace years, 1938 and 1939.

TABLE I.—*Age and Sex Distribution*

Age	Males			Females		
	Average 1938–9	1940	1941	Average 1938–9	1940	1941
–15 years ..	118	92	134	84	111	136
–25 " ..	236	287	300	341	437	454
–35 " ..	165	218	214	181	214	219
–45 " ..	147	164	184	65	82	82
–65 " ..	222	206	230	65	53	69
65+ " ..	25	31	32	10	13	12
Total ..	913	998	1,094	746	910	972

The table demonstrates that the notifications of pulmonary tuberculosis in 1941 for males show an increase of 9.6% over 1940 and 19.8% over the average of 1938-9. The relative female figures are 6.8% and 30.3%. A feature of the table is that the under-15 age group has shown a marked increase in both sexes, and there has also been an increase in the over-45 age group confined to males. The number of cases recorded in the age groups 15–45 in males and 15–35 in females has only slightly increased during the past year, but exceeds 1938-9 by 27.3% for males and 28.9% for females.

Tables II and III give the total deaths from pulmonary tuberculosis, along with their distribution in age groups, for the years from 1938 to 1941.

TABLE II.—*Total Deaths*

	1938	1939	1940	1941
Males ..	534	537	664	615
Females ..	426	435	518	540
	960	972	1,182	1,155

TABLE III.—*Age Distribution*

Age	Males			Females		
	Average 1938–9	1940	1941	Average 1938–9	1940	1941
–15 years ..	25	25	34	27	26	30
–25 " ..	109	138	103	170	217	228
25+ " ..	401	501	478	233	275	282
Total ..	535	664	615	430	518	540

The figures show that the male death rate during 1941 is 13% above the average in 1938-9, although it has shown a slight fall since 1940; whereas the female death rate still continues to rise in all age groups, being just over 25% higher in 1941 than in 1938-9.

There is little change to be noted in the incidence and mortality of non-pulmonary tuberculosis, the notification rate being only 1.5% and the death rate 3% above 1940. Table IV shows at a glance the distribution of the non-pulmonary cases in the usual categories.

TABLE IV.—*Non-pulmonary Tuberculosis, 1939-41*

Year	Abdomen	Bones or Joints	Lymph Glands	Meninges	Skin, Genito-urinary, or Multiple	Total
1939 ..	82	166	90	137	52	527
1940 ..	80	198	130	184	60	652
1941 ..	108	226	104	182	44	664

Meningeal tuberculosis still remains relatively high, while bone and joint lesions again show an increase. A few more abdominal cases have been notified, but again the Senior Food Inspector reports no increase in the number of samples of Glasgow milk containing tubercle bacilli. In fact, only 18 out of 301 samples of transport milk examined during 1941 showed the presence of tubercle bacilli—that is, 6%, as contrasted with 6.3% for 1940 and 9.4% for 1939.

Occupational Analysis

Thus for another year the chief public health problem lies in the continued large number of cases of pulmonary tuberculosis. Table V compares the occupations among these pulmonary cases for the years 1938-41, and for simplicity of comparison gives the percentage increase for certain groups in 1941 compared with 1938-9.

TABLE V.—*Occupations in Notified Cases of Pulmonary Tuberculosis, 1938-41*

Group	Occupation	Average 1938–9	1940	1941	Percentage Increase
I	Scholars .	123	102	160	30
	Under school age	73 } 196	88 } 190	100 } 260	37 } 32·6
II	Domestic class ..	305	368	393	28·9
III	(*a*) Commercial class	248	212	230	
	(*b*) Professional class	21 } 269	28 } 240	46 } 276	2·6
IV	Soldiers, sailors, airmen	34	71	145	War increase
V	Miscellaneous (includes modellers, retired persons, no occupation)	97	91	74	–25
VI	(*a*) Tradesmen ..	187	230	204	
	(*b*) Skilled workers	219 } 406	338 } 568	294 } 498	22·7
	(*c*) Unskilled workers	210	231	254	
	(*d*) Labourers ..	142 } 352	149 } 380	166 } 420	19·3
	Total of (*a*), (*b*), (*c*), (*d*)	758	948	918	21·1
	Total of all groups	1,659	1,908	2,066	24·3

Although this classification is convenient for general statistical purposes, it does not detail the exact trades nor does it separate workers in heavy from workers in light industries. Therefore, in analysing the first 1,600 confirmed cases of pulmonary tuberculosis notified during 1941 we studied the classification of H. M. Vernon in his *Health in Relation to Occupation, 1939.* The advice of the officials of the Ministry of Labour was also sought, with the result that it was decided to rearrange Group VI of the above Occupation Table into three sections, namely:

Section A: Workers in heavy industries—general labourers, moulders, steel workers, riveters and platers, furnacemen and stokers, chemical workers;

Section B: Workers in medium-heavy industries—engineers and munition workers, machinists, turners, finishers, and fitters;

Section C: Workers in lighter industries—joiners and wood workers, paper workers, painters, workers engaged in the preparation of food, drink, and tobacco, textile and rubber workers;

and Group III (*a*) into two sections: (*x*) office workers, typists, clerks, draughtsmen, and telephonists; (*y*) shop employees, cleaners, and caretakers. Group II was subdivided into (*a*) housewives, and (*b*) domestic servants; while Groups I, IV, and V remain unchanged.

Each of the 1,600 patients investigated was carefully classified, and particulars were obtained of hours of work, overtime, A.R.P. or Home Guard duties, recreations, housing, contact infection, and time occupied in travelling to and from work. The travelling time varied a great deal, and could not satisfactorily be averaged. One remarkable feature was the large number who had to travel so far to work that they had to carry "pieces" (sandwiches) with them. This applied especially to workers in the heavy industries. The number who availed themselves of provided canteen facilities was found to be relatively small, the reasons given being that the catering in some of the canteens is monotonous and that the charges are often too high.

Of the 1,600 cases analysed, 470, or 28%, fell into Group VI (tradesmen, skilled workers, unskilled workers, and labourers), which was subdivided as above. Table VI illustrates the age and sex distribution of these cases according to the adopted subdivisions.

TABLE VI.—*Age and Sex Distribution of Group VI*

Section		Age Groups						
		–15	15–24	25–34	35–44	45–54	55+	Total
A	Heavy industries: Males ..	1	34	22	27	30	21	135
B	Medium-heavy industries:							
	Males ..	—	40	18	20	17	8	103
	Females .	1	64	10	1	—	—	76
C	Lighter industries:							
	Males .	—	24	6	15	4	6	55
	Females ..	1	88	8	1	3	—	101

Hours of Employment

From Table VI it appears that the young adults of both sexes are chiefly involved, and that with an increase of age the number of cases of pulmonary tuberculosis diminishes; but in the heavy industries there is a more even distribution of cases throughout the age groups. It was decided to subdivide the above sections into various working periods for comparative purposes. The results are shown in Table VII, in which are also included the working hours of clerical and shop employees, based upon statements made by the patients. The Labour Exchange has so far been unable to provide detailed figures of the number of persons employed in the different industries in Glasgow; it is unlikely that this information will be available for some considerable time. In any case, a really accurate estimate showing the interrelationship of occupation and pulmonary tuberculosis would demand a wider survey, as many persons who work in Glasgow live in the county areas, while considerable numbers of county workers live within the city.

TABLE VII.—*Distribution of Workers according to Hours of Employment*

	Average Number of Hours per Week				
	40–48	48–56	56–64	65–72	72+
Section A	%	%	%	%	%
Males	—	20	26	18	36
Section B					
Males	17	13	43	17	10
Females	14	46	31	9	—
Section C:					
Males	19	38	38	5	—
Females	35	45	14	6	—
Clerical Workers					
Males	29	32	39	—	—
Females	78	15	7	—	—
Shop Employees					
Males	48	24	18	10	—
Females	56	24	14	6	—

The first noticeable fact shown by Table VII is the percentage of those working longer hours among the industrial sections. In fact, 36% of those employed in the heavy industries were working over 72 hours a week, which could not possibly be conducive to good health, combined as it so often was with long periods of travelling and carried meals. It is noteworthy that four-fifths of the women employed in clerical work did not exceed a 48-hour week, contrasted with the low figure of 14% for machinists and munition workers. It will be seen that the advice given in the 25th Report from the Select Committee on National Expenditure (Session 1940-1) has been largely ignored. In that report (page 4) hours of work are dealt with and recommendations made. Paragraph V reads as follows: "The investigations already carried out by the Board indicate that over an extended period weekly hours of work should not exceed 60 for men and 55 for women." Applying these standards to Table VII, the percentage of workers in each group exceeding these figures can be tabulated as follows:

	Males	Females
Section A	67	—
Section B	48	40
Section C	24	20
Clerical workers	19	7
Shop employees	19	20

The subdivision of the commercial class, Group III (*a*), showed that 60% could be grouped under Section (*y*) (shop employees, etc.) and 40% under Section (*x*) (office workers, etc.). The conditions of employment and the risk of developing pulmonary tuberculosis in these two sections appear to be very similar. The proportion who were able to return home for their meals showed no appreciable difference, nor was there any distinction between the average housing and sleeping accommodation. The subdivision of the domestic class provided the following information: that 85% of the recorded cases were those of housewives and 15% domestic servants; that the illness of 10% of the married women showed a definite time-relation to pregnancy; and that 55 (20%) of the 270 cases recorded in the group were contacts with tuberculosis in the home.

Scholars and Pre-school Children

It is difficult to ascertain to what extent the number of pre-school children and scholars in Glasgow has diminished owing to evacuation during the year under review; but the number has certainly not increased, yet the number of children affected by tuberculosis has risen by over 32%. Our investigations showed that of the notified cases 24% had been contacts with open tuberculosis within the past five years, as against 18% in 1940 and 14% in 1939. Definite contact history was found in 66 of the 258 pre-school children and scholars notified, and it is possible this increase has arisen from the necessity for keeping chronic cases of phthisis at home owing to shortage of hospital beds. It is significant that, although the number of cases of pulmonary tuberculosis in this group has increased by 32% since 1938-9, there is an increase of 90% in the cases showing definite contact with previous open tuberculosis within the past five years.

Summary and Conclusions

Our previous study of tuberculosis in Glasgow dealt with the increased incidence of the disease from the outbreak of war up to the end of 1940. It was found that the main increase involved the age groups 15–45 in males and 15–35 in females, the rise being attributed to war conditions, such as long hours, overwork, strain, and curtailed rest.

The present study carries these observations further. It compares the returns for 1941 with those of 1940 and 1938-9. It also includes the results of a detailed investigation into the occupations and working hours of the first 1,600 confirmed cases of pulmonary tuberculosis notified during the year.

The number of notified cases of pulmonary tuberculosis in Glasgow among the young adult cases of both sexes still remains high, but the rate of increase during 1941 has slowed down considerably. On the other hand, the under-15 age groups of both sexes have revealed a very real increase, as has the over-45 age group in males.

The increase among young people of both sexes under 15 years of age is partly accounted for by an increased proportion of home contacts.

Our contention that overwork and long hours are playing a major part in the increased number of recorded cases since the war is supported by the facts embodied in Tables VI and VII, one of the outstanding features of which is that little increase has occurred among the commercial and professional classes, whose hours of work alone remain within reasonable limits. It will be observed that, whereas less than 20% of the commercial class exceed the recommended maximum hours of work, 67% of the workers in heavy industries and well over 40% in the medium-heavy industries are working in excess of these standards.

The increase in the domestic class may be accounted for by war strain and the fatigue caused by standing in food queues in all weathers. Inquiry shows that nearly 40% of the housewives notified during 1941 were employed in part-time war work in addition to their household duties. This is a new feature, entirely associated with war conditions, which, in our opinion, may account for the increased number of cases in this group.

ACTION OF PHOLEDRINE AND NEOSYNEPHRIN IN RAISING THE BLOOD PRESSURE

BY

P. C. ELMES

AND

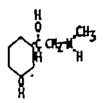
A. A. JEFFERSON

(*From the Department of Pharmacology, Oxford*)

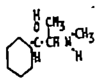
The use of substances having an action like that of ephedrine for raising the blood pressure still remains limited. Although ephedrine is sometimes injected when a spinal anaesthetic is employed, patients in collapse are ordinarily treated with nikethamide (coramine) or leptazol (cardiazol). Both are medullary stimulants and have no direct action on the heart. There is evidence that in animals they partly restore the blood pressure after previous depression with barbiturate. The effects are, however, seldom definite, and the doses necessary are very large indeed, being almost as great for a cat as the full therapeutic dose recommended for a man. The ability to improve the circulation is presumably due to stimulation of the vasomotor centre, causing vasoconstriction, some rise in blood pressure, and in consequence improved coronary flow.

If the chief effect desired is a rise in blood pressure, a substance which acts *directly* on the heart and blood vessels is clearly preferable. The more widely known agents which act in this way are ephedrine and pholedrine. Two other examples of such compounds on the market are neosynephrin (metasympatol) and phedracin.

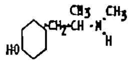
The formulae of these substances are as follows:



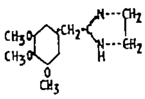
Neosynephrin (meta-sympatol)



Ephedrine



Pholedrine (veritol)



Phedracin

The properties of ephedrine are well known. Neosynephrin is practically unknown in this country, although it has been employed in America by a number of clinical workers, who find it greatly superior to ephedrine (Bittrich, 1939; Brunner and de Takats, 1939; Johnson, 1937; Lorhan and Oliverio, 1938; Lorhan and Lalich, 1940). In 1938 Jones and Wilson reported on the action of phedracin. They suggested at the time that it might be of use in spinal anaesthesia. Pholedrine (veritol), which was introduced in Germany by Rein (1937a, 1937b), has received only slight attention from clinicians in Great Britain. The many German publications on the clinical use of this compound are in general very favourable, and in this country Dodd (Dodd and Merton, 1939; Dodd, 1942) has recently published the results of its successful clinical use. He recommends that pholedrine, like all other pressor agents, should be used with circumspection and only when absolutely necessary. He employs 4 to 5 mg. intravenously and reports no untoward effects with this dose. Schoenewald, Schweitzer, and Steel (1940) found that in cats large doses (10 mg.) caused cardiac disturbances; small doses (0.2 mg.) had variable effects when the blood pressure was normal.

Experimental Investigation

We have compared these four sympathomimetic compounds, under standard conditions in animals with a depressed blood pressure, with the following results:

1. *Effect on the Blood Pressure.*—For each substance a series of five cats was employed; the animals received intravenous chloralose (0.08 g./kg.). The blood pressure was recorded from the carotid artery and enough nembutal was given to depress it to about 55 mm. Hg. Artificial respiration was applied throughout and the injections of the pressor agents were made intravenously at approximately hourly intervals. Doses which had previously been found to cause equal rises in blood pressure were used. They were: ephedrine hydrochloride 1.01 mg./kg., pholedrine sulphate 0.29 mg./kg., laevo-neosynephrin hydrochloride 0.05 mg./kg., and phedracin hydrochloride 0.79 mg./kg. Under these conditions the blood-pressure responses of the five cats could be expressed as averages in each series; the results are shown in Figs. 1 to 3. Ephedrine and pholedrine caused the most prolonged rise in blood pressure (Fig. 2), the response to the first dose of each substance lasting for about 45 minutes. Phedracin was briefer in its action (25 minutes), the effect of neosynephrin being the shortest of all (15 minutes). In such a preparation the response to an equivalent rise in blood pressure due to adrenaline does not last longer than about 4 minutes.

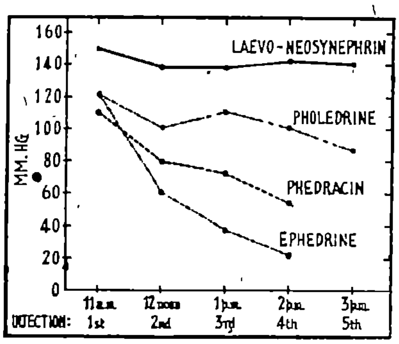


FIG. 1.—Showing the maximum height of the rise in blood pressure produced by successive injections of the four compounds given at hourly intervals. (Ordinate: mm. Hg above the initial level. Abscissa: Time.)

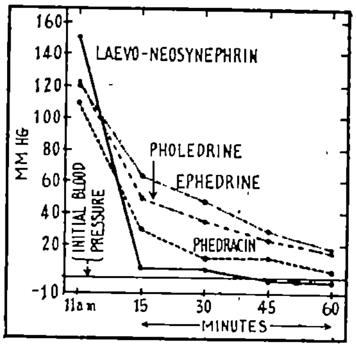


FIG. 2.—Showing the rate at which the blood pressure returns to its initial level after the peak of the first response. (Ordinate: mm. Hg above the initial level. Abscissa: Time.)

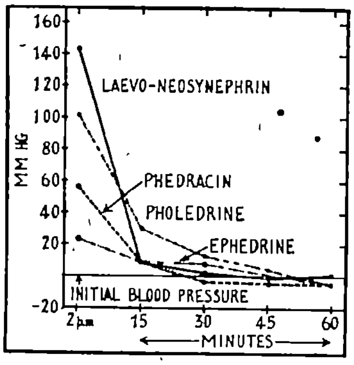


FIG. 3.—Showing the effect on the blood pressure of the fourth injection. Note the severe loss of activity of ephedrine and phedracin when comparing the peak of the response with that of the first injection, shown in Fig. 2. (Ordinate: mm Hg above the initial level. Abscissa: Time.)

Although the result of the first dose of ephedrine was satisfactory, we were never able to see an equivalent effect again in the same preparation, for invariably both the height and the duration of the blood-pressure response to subsequent doses were rapidly and progressively diminished (Figs. 1 and 3). We noticed exactly the same process upon injecting phedracin. However, the response to pholedrine over the first four injections showed little change, and the response to neosynephrin remained constant throughout.

2. *Action on the Heart and Blood Vessels.*—We also compared the action of equipressor doses of these substances on perfused vessel preparations (the rabbit's ear and the dog's hind limb) and on the isolated cat heart perfused through its coronary vessels (Langendorff method). We obtained the following results:

(i) Ephedrine and pholedrine act predominantly on the heart, whereas phedracin acts upon the vessels and neosynephrin upon both the heart and the vessels.

(ii) Ephedrine and pholedrine cause an increase in heart rate (55% and 45% respectively); neosynephrin does not.

(iii) In the experiments on the isolated vessels a regular vasoconstriction was produced by neosynephrin and phedracin. An effect was not always to be seen with ephedrine and pholedrine; a relatively higher dose was required to produce it, and the effect, when it did occur, was prolonged.

These last results are of use in determining the possibility of substituting these substances for adrenaline in local anaesthesia. We investigated the subject by injecting mixtures of procaine and these four compounds into the flank of young guinea-pigs—anaesthesia being tested by the absence of skin reflexes to pin-prick. In the short series which we carried out we did not find ephedrine, pholedrine, or phedracin to be of value. On the other hand, anaesthesia could be prolonged with neosynephrin to within 25% of the duration resulting with adrenaline. These results substantiate the suggestions of others (Tainter and Stockton, 1933; Henderson, 1940) that neosynephrin might find use in local anaesthesia, for it possesses the advantages of being a substance which remains stable in solution and which may be sterilized by heat.

Discussion

The therapeutic usage of a pressor substance depends in theory upon several factors, among which the following may be considered: (1) the mechanism of the pressor response—namely, whether it is produced by action upon the heart or upon the vessels; (2) the effectiveness of repeated doses; (3) the duration of the pressor response; (4) the existence of any unpleasant side-reactions.

Ephedrine acts mainly upon the heart, but its stimulant action is so violent as to render it potentially dangerous in all conditions in which the heart is not entirely healthy. In animal experiments it soon loses its activity when injected repeatedly, and a reduction occurs in the duration as well as in the height of the pressor response. The routine administration of ephedrine before the injection of a spinal anaesthetic has clearly little to recommend it, especially as an attempted increase in blood pressure above the normal is often the cause of cardiac arrhythmia. The administration of ephedrine very frequently inflicts great subjective discomfort on the patient, and upon these grounds too its use should be carefully controlled.

Pholedrine also exerts its pressor effects through powerful cardiac stimulation, though compared with ephedrine it is less often responsible for irregularities of the heart-beat. When given repeatedly it loses its activity far less rapidly than does ephedrine. The side-effects resulting from its injection into human beings in reasonable doses (4 to 5 mg. i.v.—maximum of 20 mg. i.m.) are slight.

Neosynephrin acts upon both heart and vessels in an extremely favourable ratio. It improves the filling of the heart, it adds to the strength of the beat, and while increasing the heart output often causes slight bradycardia. Though it shows a relatively brief action after intravenous injection into an animal, yet when given intramuscularly, as it very frequently is under clinical conditions, its length of action (30 to 40 minutes) is not greatly different from that of ephedrine or pholedrine (40 to 60 minutes) by the same route. It may be injected repeatedly with no loss of activity. After the administration of neosynephrin the patient rarely complains of even slight discomfort.

Phedracin appears to act almost entirely upon the vessels. It loses its pressor action upon repetition and, like ephedrine, its length of action is reduced. Owing to severe constriction of the skin vessels it may produce an unpleasant feeling of tightness.

Summary

The importance of using a substance which acts directly upon the cardiovascular system, when it is desired to restore a low blood pressure, is stressed.

Pholedrine, neosynephrin, and phedracin are compared with ephedrine in a series of animal experiments.

It is suggested that neosynephrin as well as pholedrine should be adopted clinically as a substitute for ephedrine.

The results obtained with phedracin do not favour its possible therapeutic use, although it might with advantage be given a further clinical trial.

Neosynephrin may be of value as an alternative to adrenaline in local anaesthetic preparations.

We wish to express our indebtedness to Prof. J. H. Burn for his constant help and encouragement.

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A DEPRESSION-HYPOSEXUAL-ALOPECIA SYNDROME

BY

CLIFFORD ALLEN, M.D., M.R.C.P., D.P.M.
Squadron Leader, R.A.F.V.R.

AND

CARLYLE CARLYLE-GALL, M.R.C.S., L.R.C.P., D.P.M.
Squadron Leader, R.A.F.O.

Some years ago one of us (C. A.) treated a case of complete alopecia in a man of middle age. This man complained of deep depression, with very marked hypochondriacal trends, accompanied by absolute loss of sexual interest. The alopecia was complete and all hair-bearing areas were denuded, so that it was impossible to find any remaining hair. The lack of sexual interest occurred synchronously with the fall of hair, and the patient not only was impotent but showed no interest in his wife or other women.* Nor had he developed any abnormal form of sexual interest. This case progressed in spite of treatment, and when last heard of the patient had entered a mental hospital, as his depression had become severe enough for him to contemplate suicide. (Unfortunately, owing to the exigencies of the war, his notes are not available to us, nor is it possible to follow up his case.)

Record of a Recent Case

The present case is that of a man aged 33. He came from a normal family. His father died at the age of 64 from a perforated gastric ulcer, and still retained his hair at that age. His mother is still alive, is healthy, and has normal hair. She suffers from occasional attacks of migraine, but has no other symptoms of illness. He has five brothers; one died from a gastric ulcer, and another was operated on for the same reason. (One might suspect from this, and the fact that the patient also has gastric symptoms, that the family is an anxious one and that emotional disturbances tend to cause malfunction of the intestinal tract.) He had five sisters, but one died from pneumonia and one was murdered by her husband. The patient himself has had little other than the usual children's illnesses, except that he has suffered from typical migraine ever since he can remember: his eyes "half black out," then he sees bright lights and zigzags, and finally develops a severe headache which ends with nausea and sometimes actual vomiting. After the attack his head feels sore, but there is a general sense of well-being.

The patient was called up in November, 1940, and joined the R.A.F. He felt well and passed Grade I. A week later he was vaccinated, and seems to have reacted allergically to this. The first night he felt very chilled and his arm was excessively painful. He was faint next day and noticed that both arms had swollen—the oedema reaching down to his hands. He reported sick; but his condition was evidently not considered serious, and his arm was merely re-dressed. Then he complained of a sore throat and feelings of general malaise. This lasted about 14 days and then gradually passed away, although he never felt as well as he had done before. At the beginning of January, 1941, the hairdresser drew attention to a small area on the vertex of the head where there was no hair, and about the same time he himself noticed that there was a diminution of his sexual interest. Eleven weeks after the vaccination he attempted intercourse, but although he had been sexually deprived for some time he had an excessively delayed orgasm—so much so that his wife commented on it. He did not feel depressed at that period. With the passage of time the baldness developed in a patchy way, mainly over the posterior of his scalp. It then spread to the sides, and over the frontal regions the hair grew more and more sparse. He became quite bald. His eyebrows disappeared and he noticed large bare areas on his face, starting on each side of the chin and slowly spreading all over the lower face to coalesce with glabrous areas on the opposite side. This became so pronounced that he had to shave only once weekly instead of twice, as was his custom. The hair on his chest dropped out and a large amount of the pubic hair disappeared also. (This was mainly over the "male" abdominal distribution.) The only area unchanged appears to have been the axillary hair, none of which seems to have been affected even at the worst period. Simultaneously with the appearance of the extensive alopecia he felt depressed. That this was not the result of brooding on his condition but was related to his general feeling of malaise is shown by the fact that he stated definitely: "I felt depressed because I felt ill."

By June, 1941, he had reached the climax of his condition: his hair was absent except in the axillae, he was extremely hypochondriacal, was depressed, and was devoid of all sexual feeling. At this time he had an attack of abdominal pain, which he described as heartburn, but for which no organic cause was discovered. His sleep was poor and he ate little. He was transferred to an R.A.F. hospital in August, 1941, and has slowly improved since then. He was allowed home on short leave at intervals during September, October, and November, 1941. He felt little sexual desire with his wife, and when he did attempt intercourse—he felt he should do so to "prove his manhood"—his orgasm was delayed. The depression was sufficient to make him weep frequently, and he was unable to concentrate on anything. He could not write letters, and eight holes at golf exhausted him. He became excessively worried over his condition and has remained anxious about it ever since.

The condition appears to have followed his vaccination, but psychological factors may be important also—these being the fact that he was in some financial difficulty when he was conscripted into the R.A.F. and while away from home his wife developed a trivial meatal boil; but he was given a wrong idea of her state, and seems to have thought she was in danger of her life. Curiously enough, during his illness he suffered less from migraine than usual, having only three attacks during the whole of his service in the R.A.F.

In February, 1942, this man was still suffering from considerable alopecia and depression, and, as it was considered that it might be another year before he recovered, he was invalided, since it was unlikely that he would be of much value to the Service during this period.

Laboratory Investigations.—The patient's urinary male-sterone excretion was found to be 10.6 mg. a day, which is within normal limits. It is felt that this may not be significant either way, since he is now definitely recovering. The Wassermann reaction was negative.

Discussion

It appears to us that this patient is suffering from a syndrome, and since similar cases exist it is possible that it has not been recorded owing partly to the rarity of such extensive alopecia and partly because such cases fall into the hands of dermatologists who are not particularly interested in the concomitant psychological symptoms. The syndrome we would suggest consists of (1) wide-spread or complete alopecia; (2) depression with strong hypochondriacal features; and (3) diminution or complete lack of sexual desire, together with (4) diminished or absent capacity to fulfil the sexual act.

Alopecia.—The alopecia itself presents several problems. Is it directly dependent on the nerve supply or is it an endocrine deficiency which causes the fall? The distribution of the bald patches is not markedly symmetrical, so the suggestion is that the cause is endocrine rather than nervous. Again, there is no pattern suggestive of nerve or root distribution. Moreover, the delay between the causal factor and the onset of the loss of hair suggests an endocrine rather than a nervous mechanism at work. If it is an endocrine matter, then it would seem that there must be two endocrines—one which causes the growth of ordinary hair and one which stimulates the growth of sexual hair. The work of Broster and his collaborators (1938) on adrenal virilism has thrown considerable light on the endocrine factor—the adrenal cortex—and its relation to sexual hair. It seems probable, although there is no proof, that both hormones originate in the adrenal and complete alopecia is due to absence or diminution of them. The actual cause of the glandular damage, whether psychogenic or toxic, must be purely speculative. There is considerable evidence for the toxic origin. The amount of reaction evoked by vaccination, the loss of the feeling of well-being, and the fact that it is well known that alopecia commonly follows acute specific fevers, particularly if pyrexial, all suggest a toxic factor at work. On the other hand, there is the fact that this patient was in financial straits and was very anxious regarding his wife's health before he became ill. There are several well-authenticated cases in which anxiety has caused a fall of hair. For example, Spiegler (1918) recorded a case of a soldier who lost all his hair following the explosion of a shell close by him. Similarly, Pusey (1928) noted the loss of hair ten days after an emotional shock. Stern (1922) has suggested that the fall of hair is the extremity of the process which usually appears as greying of the hair. He, too, recorded alopecia following psychic trauma—the excitement of a barrage. Hurst (1940) describes cases of sudden greying of the hair within a week of strong emotional strain due to war-time experiences, also of permanent erection of the hair on the scalp and body, but does not appear to have seen any cases of alopecia.

Loss of Sexual Feeling and Power.—This lowering of sexual feeling and ability to carry out the act is very suggestive of endocrine disease. The attempts made by our patient seem to have had their origin in a psychic effort rather than a fundamental desire. It is a great pity that we were not able to arrange for investigation of his urinary male-sterone excretion during this time. On the other hand, he did not respond very strongly to injections of testoviron, so possibly the basic factor is a polyglandular one.

Depression.—The depression is accompanied by a heightened self-interest, which shows itself in hypochondriacal symptoms. The patient complains continually of his sad plight. He constantly draws attention to his terrible appearance and his miserable feelings. There is no retardation, and in neither of the cases seen has there been any delusional construction or hallucinosis. It might be tempting to explain the patient's reaction as a real response to his condition. There is no doubt that he does look bizarre with no hair or eyebrows, and he has some reason to complain and feel miserable. We would point out firmly that this is very unlikely to be the basic cause of his symptoms. We have seen pilots, air-gunners, and others who have suffered severe burns so that their faces were scarred and disfigured, but these men did not moan or complain. On the contrary, they were inclined to joke about themselves and were usually cheerful, although much more disfigured and more permanently scarred.

Prognosis.—The prognosis usually given by dermatologists is a hopeful one. Nevertheless the hair may take a year or even two before it grows again. Presumably the other symptoms also disappear with the reappearance of the hair, but we have had no opportunity of confirming this. That the prognosis is not always favourable is shown by the first case we saw. On the other hand, these cases must usually have a favourable termination, since wide experience in a number of mental hospitals has not brought us in contact with any further cases.

Treatment.—It would seem logical to treat these cases by psychotherapy, and this has been advocated by Hingston (1939), who claims favourable results. She also states that small doses of thyroid (1/2 to 2 g.) appear to have influenced the result. It seems more probable that testosterone propionate would be of value, but we are unaware of any really extensive and convincing experiments with it.

Conclusions

This combination of depression, alopecia, and lowered sexuality at once suggests some relationship, although doubtless a distant one, with Simmonds's disease. This illness, which is a polyglandular syndrome, is characterized by emaciation, anorexia, asthenia, precocious ageing, and general depression of glandular activity. It is usually accompanied by atrophy of the genitalia, cessation of the menses and sterility in women, and impotence and loss of sexual interest in men. There is in most cases a fall of the hair—so that the pubic and axillary hair may be absent. If the case is an early one the hair is found to be brittle and sparse. It is of interest to notice that Cahane and Cahane (1935, 1936) have described cases of diencephalic origin and suggested that these are related to Simmonds's disease. We feel that it would be unwise, on such slight clinical grounds as we possess, to make any suggestion as to the causation of the syndrome which we have described, except to point out its similarity to some of the other characteristics of endocrine disease and to suggest that it seems also to be of endocrine origin, although the cause of the damage to the glands is yet to be determined.

We have to thank Dr. Jocelyn Patterson for investigation of the sterone content of the patient's urine.

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The effect of acute loss of blood on normal persons has recently been investigated by R. V. Ebert, E. A. Stead, and J. G. Gibson (*Arch. intern. Med.*, 1941, **68**, 578). Between 760 and 1,220 c.cm. of blood was removed from each of 6 persons within 6 to 13 minutes; this was estimated to amount to from 15.5% to 19.7% of the total blood volume. Five out of six collapsed with weakness, nausea, blurred vision, sweating, and fall in blood pressure. Before the onset of collapse the pulse rate increased from 14 to 30 beats a minute, and at the height of the collapse the rate became slow (between 30 and 40 beats a minute). Restoration of the plasma volume began immediately after the bleeding and continued for the subsequent 72 hours, at the end of which it was approximately equal to the volume before bleeding. The authors observed that during the first two hours after venesection the increase of volume was contributed by a protein-poor fluid, so that there was decrease in the concentration of serum protein. After this, fluid and protein entered the blood stream simultaneously. At the end of 72 hours approximately one-quarter of the plasma protein was protein which had entered the blood stream after the bleeding. The proportions of the albumin and globulin fractions were unaltered. The authors conclude that loss of blood acted as a physiological stimulus to the production of normal protein.

THE INCIDENCE OF BREAST-FEEDING IN A SMALL MINING TOWN

BY

ENID L. HUGHES, M.B., B.S., M.Sc., D.C.H.

Assistant M.O. (part-time), Northumberland County Council

This is a study of the incidence and duration of breast-feeding in Newbiggin-on-Sea, a small town on the coast of Northumberland, with a population of just over 9,000. The data have been obtained by interrogation of the mothers attending the infant welfare clinic. Since its establishment the clinic has been characterized by an absence of "class feeling," which may well be found even in a town of this type; and the friendly relations existing among the health visitors, midwives, and doctors of the town have resulted in an attendance in 1940 of 95.7% of the babies born there in that year, and living for at least six months.

Views concerning the Incidence of Lactation

A particularly interesting paper giving her own experiences of lactation and its difficulties is that of Dr. Lucy Naish (1913). In this she states that "weaning at or shortly after birth is very common among the well-to-do classes, and there are signs that it is spreading gradually to the less well-to-do." Spence (1938) quotes recent studies on the incidence of breast-feeding in Edinburgh, Newcastle, and other places, and reports a definite decline. Some of the findings quoted in his paper are included here, with the results of the present investigation. Robinson (1939) has studied the incidence of breast-feeding in Liverpool, using welfare clinic records over the period 1918-37. She, unlike Spence, came to the conclusion that there was no real decline in breast-feeding, but that there was a shortening of the period of lactation. Blessing (1937) has investigated the incidence of breast-feeding in a suburban metropolitan area in the U.S.A., all his patients being delivered in hospital. Only 38% of mothers breast-fed entirely to 1 month; all disliked "mixed feeding." He attributes the poor result to a system of divided control, in which the obstetrician took no responsibility for the child's feeding.

Present Investigation

The babies here studied are those born in 1940 of Newbiggin parents and continuing to live there till at least 6 months old. (This excludes 5 babies who died before the age of 6 months, the evacuee babies born elsewhere, and 12 babies whose mothers came to Newbiggin for the birth and moved away shortly afterwards.) The babies thus defined number 112—apart from these, 5 babies did not attend the clinic. The total is a small one, and does not justify generalities; any interest in this work lies in the fact that it is on 112 out of 117 possible attenders—i.e., 95.7% of the baby population of 1940; it is not considered "representative" of anything except this town in this year.

The population is mostly concerned with mining. An analysis of the fathers' occupation is as follows: Mining, 65; H.M. Forces, 12; traders, 9; fishermen, 8; labourers, 8; schoolmasters, 3; bus-drivers, 3; unemployed, 2; policeman, 1; professional footballer, 1; not known (illegitimate), 1. In this first full year of war wages approximated among the mining community to £3 a week; there was no real poverty, and no shortage of food. The Government scheme for cheap milk came into operation in August, 1940.

Most of the deliveries were by midwives. The figures are as follows: Doctors' cases, 13 (11.6%); hospital or nursing home, 13 (11.6%); midwives' cases, 86 (76.8%). Naturally the greatest number of babies were first children; the numbers of children related to their position in the family were: first children, 45; second, 35; third, 15; fourth, 8; fifth to eleventh, 9.

Data were obtained of the age at which weaning occurred; if it was preceded by a period of partial breast-feeding this was noted. Note was also made of the position of the child in the family and of how many previous children had been breast-fed, this term being used here to indicate "fed wholly on the breast to at least 3 months." (This figure was adopted to fall into line with Winternitz, quoted by Robinson.) Those mothers who weaned very early were asked whether they knew of any reason for this, and an analysis of their replies is given further on.

Results

The numbers were considered not to justify a very detailed analysis. The duration of breast-feeding is summarized in Table I.

TABLE I.—*Duration of Breast-feeding (112 Babies)*

Time	Complete Breast-feeding	Partial Breast-feeding	Weaned
Up to 2 weeks	67%	2%	31%
1 month	55%	2%	43%
3 months	32%	10%	57%
6 "	19%	9%	72%

This shows a very high percentage of early weanings. Spence (1938) states that in Newcastle (using figures derived from Princess Mary Maternity Hospital and from a middle-class nursing home) "satisfactory breast-feeding in the neonatal period is maintained only by three-quarters of the mothers"; but the Newbiggin figure is even lower.

In Table II is given a summary of some of the figures quoted by Spence (1938), together with some from Robinson, for comparison with the present work.

TABLE II.—*Percentage of Babies Wholly Breast-fed—Recent Investigations*

	Finlay (Edinb.), quoted by Spence (1938). 3,000 Cases (Home Visits)	Brewis, quoted by Spence (1938) Newcastle Municipal Welfares (1,326 Cases)	Robinson Liverpool Welfare, 1937 (439 Cases)	This Work (112 Cases)
10th–14th day .	87%	—	—	—
At 2 weeks	—	—	86%	67%
At 3rd.mth. .	—	58%	48%	32%
3rd–6th mth. ...	55%	—	—	—
At 6th mth.	—	34·7%	29%	19%
After 6th mth.	38·5%	—	—	—

Reasons given for Weaning before 2 Weeks

The proportion weaned (31%) was so high that the reasons for weaning were studied in some detail. Five of these 35 children were never put to the breast, on account of the mothers' serious illness. Two babies were very small twins, and breast-feeding was not attempted. One baby was weaned at 3 days because of the mother's sore nipple (hospital case). Six babies were either never put to the breast or no serious attempt was made to establish breast-feeding and they were "taken off" the breast when 1 to 4 days old; the usual explanation given was that "there was no milk." In two cases "breast abscess" and in one case "engorged breast" was given as a reason; and two at least of these three babies were stated to be "sleepy" or lazy feeders. In one case the mother had "too much milk," and had experienced such pain and trouble with a previous child that she made no attempt to breast-feed. She was a poor type of mother mentally, and was nervy and worried. Her husband was in a mental hospital, soon to be discharged, and she was upset about this.

In the remaining 17 cases the reason given was either that the baby was not gaining (and most mothers are very averse to giving, or are not encouraged to give, complementary feeds) or that, with getting up and about, the milk failed. Usually these two reasons were combined.

Feeding of Previous Children

Of the 35 babies weaned within two weeks, 18 were first children. It is interesting to know how the other (experienced) mothers had succeeded with previous children. In all, these 17 mothers with more than one child had reared between them 28 previous children. Only 6 of these had been breast-fed to at least 3 months: 22 had failed before this. (Of the 6 successfully breast-fed, 5 belonged to one large family of 11 children, the youngest of which was one of the 1940 babies.) Of the 1940 babies breast-fed to 3 months or more, 11 were first children and 26 were children of experienced mothers. These mothers had reared between them 44 previous children:

36 had been breast-fed to 3 months, 4 had failed, and of 4 no information was obtained.

The numbers are of course far too small for conclusions to be drawn, but they certainly tend to support one's ordinary observation that where a mother has managed to nurse one child she is likely to do so again. Thus breast-feeding of the first baby becomes even more important, in giving the mother experience and confidence.

Complementary Feeding

This is usually regarded as a step to be avoided if at all possible, as predisposing to rapid weaning. I have wondered, however, whether instruction in it may not help an anxious mother over a period of temporary shortage of breast milk. The knowledge that she can do this while her own supply is being improved may be very helpful, as, otherwise, a hungry crying baby may make her despair of feeding and lead to her weaning it immediately. I have therefore examined the clinic records to discover what evidence they afford of the value of complementary feeding in prolonging the total time of breast-feeding. The figures below refer to babies starting complementary bottle-feeding before the age of 6 months. The supplement advised was usually, to begin with, about 1/2 to 1 oz. of dried milk mixture, to be given at the end of some or all breast feeds. Breast-feeding was prolonged for *only 2 weeks* or less in 7 cases. It was prolonged for more than 2 weeks in 24 cases, 8 of whom were first babies. These 24 cases are analysed in Table III.

Table III

Case	Started Complementing at	Finally off Breast	Time Complemented
1	1 week	3 months	2 months 3 weeks
2	1 ,,	1 ,,	3 ,,
3	2 weeks	2 ,,	1 ,, 2 ,,
4	2 ,,	5 ,,	3 ,, 2 ,,
5	3 ,,	6 ,,	5 ,, 1 ,,
6	1 month	10 ,,	9 ,,
7	1 ,,	6½ ,,	5 ,, 2 ,,
8	1 ,,	2 ,,	1 ,,
9	5 weeks	4 ,,	2 ,, 3 ,,
10	6 ,, (pyloric stenosis operation)	9 ,,	7 ,, 2 ,,
11	2 months	4 ,,	2 ,,
12	2 ,,	5 ,,	3 ,,
13	2½ ,,	10 ,,	7 ,, 2 ,,
14	3 ,,	4 ,,	1 ,,
15	3 ,,	5 ,,	2 ,,
16	3 ,,	4 ,,	1 ,,
17	3 ,,	7 ,,	4 ,,
18	3 ,,	4 ,,	1 ,,
19	3 ,,	10 ,,	7 ,,
20	3½ ,,	10 ,,	6 ,, 2 ,,
21	3 ,,	4 ,,	1 ,,
22	4 ,,	6 ,,	2 ,,
23	4 ,,	6 ,,	2 ,,
24	5 ,,	7 ,,	2 ,,

Thus 8 babies were 1 week to 1 month old when supplements were started, and breast-feeding was prolonged for periods of from 3 weeks to 9 months; 4 babies from 5 weeks to 2 months old were enabled to continue for periods of from 2 to 7 months; 8 babies from 2 to 3 months old continued for periods of from 1 to 7 months.

On the whole, therefore, the results are encouraging, as in many of these cases (particularly those which continued for several months) the feeding was very largely on the breast, in some instances being practically re-established, the mother supplementing only when she realized that her own supply was inadequate. I have looked for the baby who "prefers the bottle to the breast," but found him only when the breast-milk supply was very poor or the mother inexperienced or unwilling.

Discussion

It is interesting to compare the results obtained by Pooler (1930), working in North Derbyshire with a population also largely concerned with coal-mining. From a detailed analysis of 100 cases of early weaning he finds that in 63% the primary cause of weaning is the return to domestic duties. In about half of these there are additional predisposing conditions—e.g., too frequent feeding, depressed nipples, etc. Spence (1938) says: "Probably the most important cause of failure to breast-feed among those who desire to do so, is the temporary inhibition of lactation which occurs shortly after the lying-in period when the mother returns to her household duties."

Most of the Newbiggin mothers get up at the tenth day, and although the midwives continue to visit up to the fourteenth day many of the mothers have to plunge at once into full housework. Some of the fisherwomen, in addition, work at mending and setting the nets. It is too costly for many to arrange for extra help in the house after the two weeks; but, in any case, the importance of returning gradually to their normal duties is not sufficiently recognized by many mothers, one of whom, when urged to do so, said that "that would be behaving like an invalid."

Full details have been given of the 35 mothers who weaned in the first two weeks, as they formed nearly a third of the whole. For babies to be weaned at or before two weeks surely implies (except in the case of the mother's illness) either a very feeble will to nurse, or mismanagement, and sometimes results from the influence of friends and relatives, ignorance as to the value of small complementary feeds, or proper requirements of rest on getting up.

The midwife is often blamed for not seeing that breast-feeding is established; but, unlike the monthly nurse of the better-off classes, she is not in constant attendance on the mother. This ever-available support and advice is given by the grandmother or other female relative. (Sometimes the grandmother is anxious about some previous illness of her daughter's which she feels may recur with the strain of breast-feeding.) Most midwives are as keen as anyone to establish breast-feeding, but their one visit a day (after the third day) cannot replace the home atmosphere. Is enough care taken, one wonders, in educating the grandmother as well as the mother in the importance of breast-feeding, and of meeting the grandmother's doubts as to her daughter's fitness for this? The opinion of the senior midwife in the town was that many of the young mothers wanted to go to dances with their husbands, and so were not keen to establish breast-feeding.

Another point is that a young mother, especially with her first baby, becomes extremely anxious when it cries, and she is apt to attribute this to her own deficiency—"Not enough milk" or "Milk not doing any good"—an opinion that is often supported by her own mother. It is not easy to persuade her to persevere under these conditions, and, especially if the baby is not obviously gaining, she will turn with relief to a bottle and a box of food for which she feels she is not (psychologically) responsible.

Most of these mothers also firmly believe that it upsets the baby to complement, and that the two milks will not mix well at the same feed. Regurgitation of curdled milk is interpreted as a serious symptom: I have not met one mother who realized that "souring of the milk" was a natural and proper process. Education on this point might avoid many anxieties. It is probably this belief that leads often to the rapid weaning of a baby on complementary feeds; but the figures already given suggest that, with encouragement and advice, complementary feeding may be very valuable in prolonging lactation.

Summary

In a small mining town in Northumberland 31% of 112 babies born in 1940 were weaned before the age of 2 weeks; 57% were weaned by 3 months.

Reasons for early weaning are discussed. It is suggested that early return to domestic duties played an important part.

The anxieties both of the mother and of her home attendants need more attention and understanding in order to create a favourable environment for breast-feeding; this is specially important with the first child.

Complementary feeding has enabled lactation to be carried on for several months in some cases, and might be tried with more confidence in the neonatal period.

I am grateful to Dr. Tilley, acting medical officer of health, Northumberland, and to Dr. Jamieson, maternity and child welfare officer, Northumberland, for permission to publish these results. I also wish to thank Miss McDermott and Miss Weston, health visitors at Newbiggin, for their ready help and co-operation in the collection of the data.

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Medical Memoranda

Morbid Anatomy of Chronic Otitis Media

It is interesting to try to envisage the morbid anatomy of the temporal bones from the clinical data, radiographs, and other diagnostic aids. The more obvious abnormalities may prove mere palimpsests in the light of what is found at operation. The following 3 unilateral cases were among those chosen for conservative operation by the transmeatal route, with a view to providing better drainage and access for treatment.

Case 1.—The patient, aged 25, had been sent home from Gibraltar owing to otitis of ten years' standing. A small polypus protruded through an oblique perforation. Radiographs showed that pneumatization on the left side had been arrested in infancy (Figs. 1 and 2). At operation in November, 1941, a large infected cavity in the region of the mastoid antrum was evacuated; the rest of the bone was compact. The meatus was narrowed by osteophytes. At the end of December healing was in an advanced stage.

Case 2.—A sergeant aged 42 had been sent home from Iceland with a view to surgical treatment. He had had a perforation in Shrapnell's membrane for 15 years. At operation in August, 1941, a well-pneumatized temporal bone was found to have been invaded by a small cholesteatoma resembling a chamois-leather pocket, with foul green contents (Fig. 3). Within 8 weeks the ear was dry and healed and the hearing had much improved.

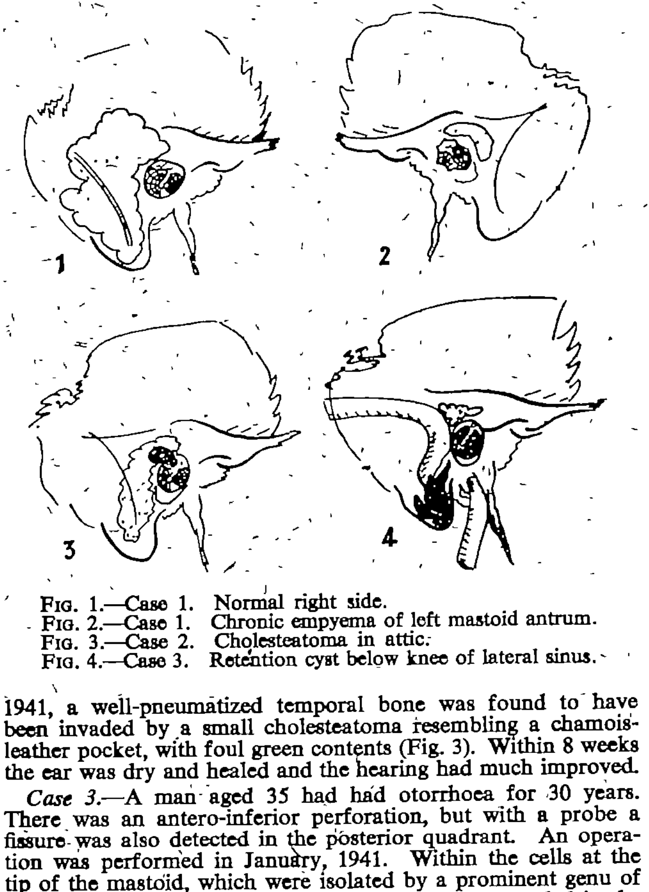

FIG. 1.—Case 1. Normal right side.
FIG. 2.—Case 1. Chronic empyema of left mastoid antrum.
FIG. 3.—Case 2. Cholesteatoma in attic.
FIG. 4.—Case 3. Retention cyst below knee of lateral sinus.

Case 3.—A man aged 35 had had otorrhoea for 30 years. There was an antero-inferior perforation, but with a probe a fissure was also detected in the posterior quadrant. An operation was performed in January, 1941. Within the cells at the tip of the mastoid, which were isolated by a prominent genu of the lateral sinus, was encysted fluid (Fig. 4). Suspended in the fluid were scintillating crystals (rectangular, with a corner missing) of cholesterin. The walls were of burnished bone, any lining membrane being invisible. The patient was subsequently passed A1 for the R.A.F. military police.

W. O. LODGE, F.R.C.S.Ed.,
Honorary Surgeon to the Ophthalmic and Aural Dept.,
Royal Halifax Infirmary

J. M. Brookhart, F. L. Dey, and S. W. Ranson (*Endocrinology*, 1941, **28**, 561) observe that there is direct evidence for believing that the site of the erogenic action of the gonadal hormones is in the central nervous system. In experimental work on guinea-pigs they found that animals with lesions in the anterior part of the hypothalamus fail to show pro-oestrual or oestrual behaviour, and that such behaviour cannot be induced in them by the injection of ovarian hormones alone or in combination with pituitary hormones.

Reviews

IMMUNOLOGY OF PARASITIC INFECTIONS

Immunity against Animal Parasites By James T. Culbertson, Assistant Professor of Bacteriology, College of Physicians and Surgeons, Columbia University. (Pp. 274. 36s. 6d.) New York: Columbia University Press; London: Oxford University Press.

Thirteen years have elapsed since the publication of Prof. Taliaferro's book entitled *The Immunology of Parasitic Infections.* The present volume of similar title may be regarded as a continuation of the first. In fact the author states in his introduction that he has taken Taliaferro's book as its point of departure, so much so that very few of the references quoted in the present volume antedate 1929. There is no doubt that Taliaferro's book, which collected in an authoritative manner a vast amount of scattered information on the subject of immunity to animal parasites, was followed by a great extension of researches in this field. It is chiefly with the results of these later investigations that the present volume deals.

The book is divided into three parts. Part I discusses natural resistance and acquired immunity and the general principles underlying these phenomena. Part II is devoted to the immunity to specific diseases, the most important of which is malaria. Part III considers applied immunity, the relation of immunological to morphological classification of parasites, and serological methods of diagnosis of infections.

Those who have followed the literature of the past ten or fifteen years will be well acquainted with the extent of that devoted to the immunological aspects of animal infections. Formerly the study of parasites was almost entirely morphological, but of late years these have given place very largely to immunological investigations, and it is with these that the author of this book deals so successfully that it is difficult to find fault with anything he has written. He has certainly given a most valuable review of the modern position of his subject, and immunologists and parasitologists alike will find Culbertson's *Immunity against Animal Parasites* an indispensable aid to their studies and future investigations.

ASPECTS OF GENETICS

New Paths in Genetics. By J. B. S. Haldane, F.R.S., Weldon Professor of Biometry in London University. (Pp. 206. 7s. 6d. net.) London: George Allen and Unwin. 1942

Books that comprise a series of special lectures can seldom possess, unless very extensively rewritten, the characteristics of textbooks or monographs. They have more the nature of a commentary, choosing for particular attention those aspects of the subject which have interested the author and to which he has devoted his own researches. Prof. J. B. S. Haldane's book is based on lectures delivered in Holland in March, 1940. The preface shows that he seems to feel that some apology is now needed for confining the published account to certain aspects of genetics, for a relative dearth of references, and for dealing so largely with the work of himself and his associates. It is clear that the lectures have been prepared for publication under conditions of considerable strain. He says that he hurried to get them into book form, but that meanwhile "I was called upon to undertake researches for the British Government designed to save the lives of certain members of its armed Forces. This research not only occupied most of my time, but left me in a state of fairly extreme physical exhaustion, for the conditions which I was investigating were of such a character as to cause loss of consciousness and other serious symptoms." He also states: "I do not even know whether I shall enjoy life and liberty long enough to correct the proofs." Actually, few if any readers will feel that any apology is necessary and all will enjoy these fascinating essays on selected topics in the spirit in which they were no doubt welcomed as lectures.

After a general survey a detailed analysis is given of certain biochemical researches, notably those concerning the development of colours in flowers. The next essay deals with genetics and development and is based on Gruneberg's interesting analyses of the manifold and complex effects of certain genes in the mouse. The remainder of this small volume, nearly half in fact, is devoted to human genetics. In this field recent contributions from this country have been substantial and important, and, if pride of place as regards basic theoretical advances must be awarded to the researches of R. A. Fisher, Haldane is easily first in ingenious and fruitful analyses of human data. A recent leading article in these columns[1] dealing with the sex chromosomes of man was largely concerned with his discoveries, and other contributions have formed the basis for several annotations.[2] Haldane in this volume discusses a number of these fascinating discoveries and speculations, and must be congratulated on his success in making some difficult topics comparatively simple to anyone with a knowledge of elementary genetics.

Minor criticism is not called for, but the remarkable statement on page 194 must surely be due to the compression into part of a single sentence of a doubtless complicated affair: "I have personally been fortunate in securing the advice, if not always the agreement, of his distinguished successor Prof. Fisher, until, as the result of a brutal assault by employees of University College, London, whilst attempting to enter his laboratory, he was compelled to leave London." Foreign readers will be numerous, and it is to be feared that some of them may form an exaggerated impression of the perils of English academic life.

DISEASES OF THE HEART

Diseases of the Heart, Described for Practitioners and Students By Sir Thomas Lewis, M.D., F.R.S., F.R.C.P. Third edition. (Pp. 297. 15s.) London: Macmillan and Co. 1942

Nine years have elapsed since the first publication of *Diseases of the Heart,* by Sir Thomas Lewis. During this period it has kept its place as one of the best, and perhaps the best, short treatises in English on heart disease. In this third edition the work is essentially in its original form, but a careful revision has been undertaken and such relevant advances in knowledge as might prove useful to practitioners have been incorporated. Cautiousness of statement, avoidance of theorizing and conjecture, and insistence on bedside as distinct from instrumental methods are still cardinal features of the work. While radiological and electrocardiographic methods are described in relation to their specific uses in particular maladies, no separate discussions of these methods have been undertaken. In the past decade the conception of left ventricular failure has developed and has undoubtedly contributed to a more complete understanding of heart failure; it is therefore rather surprising that this important principle has not here been more unreservedly recognized and more closely woven into the text. The chapter on effort syndrome is naturally of current interest; present-day problems of medical examination of recruits and conditions of military service which differ from those obtaining in the last war have reorientated ideas on this functional disturbance, and there can be no doubt that psychological rather than infective causes preponderate.

To the student, the practitioner, and indeed all who seek a lucid, logical, and practical exposition of cardiology, free from fads and fancies, this work by Sir Thomas Lewis cannot be too strongly recommended.

CALCULATION OF FOOD VALUES

Food Values in Shares and Weights. By Clara Mae Taylor, Ph.D., Assistant Professor of Nutrition, Teachers College, Columbia University. (Pp. 92. $1.50.) New York: The Macmillan Company. 1942

The appearance of Dr. Clara Taylor's name as the sole editor of this book, which is intended to replace Rose and Taylor's *Food Values of Recipes in Shares and Vitamin Units,* comes as a melancholy reminder that in the recent death of Mary Swartz Rose not America only but all the civilized and scientific world lost one of its leading nutritional experts. Dr. Taylor has dedicated this book to the memory of her late colleague, and this serves further to emphasize the fact that in first proposing the "share system" for assessing diets Prof. Rose added an ingenious and extremely useful device to the many pieces of scientific research that constituted her contribution to the theory and practice of nutritional science.

The idea seems simple enough once someone had the ingenuity to think of it. You take the average requirements of the "average" individual for each essential nutrient, and divide them all by thirty. Each "share" so calculated then becomes the unit for dietary evaluation and planning. Every food will, according to its composition and the size of the portion, contribute a certain number of "shares" of its individual nutrients. These may be tabulated for all the foods under consideration, the nutrient shares totalled, and the results compared with requirements—obviously 30 shares of each nutrient for the "average" individual, but different amounts for others, according to sex, age, occupation, and so on.

Dietary analyses thus constructed are free of all units: ounces, grammes, pints, millilitres, microgrammes, international units all disappear, and calculations are made in terms of "shares" only. To this end Dr. Taylor's book gives, first, recommended daily allowances (in shares) of specific nutrients for men, women (non-pregnant, pregnant, and lactating), and children of various ages. Then come 33 pages of a table showing the "share" analyses of all the most important American foods, both raw and as prepared according to certain selected recipes, of which some details are given. A corresponding table of food values in weights occupies another 30 pages. There is much additional useful information in this book, which is of excellent appearance and handy shape, as well as some "specimen blank" pages ruled for the reader to use on his own diets. Practitioners would certainly derive much interest from reading this book, and still more from using its procedure and facilities to examine the diets of their own households; sometimes, possibly, the interest might be tinged with a little disquiet.

Notes on Books

Basic Concepts in Social Case Work, by HERBERT H. APTEKAR, is published in this country at 15s. 6d. by the Oxford University Press. It is a book for teachers and students of social case work and deals with the fundamental approaches to the subject with numerous illustrative examples. This may not prove of great interest or importance to medical readers except in so far as they ought to know something of the principles on which the social services ancillary to medicine work. Two important principles are insisted upon in this book which perhaps all social workers would do well to remember. First, the social worker has to mediate between the individual and the community with real responsibility to the latter, while the doctor, in his capacity of private practitioner at any rate, is more concerned with the former. Secondly, the social worker is concerned with the present situation and is not primarily concerned with causal factors. These are the province of the psychotherapist, and the social worker is not a psychotherapist.

Mrs. CLAIRE LOEWENFELD, in response to public demand, has prepared a set of printed leaflets on *Britain's Wild Larder,* giving practical directions on the gathering and preparation of wild plants, herbs, fruits, and berries, many of which are rich in vitamins and agreeable flavours. There are three leaflets under the general heading "Wild Plants and Herbs" (price 3d. each); three leaflets on "Wild Fruits and Berries" (price 2d. each); and a third edition of the author's earlier leaflet on the collection, preparation, and use of wild rose hips (price 2d.). The leaflets can be obtained at the leading London bookshops or by direct application to Mrs. Loewenfeld at Hedgerose, Buckland Common, near Tring, Herts. The whole set will be sent for 1s. 6d. post free; the postage on individual groups of leaflets is 1d.

Preparations and Appliances

WATER CHLORINATION OUTFIT

We have received from Pond's Extract Company, Ltd. (Perivale, Greenford, Middlesex), samples of their emergency outfit for water sterilization. A solution of sodium hypochlorite containing 2.5% of available chlorine is provided in glass ampoules, the usual size containing 5 c.cm., which is enough for 2 gallons of water. The ampoules being hermetically sealed, deterioration is prevented, and their tapering ends are easily snapped off when they are required for use. The outfit includes tablets of sodium hyposulphite for neutralizing the chlorine after disinfection in order to make the water palatable.

Boots Pure Drug Co., Ltd., have put on the market half-gramme tablets of sulphaguanidine, the new sulphonamide for treatment of bacillary dysentery and for prophylaxis before operations on the colon and rectum.

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[1] *British Medical Journal,* 1941, 2, 202.
[2] Ibid., 1940, 1, 698; 1941, 1, 562; 1941, 1, 896; 1942, 1, 420.

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COMPLACENCY IN ANAESTHESIA?

There are perhaps few subjects that lead to such energetic and informed discussion in our columns as anaesthesia. The shortest note, for example, on ether convulsions is followed by letters which far exceed in length the original communication. The high drama of bringing back to life by cardiac massage a patient who has died on the table inevitably evokes letters of praise and of criticism. In fact the recording by Mr. Hamilton Bailey of his unusual experience, and the subsequent interesting recital of his experience by Major John Nicholson, provoked Dr. John Elam to wonder whether anaesthetists were not getting too complacent in accepting with apparent equanimity a death rate on the table of between 1.3 and 1.8 per 1,000. He made what seems to be a useful suggestion—namely, that the Association of Anaesthetists might carry out an investigation into the relative safety of the various anaesthetics now used in general surgery and so lead to an assessment of their indications and contraindications. Later correspondents have renewed several old challenges. Dr. Massey Dawkins offered some slight correction to the view that complacency in anaesthetics may exist by giving his experiences of general anaesthesia carried out in the periods 1921-5 and 1931-5. In the first period deaths on the table amounted to 4.03 per 1,000, and in the second to 2.3 per 1,000. It is as well to remember that a death "off the table"—e.g., from subsequent lung complications—may also in part be the fault of the anaesthetist. But the part of the surgeon in such catastrophes must not be ignored: by faulty judgment in the choice of operation, by an operation entailing too severe a loss of blood, by heavy handling of viscera, he may be responsible for post-operative complications unjustly laid at the door of the anaesthetist.

But there is one theme that has recurred in this and other correspondence in our columns during the past few years—namely, that the standard of anaesthesia in this country as a whole is unsatisfactory. If this feeling is indeed widespread, then Dr. Elam need have no fears about complacency in the specialty which he combines with general practice. Indeed we may hope that complete satisfaction will never be reached, for such a state leads to stagnation of ideas and of effort. And the successful introduction of new techniques, new modifications of old techniques, new apparatus, new agents, all show that the specialty of anaesthesia is as alive to its opportunities and responsibilities as any other branch of medicine. The modern anaesthetist is indeed becoming conscious of the fact that his work is that of applied physiology, and it is, we believe, this change of attitude which has made both for advance in the subject and for the critical attitude towards it that has so healthily developed. The good is the enemy of the best; and if the level of the best is high and that of the good not always very, very good, then comparisons between different groups are apt, as Dogberry said, to become "odorous." No one can get away from the fact that experience teaches. It is inevitable that the occasional anaesthetist has come in for criticism, and that the whole-time anaesthetist seeking perfection in an imperfect world should wish all anaesthetics for conditions other than minor ones to be given by medical men with special experience or a special diploma.

We believe that all the wrongs there are in the situation can be traced to the fact that medical education has not kept pace with the innovations that have flooded medical practice during the past fifty years. The developments of modern anaesthesia and modern surgery have gone hand in hand, each aiding and abetting the other. The higher the art of the anaesthetist, the more bold can the surgeon be in his exploration of new fields; and the adventurous and imaginative surgeon inevitably stimulates his anaesthetic colleague to introduce new measures that will enlarge his scope. A medical student standing on the outer fringe of an admiring circle in the operating theatre must view the modern anaesthetist somewhat as the apprentice in the street used to view the mediaeval alchemist. If his lot is that of the bulk of the profession—namely, to become a general practitioner—it is unlikely that he will ever preside over the mysteries of the McKesson. In practice what he wants to know is how to use the rag and bottle, or mask and bottle, with safety and efficiency, and how to give a gas without making the patient purple. And, too, we would make the plea that he should thoroughly master the technique of giving the intravenous anaesthetics such as hexobarbitone. First and foremost the general practitioner needs to have a thorough working knowledge of anaesthesia for minor surgical procedures. Secondly, he should be fully acquainted with the snares and traps that beset the giving of anaesthetics in the old-fashioned way for the occasional major emergency. Only too often he has to learn the rudiments of the art when engaged in actual practice, and if, indeed, the standard of occasional anaesthesia is lower than it should be, then the blame must be distributed between those who teach this subject, those who draw up the curriculum, and those who conduct anaesthesia. Sooner or later a carefully thought out answer must be given to the question, "How far does medical education as at present carried on in the medical schools of this country prepare the student for work in general practice?"

The immediate problem, as we see it, is how to reconcile the ideals of the whole-time staff anaesthetists of this country, who are second to none in the world, with the need for grounding the embryo general practitioner in methods which most of the experts have abandoned as obsolete. All are agreed that the curriculum is overcrowded, and the student has little time to learn the simpler anaesthetic techniques which he will be called upon to practise in small cottage hospitals and in emergency work in humble homes or factories or camps or ships at sea. A nodding acquaintance with modern apparatus will not help him then. Mr. Cecil Hughes, in his letter printed on June 6, says that "the advent of 'machines' has undoubtedly led to a deterioration in the anaesthetic education of our students, a very large number of whom when qualified have probably never seen, let alone given, chloroform anaesthesia. If every student were taught to give a mask anaesthesia with C.E. mixture . . . he would certainly be more fitted for general practice, and for work in the smaller hospitals where these machines are not always available. . . . Chloroform has to be, and always will be, used at times for various reasons and circumstances, and it is deplorable that students should qualify without being used to its administration." It is too much to expect the new graduate to be a competent anaesthetist, but elementary instruction in anaesthesia should never be regarded as a mere matter of getting signed up: teachers and examiners should insist on a minimum standard of knowledge upon which experience can build—*and the maximum amount of practice in the simpler methods*. But, whatever method of anaesthesia is taught or attempted, it remains true that any technique can be dangerous if the user is incompetent. This raises the question whether the general practitioner of only average anaesthetic experience is fully competent to anaesthetize patients requiring a major operation. The practitioner who is frank with himself will surely admit that his competence cannot be as great as that of the man who devotes himself exclusively, or at least largely, to mastering special techniques and acquiring detailed knowledge through special study and research. It is self-evident that the more perfect the anaesthesia the better will be the operating conditions for the surgeon; and a surgeon will always do better when he works with an anaesthetist who understands his ways and whose skill as an anaesthetist he fully trusts. The close relationship between surgeon and anaesthetist, a subject dealt with in an interesting article by N. A. Gillespie,[1] is of the highest importance to the object of this relationship—the proper treatment of the patient and his ultimate recovery. To this end everything else must be subordinated, although, human nature being what it is, "at some time or another," as Gillespie says, "we have all been guilty of allowing our personal pride to supplant the patient's interest." There is one aspect of this which has worried not a few surgeons and anaesthetists, and that is the occasional insistence of the general practitioner that he shall administer the anaesthetic to a private patient of his about to undergo a major operation. The surgeon who counter-insists that he must bring his own anaesthetist is unlikely to have his services called upon a second time, for obvious reasons. It is not suggested that such a point of disagreement between practitioner and surgeon is common, but at the same time it is useless to blink the fact or to evade it by soft words. The occasional anaesthetist in general practice must recognize his limitations, perfect himself in anaesthesia for minor conditions, and seek to employ a specialist anaesthetist for major and difficult operations just as he seeks to employ a surgeon with special skill to perform them.

As Gillespie brings out in his article, during recent years there has been a most fruitful revival of interest in, and original work on, anaesthesia. There is need, he says, for the keeping of records by anaesthetists, so that analysis of such records will enable them to give a more convincing answer to the usual question in the operating room, "Is he all right?" He argues that the anaesthetist with special knowledge should be used in diagnosis and treatment of post-operative complications; for example, his familiarity with the technique of intubating the respiratory passage enables him to treat atelectasis by suction drainage. The anaesthetist's work does not in fact begin and end in the theatre, but should begin and end at the bedside before and after operation.

Largely through the efforts of the Association of Anaesthetists in this country, the English Royal Colleges have instituted a diploma in anaesthetics, now rapidly becoming recognized as a necessary qualification for whole-time staff appointments. It is to be hoped that the examination for such a diploma will not become too theoretical, and will lay greater stress on practical knowledge, practical experience, and practical ability. The creation by Lord Nuffield of a Chair of Anaesthesia at Oxford has done much to raise the status of the specialty, and will no doubt bear increasing fruit in applied research.

APPLIED PSYCHOLOGY IN THE ARMY

It has become all too obvious these days that the waging of successful war is essentially a matter of applied science. Victory is likely to rest not so much with the big battalions as with the side that applies scientific knowledge and methods most thoroughly in all possible fields of endeavour. Nevertheless this does not mean that the individual has ceased to be important. On the contrary, he has become even more important. Successful war more than ever depends on the intelligence, initiative, and courage of the individual soldier.

Can science be applied in some way to the individual, and, more especially, can it be applied to the selection of leaders, who have the greatest responsibility of all? An attempt has been made by the British Army to answer this question in a very interesting and promising piece of work which has been under way for some time past. It was called into being partly as a means of reducing the wastage in officer training, as it was found that a certain proportion of those picked out for training failed to qualify for commissions, and the question arose whether the methods of selection for training purposes could be improved, saving thereby a considerable amount of time and effort. A refinement of this aim obviously consists in adopting methods, if they can be found, which will not only prevent failure but will choose the very best from the material available. The first unit for officer selection was established in Scotland and has now been working long enough to give that amount of confidence in the results which has justified the setting up of similar units in different parts of the country. The method consists in a study of the individual by a team of people consisting of psychiatrists, psychologists, and military testing officers, the latter being officers with military experience who live with the candidates during the three-day period of their residence at the unit, and who watch them perform a series of tests designed to elucidate their physical stamina, their behaviour in emergencies, and their ability to solve simple practical problems in the field. A central feature of the procedure is the psychiatric interview, which is designed to get a picture of the candidate's personality and leading traits of character and temperament. There is as yet no test or series of tests which will portray temperamental qualities in a more reliable way than the psychiatric biographical method. The psychiatrist's daily work consists so largely in the assessment of temperamental factors and resistance to stress, both internal and external, that he is well qualified to assess the probable reactions of the individual under war conditions. If the psychiatrist himself has had combatant military experience he is doubly equipped.

Intelligence testing is on a more systematic footing and is capable of application to a number of individuals at one time. Group testing of this sort is a routine at the unit, but the psychologists who are attached to it work all the time on possible improvements in method, and especially on tests which will throw light on some aspects of temperament; but such observations must always be dovetailed with the psychiatric survey, keeping the whole procedure essentially a clinical one. Each candidate spends between two and a half and three days at the unit, and the reports from the psychiatrists, psychologists, and military testing officers are collated at the end of that time and submitted to the president of the Board, who is a serving officer from a field unit, and in whose hands the ultimate decision lies.

The procedure thus briefly outlined has the effect, it is found, of giving a sense of satisfaction and fair play to the candidate for a commission. It aims very much at detecting fundamental qualities, independent more or less of education and upbringing, and so has the advantage of giving the chance to show his true form to a young man who may have lacked educational opportunities but may possess qualities of leadership. There are already indications that, because the selection procedure is now apparently an exacting one, considerable prestige is attached to successful emergence from the ordeal. This cannot but have a good effect on morale, both on the officer himself, who knows he has passed such tests, and on the men under him, who know that he has been able to survive such a careful method of selection. There are promising indications, also, that the wastage in officer-training may by this method be much reduced. Incidentally there is in this war-setting an anticipation of that principle of equality of opportunity which has been so much talked about with reference to post-war social legislation. Such efforts as are represented by this War Office experiment to introduce scientific method into the choice of officers are part of a pattern for the scientific organization of our fighting Forces. The Army Directorates responsible—the Directorate of Selection of Personnel and the Directorate of Army Psychiatry—will have the good wishes of everyone in their pioneer work in this direction.

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[1] *J. Amer. med. Ass.*, 1942, **118**, 787.

MALARIA IN BRITAIN

An article in this issue by Prof. Warrington Yorke on malaria imported into this country in persons returning from service in endemic zones is particularly apposite at the present time. Such persons returning on leave to homes scattered throughout the British Isles may be taken ill suddenly with malaria, and in the absence of proper diagnosis and treatment are only too apt to die. Such a state of affairs should not obtain if the possibility, indeed probability, of malarial infection is adequately appreciated by the medical practitioners throughout the country. Under peacetime conditions, however, instruction on the disease to the undergraduate student was inadequate, because the condition was regarded as a strictly tropical entity. This view is at least open to grave objection in a maritime race; and, under conditions such as those which now obtain, it requires early amendment. It is gratifying to find that certain medical schools are taking steps to remedy an obvious defect by providing instruction on this and allied subjects for their students in the medical curriculum.

HYPERTENSION IN UNILATERAL RENAL DISEASE

It has been known for some years that unilateral renal disease may be found in patients, especially young persons, who have succumbed to hypertension. Such cases were occasionally mentioned before the work of Goldblatt,[1] and, later, that of Wilson and Byrom,[2] called attention again to the close relation between hypertension and kidney disease. This work, which has already been reviewed in these pages,[3] provided clinicians with the hope that cases might be found from time to time in which hypertension had been caused by disease in one kidney only and might therefore be amenable to cure by nephrectomy. The hope has been justified, and a number of cases have now been published in which nephrectomy has been followed by a return of the blood pressure to normal. The first successful case was that of Butler.[4] This was in a boy of 7 who developed unilateral pyelonephritis after removal of a renal calculus. The blood pressure gradually rose to 160/105, but returned to normal immediately after nephrectomy.

It is impossible in a short space to review all the cases which have now been published, and in any event they are difficult to classify. The most successful results have been obtained in children with hypertension, and the commonest cause has been some congenital abnormality of the kidney, with or without superadded infection. Much less satisfactory, as might be supposed, are cases occurring in elderly persons in which the aetiology of the hypertension is less certain and evidence of a completely normal kidney on the side not obviously diseased is less convincing. It is still difficult to decide what the indications for nephrectomy are. Abeshouse,[5] in a comprehensive but rather lengthy review, agrees with the criteria suggested by Schroeder and Fish—namely, that the hypertension should be of recent origin; that the renal lesion must be confined to one kidney; that the combined renal function must be normal; that retinitis should be absent; and that the hypertension must be persistent. These criteria are largely a matter of common sense, but a recent case published by Platt[6] shows that even in the presence of retinitis and papilloedema the operation may be justifiable, in fact life-saving.

So that the position may be clarified more exact observations are needed, and physicians and urologists should be on the alert. Every case of hypertension, especially in a young person, in which the aetiology is not obvious should have a thorough urological investigation. Conversely, the blood pressure should be taken in every urological case. Where persistent hypertension occurs with unilateral disease nephrectomy should be contemplated, not merely from the urological point of view but as a possible means of curing the hypertension.

ENDOCRINE FACTORS IN ACNE VULGARIS

Of late years the impression has become stronger that the aetiology of acne is more complicated than was formerly believed. Because the one undisputed fact about acne is that it makes its appearance almost invariably at about the age of puberty, the influence of the endocrine glands has been postulated by many as a factor in its aetiology. So common are an oily skin and acne in early adolescence that it has even been held that their presence is normal and their absence abnormal. The association between acne and puberty has naturally focused attention on the relation between acne and the sexual glands. Nevertheless, non-gonadal endocrines have also been incriminated by many observers. Dr. Lipman Cohen,[7] in a laborious and exhaustive review of the subject, concludes, firstly, that acne occurs with abnormal frequency in connexion with certain disorders of the endocrine system, such as tumours of the suprarenal cortex, and during the administration of androgens such as testosterone propionate. This has often been seen during its use for hypogonadism—but nevertheless certain authors recommend it as a treatment for acne. In an American prison 148 men were treated for acne by testicular implantation and 99 were said to have improved. But such opportunities rarely come the way of the dermatologist. Another factor often evoked to explain acne is a disturbed carbohydrate metabolism. But there seems to be little reason to believe that it is at all abnormal in acne, though Semon and Herrmann's results in the treatment of acne by injections of insulin are suggestive. Other disorders of metabolism which have been held responsible for acne in greater or less degree are changes in water metabolism, especially retention of water in the skin. The Suttons, father and son, describe acne as a "primary epidermal lipoidosis" and as a "pustular lipoidosis." The sheet anchor in their method of treatment is a low-fat diet, from which they claim excellent results. But another

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[1] *J. exp. Med.*, 1934, **59**, 347.
[2] *Lancet*, 1939, **1**, 136.
[3] *British Medical Journal*, 1940, **1**, 138.
[4] *J. clin. Invest.*, 1937, **16**, 889.
[5] *Surgery*, 1941, **9**, 942; **10**, 147.
[6] *Proc. roy. Soc. Med.*, 1942, **35**, 317.
[7] *Brit. J. Derm. Syph.*, 1941, **53**, 231, 269.

American dermatologist, Becker, advises a high-fat diet to compensate for the calories lost in the reduction of carbohydrates that he advises. The more one studies the literature of this subject the more difficult it becomes to draw any clear-cut conclusions. The only real argument in favour of an endocrine aetiology is the regularity of its appearance at puberty and its ebb and flow with the menses. As regards treatment, Stryker and Bloom very appositely point out that the majority of articles praising endocrine therapy deal with series of fewer than ten cases each, usually without any control series—and Lynch reports that he obtained an improvement in 64% of his controls. In fact, the uncritical nature of so many reports confers no credit on clinical investigation.

BIOLOGICAL VALUES OF BREADS

The biological value of a bread comprises its content of protein, carbohydrate, vitamins, and salts, and also its digestibility. Some of these factors can be determined chemically, some by experiments on animals; but some must be determined by experiments on human subjects. Murlin *et al.*,[1] by experiments on ten healthy male subjects, have lately compared three whole-wheat breads, one whole-wheat cereal biscuit, and three white breads for digestibility and biological value of proteins. They had six-day feeding periods, twenty-four-hour urine analyses on the last four days, and analysis of faeces in one lot for the full period. They found that the whole-wheat breads gave lower true digestibility values for the protein than the white but produced higher biological values. Making bread with "high vitamin" yeast or eating extra B-complex vitamins separately seemed to improve the biological value of the proteins. The apparent digestibility of carbohydrate and fat was the same whichever kind of bread was eaten. Thus the "indigestible residue" of the whole-wheat products did not, in this experiment, have the effect usually ascribed to it. Macrae *et al.*[2] have fed human subjects over a period of twelve days with a diet of bread (white, fine wholemeal, or coarse wholemeal), margarine, milk, marmalade jelly, and mild ale. During the last seven days, total energy, nitrogen, and fibre of the food consumed and of the faeces excreted were determined. The average net absorptions of the energy, nitrogen, and fibre of the white bread were 96.1, 91.0, and 65.8%, of the fine wholemeal bread 86.9, 85.3, and 14.0%, and of the coarser wholemeal bread 87.1, 85.7, and 9.7%, respectively. The intake of nitrogen per 100 g. wholemeal bread eaten was 2.91 g., and of white bread 2.7 g., but this advantage was neutralized by the larger amount of nitrogen in the faeces from the wholemeal bread. The degree of fineness to which the wholemeals were ground made no significant difference to the utilization of the energy or of the nitrogen they contained. Krebs and Mellanby[3] have found, also by experiments on human subjects, 94% utilization of calories and 89% digestibility of protein in wheatmeal bread of 85% extraction (the national wheatmeal bread). From a comparison of these with Macrae's figures they argue that the digestibility of both 75% extraction flour (white) and national wheatmeal is much greater and the differences between them much smaller than was assumed by Wright[4] when he put forward the opinion—"that the adoption of the wholemeal loaf would not result in any appreciable saving in the energy content of the nation's dietary, while it would cause a significant reduction in both the quantity and quality of protein available for human consumption." Kodicek[5] has concluded from various calculations that the eating of wholemeal bread instead of white bread, in conjunction with the average dietary available to-day, would raise the intake of nicotinic acid from the minimal requirement (8 to 10 mg. a day) to about 12.3 mg. Wheatmeal bread, he says, would be almost as effective. Thus, from the human standpoint, evidence is accumulating of the superiority of wheatmeal over white bread.

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[1] *J. Nutrit.*, 1941, **22**, 573, 589.
[2] *Chem. & Ind.*, 1941, **60**, 723.
[3] *Lancet*, 1942, **1**, 319.
[4] *Chem. & Ind.*, 1941, **60**, 623.
[5] *Lancet*, 1942, **1**, 380.

FERTILITY STATISTICS

A very limited edition of Part II (Civil) of the Registrar-General's Review of England and Wales, 1938, has been printed for official use. The publication can be consulted at Somerset House or at Terra Nova, Lancaster Road, Southport. A few copies are available for temporary loan to approved persons having an acknowledged interest in vital statistics, and application should be made to the Southport office. The volume contains the usual tables of population, births, marriages, etc., but the principal interest is in the new feature—the first analysis of the information bearing upon the fertility of women in England and Wales, collected under the Population (Statistics) Act of 1938: the data relate to the second half of that year.

Almost one-third of the mothers of legitimate children during this period were aged 25–29, and nearly one-quarter were in each of the adjacent age groups 20–24 and 30–34. It is interesting to note that the intervals between marriage and the first birth in 1938 show that about 40% of women who married before 20 years of age must have been pregnant before marriage, about 30% of those who married at 20, about 20% of those who married at 21, and 8% of those marrying at 30–34. Half the mothers of illegitimate children were under 25. When the number of children born was related to the number of women in the various age groups, a rapid decline with increasing age was shown in the legitimate birth rate. At ages 15–19 the proportion of married women producing a child was one-half, at ages 20–24 the proportion was one-quarter, and in the 35–39 age group the rate had declined to one woman in twenty. The trend of the illegitimate birth rate, by ages of mother, did not decline continuously: the rate was highest at 25–29 years, but there was little change between ages 20 and 39. The first confinements formed 42% and the second 25% of the total confinements. Fertility in 1938 declined continuously as the duration of marriage increased from 0 to 10 years. Fertility immediately after marriage has declined since 1911, by one-third for women marrying at 20–26, and by one-quarter for those marrying at 27–30. Statistics of twins and triplets are given for the first time. One of every 42 children born was a twin, and one in every 3,873 a triplet. The risk of a confinement producing a multiple birth increases with age of mother up to ages 35–40, where it is a maximum. The report shows that the "adjusted net reproduction rate" was 0.84, or 16% below the necessary standard for reproducing the population. If an ultimate decline in the native-born population is to be averted an increase of 19% in the reproduction rate will have to take place. Discussing how this increase might be brought about, the Report states that in 1938 there were in this country 275,000 spinsters aged 40 to 44.

The Prime Minister of Turkey, Dr. Refik Saydam, who died suddenly at Istanbul on July 8, had made his name as a physician and personal medical adviser to Kemal Ataturk before entering political life as Minister of Health after the establishment of the Turkish Republic. He showed energy and great administrative skill in devising and carrying out hygienic measures. The health services of Turkey owe much to his statesmanship and creative vision.

NUTRITION OF EXPECTANT AND NURSING MOTHERS

A special committee set up by the People's League of Health in July, 1935, to investigate and consider the nutrition of expectant and nursing mothers in relation to maternal and infant mortality and morbidity has prepared an interim report of its research. This document is signed on behalf of the special committee by its chairman, Prof. James Young, by Dr. C. O. Hawthorne, chairman of council of the League, and by Dr. W. C. W. Nixon, medical secretary of the special committee. The report, with minor omissions, is printed below.

The committee has completed a survey which involved the study of the records of over 5,000 women and which it believes to be more comprehensive than any similar investigation previously carried out. The League has been fortunate in enlisting the co-operation of 10 London hospitals.

A Statistical Survey

The investigation was carried out from March, 1938, to the end of 1939, and involved the keeping of accurate records in the case of 5,022 women and the compilation of 324 statistical tables. This was rendered possible only by the generous and unstinted services of the staffs in the various hospitals and of the statistical member of the committee (Mr. W. T. Russell) and his assistants. The People's League of Health is indebted to three commercial firms—Vitamins Ltd., Crookes Laboratories, and Roche Products Ltd.—for free gifts of the vitamin and mineral elements required.

The main investigation was planned to show whether additions of the appropriate vitamins and minerals to the daily food would have a beneficial effect on the course of pregnancy and labour and on the newborn child. In order to obtain some information concerning the type of diet consumed by the group of women to be studied, an inquiry was carried out among expectant mothers attending four of the hospitals which collaborated in the test. Included among these patients were some of the women enrolled in the investigation. It was not found possible to make a detailed dietary survey, but nearly 1,000 women collaborated by filling in questionaries which gave a record of the food they had eaten during a week. It is recognized that this procedure was at best a rough-and-ready method of assessing food consumption, but there were good reasons for believing that it would give some evidence of the nutritional level of the women during the experimental period. Analysis of the records showed that, in general, there was no marked deficiency of first-class protein among any of the women answering the questionaries.* As regards minerals, a shortage of calcium was noted in about 70% of the women, most of whom were consuming insufficient milk and cheese. Iron deficiency was even more serious, only 2% having a satisfactory intake.

Vitamin and Mineral Deficiencies

The deficiency of vitamin A was the most common, this being anticipated from comparison with other pre-war data: rather more than half of the women were taking less than they required. Vitamin B_1 deficiency was not nearly so marked, and, generally speaking, the diets were not badly defective in this respect, but nearly half the women were not obtaining as much as was really desirable. Vitamin C shortage also affected about 50% of them, but once again the magnitude of the deficiency was not nearly so great as had been expected. The general impression was that the women were on the average better nourished than had been expected from a direct comparison of data derived from previous dietary surveys of comparable groups of the ordinary population. It was clear that in a number of cases they were following advice given at the ante-natal centres and that fresh fruit and eggs frequently entered into their daily diet. The same was true of milk. The women stated that they were taking these foods especially because they had been advised that the health of their babies would thereby be improved. There were, however, instances in which the dietaries were grossly defective.

The committee next decided upon the amounts of vitamins and minerals required to make up the deficiency in the above respects. The daily supplements used for the experiment were: Saccharated iron carbonate, 18 gr. (1.1 g.), equivalent to 0.26 g. ferrous iron; calcium lactate, 30 gr. (2 g.), equivalent to 0.26 g. calcium; minute quantities of iodine, manganese, and copper; adsorbate of vitamin B_1 containing all factors of the B complex B_1 content standardized at 200 international units per g.), 15 gr. (1 g.); vitamin C (ascorbic acid), 100 mg.; halibut-liver oil (vitamin A, 52,000 I.U. per g., and vitamin D, 2,500 I.U. per g.), 6 minims (0.36 g.).

In each hospital the women enrolled at the ante-natal clinic were divided into two main groups by placing them alternately on separate lists. The women in one group received the supplements, while those in the other were kept as controls. Within each of these groups the women were further classified into (1) women pregnant for the first time; (2) women with a history of one or more previous pregnancies. And again each of these two groups was subdivided into: (*a*) women under 25; (*b*) women between 25 and 30 years; and (*c*) women over 30 years. All women who were not in good health were at the outset excluded from the experiment, also women whose delivery was expected in less than 16 weeks.

The groups of important records thus obtained have been analysed by the statistical member of the committee and his assistants, but the extent of the material collected and the exigencies of the war have made it impossible for the committee to prepare a full report at present. In view, however, of the importance to the community of certain facts which have emerged it has been decided to issue this preliminary report.

Toxaemia of Pregnancy

At the start of the research it was decided to regard as toxaemic (*a*) cases which exhibited hypertension—a systolic blood pressure of or above 140 mm. Hg or a diastolic pressure of or above 90 mm. Hg—with or without albuminuria, oedema, etc., and (*b*) cases in which there was no hypertension and in which the diagnosis was based upon albuminuria.

In the 1,530 primigravidae who received the supplementary diet the toxaemia rate on the above standard was 27.1%, while in 1,512 primigravidae who did not receive the supplementary diet the rate was 31.7%—the difference being 4.6±1.7%. This result was due to the dominating influence of the statistical experience of women aged 25-30, in whom the difference was 7.7±2.6%. At the younger and older ages the difference, although still favouring the treated groups, was statistically unimportant. In multiparae there was no difference between the two groups, the incidence of toxaemia being 21.8% in both 980 treated and 999 controls.

Within recent years it has come to be recognized that a diagnosis of toxaemia cannot be based upon hypertension by itself, as this frequently connotes not a true or specific pregnancy toxaemia but an essential hypertension. The exclusion from the above groups of cases with hypertension as the sole clinical condition leaves those women in whom the diagnosis of toxaemia is based upon albuminuria, oedema, etc., with or without, but generally with, hypertension. This treatment of the figures may result in the exclusion of some cases in which the hypertensive state is due to toxaemia, but any such disadvantage is offset by the fact that, apart from any possible differential benefit derived from the supplementary diet in one group, each group is being similarly treated. It has the advantage of segregating for special study those cases in which the diagnosis of toxaemia rests on a reasonably secure foundation.

On this basis the primigravidae who received the additional dietary ingredients had an incidence of toxaemia of 5.4%, while in the primigravidae who did not receive any additional diet the percentage was 7.4. The difference and its standard error was 2.0±0.9, which means that the odds are nearly 40 to 1 against such a result being obtained by mere chance. The figures were also favourable to the parous women, but not to a significant degree, the percentages being 3.6 and 5.2 respectively, the difference being 1.6±0.9 (see Table). These results are striking, and indicate that the women receiving the special diet are protected against the risk of toxaemia in a ratio which is almost 30%. When it is remembered that, next to puerperal sepsis, toxaemia is the most important cause of the maternal death rate (about 20% of the total) in addition to being one of the most fertile sources of chronic ill-health after childbirth, the findings of the committee assume a significance which it is hardly possible to overestimate. This investigation has been carried out in the London area, in which it is known that the incidence of toxaemia is low. A reduction of 1.8% has been obtained. If a similar reduction could be obtained for the whole country it is estimated that on the basis of the annual number of births—approximately 600,000 in the immediate pre-war years in England and Wales—there would be 10,000 fewer cases of toxaemia in the year.

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* It was not found practicable, owing to the restricted facilities available, fully to analyse in terms of calories, grammes of protein, units of vitamin, etc., the diet of the women whose food consumption was investigated. A scoring system was therefore adopted by which arbitrary values were given to express the daily consumption of the more important foodstuffs such as milk, butter, wholemeal bread, fresh vegetables, fatty fish, fruit, eggs, etc. By making a sum of the weekly score for appropriate foods, approximate estimates could be made of the intakes of first-class protein, vitamins, minerals, etc., while from a general summation was obtained a picture of the diet as a whole. This admittedly rough-and-ready procedure sufficed to reveal any marked deficiencies in the diet.

In a further classification based upon the criteria generally accepted for "pre-eclampsia"—namely, hypertension with albuminuria, oedema, etc.—the following toxaemia rates were obtained: treated primigravidae 4.51%, untreated primigravidae 6.42%, the difference being 1.91±0.82; treated multiparae 3.16%, untreated multiparae 4.60%, the difference being 1.44±0.87 (see Table).

Pregnancy Toxaemia

	No. of Women	Hypertension only		Albuminuria with or without Hypertension		Hypertension with Albuminuria, etc. (Pre-eclampsia)	
		Cases	%	Cases	%	Cases	%
Primiparae							
Treated	1,530	332	21·7	83	5 4	69	4 51
Controls	1,512	368	24·3	112	7·4	97	6 42
Difference (C–T)		2·6 ± 1 5		2·0 ± 0 9		1·91 ± 0·82	
Multiparae							
Treated	980	179	18 3	35	3 6	31	3·16
Controls	999	166	16·6	52	5 2	46	4 60
Difference (C–T)		− 1·7 ± 1·7		1·6 ± 0 9		1·44 ± 0 87	
Total	5,021	1,045		282		243	

The Infant

Prematurity.—The committee found evidence, which it regards as statistically significant, of benefit to the infant from the improved diet of the pregnant mother. It finds that the prospects of a woman carrying her child to term are improved by the diet. Thus, out of 1,529 primigravidae receiving additional diet, in 308, or 20.1±1.10%, the pregnancy ended prematurely (i.e., before the 40th week), while in 1,512 primigravidae who did not receive any addition prematurity occurred in 361, or 23.9±1.10%. The corresponding figures for the multiparae were almost exactly similar to those for the primigravidae—namely, 20.1±1.33 and 24.2±1.33. The differences in both instances are greater than mere chance fluctuations. This result—the relatively greater proportion of term deliveries among the treated women—is of importance, particularly in view of the fact that, according to the Registrar-General's statistics, 50% of infantile deaths under one month are due to prematurity.

Weight of Baby.—For primigravidae of all ages the difference is slight—7.18±0.03 lb. for the treated as against 7.17±0.03 lb. for the controls; but a similar comparison for age 30 and over reveals a wider range, the treated being 7.17±0.7 lb., as compared with 6.99±0.07 lb. in the babies of the control mothers. The difference here is 0.18 lb., which approaches significance. In the multiparae of all ages the difference between the birth weight is −0.07±0.05 lb., which is not significant; but the trend of the values favours the treated women, as in 3 out of the 4 age groups their babies were slightly the heavier.

There is evidence of a considerable difference in the average birth weights in different hospitals. In hospital B the mean value was 6.98 lb. for babies of primigravidae, as against 7.22 lb. and 7.42 lb. in hospitals G and J. The corresponding weights in the multiparae class were 7.43 lb., 7.62 lb., and 7.89 lb. The differences between these mean weights are statistically significant. These wide deviations in the average birth weight of babies born in different London hospitals raise questions which merit further investigation.

The committee could not find any evidence to support the view that the addition of the vitamin and mineral elements to the dietary affects in any appreciable degree the risk of the development of fever and sepsis after childbirth. Nor did it find any appreciable influence on the character and duration of labour.

Benefits of a Well-balanced Diet

In directing attention to the significant benefit both to mother and child of a well-balanced diet in the ante-natal period, the committee would at the same time emphasize some considerations which make it likely that in its nature the investigation could not be expected to discover the full extent of this benefit. The committee had to avoid the risk, peculiarly attendant on this class of investigation, that materials (vitamins and minerals) intended for the mother would be diverted from her diet and added to the general family stock. For this reason the substances were given in tablet and capsule form, and, as was to be expected, some women defaulted. It may further be urged that the full value of such protective substances can be realized only when they are given in the form of naturally occurring foods. For these reasons the committee feels that there is sound reason for the view that the results of the investigation, valuable and significant as they are, should be regarded as pointing to the minimal rather than to the maximum advantages to mother and child of a well-balanced maternal dietary. It should also be mentioned that the statistical results which have been obtained concerned women whose basic diet was in all probability somewhat better than that of similarly constituted groups of women at the present time.

This comprehensive and controlled investigation furnishes for the first time clear evidence on questions which have long been in dispute. In so far as the results demonstrate the influence of a well-regulated diet on the health of mothers and on the development and well-being of their infants, they are of great national importance. Further, this message is addressed to all sections of the community, for it is not solely among the poorer classes that defective nutrition is prevalent. At the same time, since poverty and malnutrition march hand in hand, and since the poorer classes are relatively the most fertile, it follows that the ravages of faulty maternal nourishment fall with tragic emphasis on the mothers in poor homes and on their children.

Correspondence

"Positive Health"

SIR,—The salutary and timely protest in your annotation (July 4, p. 16) that ability in one specialty does not necessarily confer ability to speak with authority in another—*vide* the Socialist Medical Association's resolution in favour of a "second front"—might equally be applied to the subject so pertinently raised by Mr. A. R. Jordan in his letter in the same issue (p. 22). Do not the medical profession, specialists in the care of the sick, act in the same manner when they pose as authorities on "positive health"? No doctor, the school medical service excepted, is in a position to study any section of the populace other than those who constitute themselves "patients." Sickness must come to the doctor before he is empowered to act; he must wait the patient's pleasure. How then can such experience qualify medical men to be experts on health or even on fitness?

In *Biologists in Search of Material* (Faber and Faber, 1938) we gave the results of complete overhaul, including laboratory, biochemical, and physical examinations, of the 1,530 individuals over 5 years of age comprised in 500 families. These results were as follows.

8% with acknowledged disease—i e, aware of their disorders—receiving medical treatment;
24% with acknowledged disease *not* receiving medical treatment;
59% with disorders discoverable by us, but the presence of which was either ignored by or unknown to the individuals, and who were, therefore, also not under medical care;
9% without any disorder discernible by the examiner.

These families were taken from among those presumed to be a healthy populace. From these figures, which we have no reason to believe would vary to any great extent whatever sample of the normal public was chosen, it will be seen that the medical profession has a very long way to go before it has so organized its own activities as to bring the benefits of modern medical science to all those in need of them—namely, all the disordered. Not until this is done will the borderland between health and sickness bring them legitimately and naturally to the brink of the subject of health.

The fact that the majority of those with untreated disease are ambulatory "cases," though not necessarily of minor disorder, perhaps affords a partial explanation of how it is that they have not come within the cognizance of the medical profession. The man in the street is not such a fool as he looks. He knows that the hospitals and clinics have a "corner" in scientific instruments, without which he naturally, and perhaps rightly, presumes that the medical services cannot do justice to the nice demands of non-incapacitating disorder. But he also knows that the circumstances of organization of these hospitals and clinics will almost inevitably immobilize him should he go near them. It is thus in some measure the intelligence of the man in the street which is keeping him from seeking the help that he believes modern medical science to hold for him. Only two things can put this right. One is to furnish the practitioner with the tools and instruments which as a student he has been trained to use. The other is to reorganize the setting of the hospital out-patient facilities and to sweep away the obsolete spirit of patronage in which they are offered.

Even these reforms will only touch the fringe of the problem of the treatment of disorder. Nothing but periodic overhaul can disclose the disorders of those unaware of their presence. Fifteen years of experience directed expressly to this subject has taught us, however, that periodic overhaul of those unaware of their disorders must essentially be in the nature of periodic *health* overhaul, not periodic *medical* overhaul—that is, it must primarily be directed to the assessment of the capacity of the individual for health rather than in the nature of a search for his disorders. Though by periodic medical overhaul we might eliminate the physical disorders of the individual, we should be running a serious danger of creating psychological disorders.

Our experience has shown us that for periodic overhaul to be of maximum and continuing value it must be: (1) overhaul of the family, not of the individual, who is but a "limb" of the family; (2) it must be accompanied by circumstances which enable the family, the individuals of which have had their disorders removed, to move out of the environment that has created these disorders into one in which they may live and function more fully—i.e., in health. For this reason, in 1935 the Pioneer Health Centre, to cater for 2,000 families, was opened as a full-scale experimental research into the nature and cultivation of health. I would claim with Mr. Jordan that it is only through the old methods of long, laborious, and completely unprejudiced research that "personal hygiene can be erected into something of a science."—I am, etc.,

INNES H. PEARSE, M.D.,
Co-Director, Pioneer Health Centre, Peckham.

Planning a Hospital Service

SIR,—For sound planning it is necessary to decide the primary interest for which service is needed and to allow this to determine the main form of the plan. All proposals will then be judged from the point of view of this primary interest: much discussion may be saved and confusion avoided thereby.

In the matter of hospital provision what is required is primarily a service which is adequate for the treatment of members of the community suffering from serious illness, and a system that will ensure, so far as possible, that wherever A and B go or are sent they will be offered the skill and care they need. The value of all proposals as to the form of the hospital service should be tested against this principal requirement; for example, the question when and where it may be in the public interest to maintain the distinction between "voluntary" hospitals and those controlled by public authorities.

The system of the future must perform certain secondary functions; it must, for example, provide facilities for medical education. The call for such secondary functions should not, however, determine the main structure of the system; everywhere the primary question should be, "What does the public need?" It is when attempts are made to put first what should come second that conflict and confusion come into the discussion. If special institutions are built or chosen with an eye, primarily, to providing conveniently placed medical academies, they may well fail to satisfy the fundamental need of a medical school—namely, a varied and extensive field for clinical instruction—unless the compulsory transfer and allocation of patients by office rule is to be a feature of the future system.

On one matter there will certainly be general agreement between those who have made a study of administration and the medical profession. If the service is to be equal to its difficult task, administration must take counsel with the practitioner and give him the utmost possible freedom in his work and its development. In no public service would the suffocation of personality by iron regulation and inquisition have more damaging effects upon quality.—I am, etc.,

Liverpool. K. W. MONSARRAT.

The Planning Commission's Report

SIR,—I read the proposals of the Planning Commission with great interest, and would like to offer some comments on them. I should state at the outset that I, personally, am in favour of a State Medical Service.

I believe that any radical change in the organization of the medical services should be undertaken only after a plebiscite of the whole profession, including those in the Services. One can hardly differ from that part of the report which points out the faults of the present services and the general principles of what is required to correct them. I wish to criticize three of the suggestions made in the detailed scheme.

The first is that close liaison between the general practitioner and the hospital is not envisaged, nor is the need for it stressed enough. I believe this is because the proposals are not for a completely integrated and unified service. Secondly, since a capitation fee is retained the major evil of the present panel scheme is retained—namely, the inability of the doctor to act justly, according to his lights, toward his patient for fear of offending him and losing financially by a transfer. I believe that abuses of this kind would be worse under a collective scheme than now. Thirdly, the present unsatisfactory contributory hospital scheme is to go on. A recent case came to my notice of a man who contributed for 20 years to the local hospital, and never inside, then retired. His contributions lapsed; he had to go into the hospital for three months, and received a bill for over £37. I would suggest in conclusion that we send a deputation *of doctors who can speak Russian* to study the State service in the U.S.S.R.—I am, etc.,

T. D. CULBERT.

SIR,—The Kensington Division of the British Medical Association would like to record their appreciation of the monthly articles that have appeared in the *Supplement* for the benefit of Study Groups, and of the masterly survey of the problems confronting the medical profession together with their possible solutions as set out in the Interim Report of the Medical Planning Commission (*Journal*, June 20).

The Kensington Division, which, like other Divisions, formed a Study Group to discuss the preliminary details set out in the monthly articles, have been so impressed by this report that they have decided to discuss it "paragraph by paragraph." It is hoped that after 6 to 7 weekly meetings, of which 3 have already been held, the Division will be in a position to give precise answers to the questions asked at the end of the report.—I am, etc.,

H. STEPHEN PASMORE,
Hon. Secretary,
Kensington Division, B.M.A.

Use of the Term "Orthopaedic"

SIR,—I should like to put the case for a more restricted use of the term "orthopaedic." The O.E.D. gives 1840 as the date for the first use of the word in England, but in 1828 Delpech (Montpellier) used the adjective "orthopaedique" with precision as being concerned with the correction of deformities in childhood. In the latter half of the 19th century the word came to include adult deformities, and that remained its meaning till some 20 years ago. Since then the term has been extended by many to include the whole of traumatic surgery of the locomotor system, and it is held by some to embrace all forms of disease of the same system.

This arbitrary misuse of a term is difficult to justify. So far as I know a similar extension of the meaning of "orthopaedic" has not found favour on the Continent and is disputed in the U.S.A. I will give two concrete examples of the disadvantages attached to this lack of precision in the use of the word. First, its employment in Service instructions leads to ambiguity in their interpretation: does the term refer in a particular instance to the treatment of deformities, of fractures, or is it to be extended to include all injuries and diseases of the locomotor system? Secondly, if the latter interpretation is accepted, the use of the word "orthopaedic" in the description of surgeons suggests that only such surgeons can properly treat the wide range of conditions mentioned above, whereas it is well known that many surgeons who have but limited knowledge of orthopaedics in the 19th century sense are fully competent to deal with, and do in fact treat, injuries and diseases of the locomotor system.

It would appear that there is a tendency to include under the term "orthopaedic" at least two distinct branches of surgery—viz.: (1) the treatment of deformities; (2) the surgery of acute injuries to the locomotor system. The first is mainly concerned with the processes of growth; the second with wound infection and the processes of repair.

There is certainly no excuse for the toleration of this looseness of nomenclature. The term "orthopaedic" should be restricted to the first branch. I doubt if any special label need be sought for the second, as it is essentially a branch of general surgery.—I am, etc.,

Cambridge C. MAX PAGE.

Tetanus after Sulphonamide Treatment of Cavities

SIR,—I wish to correct certain statements in Dr. E. C. Atkinson's letter (July 4, p. 24).

I operated on this woman on April 13 and removed a large left pyosalpinx which was adherent to the bladder and to the intestines in the pelvis. In separating the pyosalpinx from the bladder some pus escaped into the pelvic cavity. Otherwise the abscess was removed whole, but the prolonged pelvic peritonitis from which the woman suffered had produced extensive non-purulent inflammation of the peritoneum over the intestines, and for this reason sulphapyridine powder (15 g.) was sprinkled on to the pelvic floor after the cavity had been swabbed as dry as possible. A medium-sized rubber tube was inserted down to the site of the pyosalpinx and was not removed until the third day.

This case formed one of a series of peritoneal infections in which the effect of sulphapyridine powder was being tried out by several surgeons. The patient progressed satisfactorily until the eighth day, when she developed trismus of the jaw, and in spite of immediate and continued treatment died of fulminating tetanus 26 hours later. An annotation on this case appeared in the *Lancet* of June 27.

I would stress that it is only a presumption that the infection was conveyed by the sulphapyridine powder. The container of the powder used at the operation was not available for examination after the patient died, although a toxigenic strain of *B. tetani* was isolated from the pelvis. Careful examination of other specimens of sulphapyridine and their cardboard containers failed to detect a toxigenic strain of *B. tetani*, although the cardboard of the containers gave cultures of several species of sporing and non-sporing bacteria. Among these organisms were some with the morphology of *B. tetani*, but since three pathologists failed to demonstrate toxin production, the identification of *B. tetani* is incomplete. It is clear, however, that the powder should be supplied in containers made of a substance which can be readily sterilized and not of cardboard derived from waste salvage material.—I am, etc.,

London, W 1 G. M. SANDES.

Urethral Instrumentation

SIR,—To one who, like myself, has been in general practice over thirty years, the letter of Mr. Gordon L. Bohn (July 4, p. 25) on the alleged dangers of a general practitioner passing a catheter might be annoying if it did not offer evidence of the fatuous and narrow outlook of the "one-specialty" man. I can assure Mr. Gordon Bohn that I have on many dozens of occasions passed catheters for acute retention, prostatic and strictural, and have never had cause to regret it—nor has the patient. And, no doubt, so have hundreds, nay, thousands of general practitioners all over the country. It is what we were taught to do—and how to do it—by teachers who knew their job and who also knew what emergencies we were likely to be up against when we started out into the world to earn a living as trained, qualified doctors.

Mr. Bohn's fear of what might happen to the kidneys from too rapid a decompression is surely beating the air. These dangers are well known to every trained doctor, and, therefore, guarded against. Mr. Bohn might, with credit, evince more fear (if he is given that way) of leaving a patient in agony with a superdistended bladder and all the ill effects likely to result from back-pressure on the kidneys, not to mention cardiac complications in an elderly prostatic case.

I note that Mr. Bohn informs us that in his opinion such a case—i.e., acute retention—should be admitted immediately into a hospital or nursing home—surely a counsel of perfection. Patients with retention quite often call the G.P. out of his bed at 2 a.m. or 3 a.m., and where, at that hour, and if in the country, can an ambulance be had straight away, or a bed obtained at a hospital or a nursing home, and if the latter, can the patient always afford the fee? Let us be realists and not frightened by bogies raised by specialists to impress all and sundry with the importance of their particular field of activity.—I am, etc.,

Bournemouth. VINCENT NORMAN.

The Expanding Pelvis

SIR,—Dr. Kathleen Vaughan (June 27, p. 786) has done good service in drawing attention to the importance in labour of the angle of inclination of the pelvic brim, for it is this angle which determines, to a large extent, whether the long axis of the uterus is perpendicular to the plane of the inlet. The larger the angle the more likely it is that the long axis of the uterus (and consequently its thrust) will be directed downwards and forwards against the pubic arch. An angle of about 90 degrees will favour a thrust downwards and backwards, which conforms to the direction of the pelvic inlet.

For the last two years I have measured this angle (together with the sacral angle) in every case referred to me for pelvimetry. I have records of over 200 cases, and hope that in course of time the number will be sufficient to make an analysis worth while.

In Dr. Vaughan's model the angle in extension corresponds to the average in my series. The extremes so far encountered have been 159 degrees and 84 degrees. It is probably a fact that the favourable influence of an optimum angle of inclination of the pelvic brim of 90 degrees may be offset by an abnormally small sacral angle.—I am, etc.,

Reading PAUL CAVE.

Increase in Hypoglycaemia

SIR,—Dr. E. Sutherland-Rawlings (June 13, p. 739) asks a question which has puzzled me from another aspect, and Dr. R. D. Lawrence (June 27, p. 802) only partly answers it. Formerly almost all my patients were balanced on a daily dose of protamine-zinc-insulin and soluble insulin in such proportions as Z.P.I.:S.I.=3:1, 5:2, and rarely 1:1. Now, however, many patients need more soluble insulin than protamine-zinc-insulin, and more and more are having to alter the proportion in the direction of Z.P.I.:S.I.=2:3, 3:5, and so on, in order to keep the blood sugar approximately normal during the twenty-four hours and to avoid hypoglycaemic reactions at night. At least one colleague has had the same experience.

If, as Dr. Lawrence suggests, the war insulin is stronger, it would seem to be only protamine-zinc-insulin, because the larger doses of soluble insulin do not cause reactions before midday; I have thought that perhaps the wartime soluble insulin contains some impurity which delays its absorption, so that the action is weak in the morning but prolonged to reinforce the protamine-zinc-insulin in the night or early morning; that, in fact, it acts as one of the "delay" insulins. I hope to procure some pre-war hoarded insulin to test this theory, but meanwhile perhaps your readers can throw further light. I shall be grateful if anyone can help me to obtain pre-war insulin.—I am, etc.,

G. M. WAUCHOPE, M.R.C.P.

SIR,—Dr. E. Sutherland-Rawlings (June 13, p. 739) has made the significant statement that most hypoglycaemic attacks occur in the early hours of the morning, and suggests that prophylactic measures should be taken to decrease their incidence. I would like to endorse this view. Insulin hypoglycaemia is an emergency state for which there is specific treatment. It is of common occurrence and usually harmless if prompt treatment is given. Delay in administering the treatment may have progressively serious results.

The protean manifestations of hypoglycaemia are well known, but in my experience the symptoms differ with the type of insulin used. Where soluble insulin is used, any sudden alteration in the blood-sugar level will produce a hypoglycaemic reaction, and a definite chain of symptoms characterizes the reaction. They can be ascribed to adrenaline secretion, and most commonly comprise shakiness, trembling, nervousness, emptiness, hunger, sweating, tachycardia, pounding pulses, and faintness. On the other hand, with Z.P.I. (zinc-protamine-insulin) there is usually an absence of those manifold manifestations which are attributed to the protective discharge of adrenaline. The reduction in blood sugar is so gradual that the suprarenal glands apparently are not aroused, and the secretion of adrenaline—a safety mechanism—is not called forth.

First effects are referable to cerebral disturbances. Drowsiness, nausea, and headache are observed, or, at first, there may be nothing more than a vague feeling of fatigue and malaise, which cannot be differentiated from fatigue from other causes. It is followed by increasing weakness and then by a little numbness about the mouth or at the ends of the limbs. Finally, the drowsiness increases, or, in some cases, euphoria develops, or delirium, or muscular incoordination, with twitchings of muscles, contortion of the face, or actual convulsions.

The fall in blood sugar is so slow with Z.P.I. that a much lower level of blood sugar has to be reached before any hypoglycaemic symptoms present themselves; the blood-sugar level may fall as low as 40 mg. per 100 c.cm. before symptoms of hypoglycaemia appear. The seriousness of the hypoglycaemic reactions arises from the fact that they are often insidious in onset, and the patient is liable to develop severe symptoms without warning. As the action of Z.P.I. extends for twenty-four hours, and as it takes longer to exert its maximum effect than soluble insulin, hypoglycaemic reactions are prone to occur during the night or sleeping hours, when the injection is given before breakfast, as is customary. In the early hours of the morning the insulin action is unopposed by the inflow of food. The important thing is, of course, to prevent these attacks from occurring, and this can be done by arrangement of the dietary carbohydrate. Since hypoglycaemic reactions are most likely to take place during the night, carbohydrate should be allowed before going to bed. Bedtime feeding is by far the most satisfactory method of preventing such reactions. A workable plan is to give one-sixth of the available carbohydrate at bedtime. This greater spreading out of the dietary carbohydrate is one of the advantages obtained with the use of Z.P.I. Indeed, the most striking feature, from the metabolic point of view, with Z.P.I. is the abolition of states of transient ketonaemia resulting from tissue breakdown. Even during the period of hyperglycaemia and glycosuria after a meal there is no recurrence of ketonuria as judged by the sensitive nitroprusside test.

The hypoglycaemic effect of exercise and muscular exertion raises important considerations in the use of insulin. Unusual exertion in diabetics on soluble insulin usually results in hypoglycaemia, but this is limited to the time of its maximum action, which can be foreseen and avoided. Z.P.I., however, with its prolonged action, makes unusual exercise apt to produce hypoglycaemia at almost any time of the day. There is no need to impose restrictions on the patient and order a "time-table existence" or carefully regulate the amount of exercise. Instead, extra carbohydrate should be given after the exertion, so that the depressing effect of the exercise on the blood sugar is neutralized. All unwonted exercise should be associated with an extra ration of carbohydrate.

As insulin is obtainable in different strengths it is very important for the patient to study the label on the rubber-capped phial to know just what he is using. Apart from using the wrong concentration of insulin per c.cm. (in the bottle) as compared to the scale on the insulin syringe, he should learn to avoid errors in filling the insulin syringe. Sometimes there is a misunderstanding about the amount of insulin prescribed. A unit is a unit, whatever the strength of insulin. That is to say, if 20 units of insulin are ordered the syringe must be filled to the 20-unit mark—using single-strength insulin. If double-strength insulin is used, the syringe must be filled to the 10-mark. And if quadruple-strength is used, the syringe must be filled to the 5-mark. In all these cases, whatever strength of insulin is used, 20 units are being given. It is, consequently, advisable to use a syringe marked in units, as it is more difficult, if not confusing, to work out the dosage using one marked in fractions of a c.cm.

There are three kinds of insulin that are available in this country: (1) Insulin hydrochloride in solution in weak acid, *p*H 3.4. Synonyms for this kind of insulin are: old insulin, unmodified insulin, clear insulin, regular insulin, ordinary insulin, quick-acting insulin, and soluble insulin. (2) Protamine-insulin, which is a suspension at neutral reaction, *p*H 7.2. Synonyms for this kind of insulin are: Hagedorn insulin, Leo "insulin retard," protamine insulinate, delay insulin, and Danish protamine-insulin. (3) Zinc-protamine-insulin, which is also a suspension at neutral reaction. Synonyms for this type of insulin are: protamine-zinc-insulin, Canadian protamine-insulin, and protamine-insulin (with zinc) suspension. The nomenclature of insulins needs clarification. Up till 1935 there was available only one kind of insulin; the word "insulin" meant only one thing. Since Hagedorn of Denmark introduced protamine-insulin and Scott of Toronto produced zinc-protamine-insulin there has been a lot of confusion, because of the multiplicity of names. To distinguish the old insulin from the other, more recently introduced insulins it is convenient to refer to old insulin as soluble insulin and the other as suspended insulins. Of the three types of insulin the preparations can be obtained in the following different concentrations: Soluble insulin—20 units per c.cm. (single strength); 40 units per c.cm. (double strength); 80 units per c.cm. (quadruple strength). Protamine-insulin—40 units per c.cm. (double strength); 80 units per c.cm. (quadruple strength). Zinc-protamine-insulin—40 units per c.cm. (double strength); 80 units per c.cm. (quadruple strength).—I am, etc.,

Guy's Hospital GEORGE R. W. N. LUNTZ.

Bacteriophage Treatment of Bacillary Dysentery

SIR,—With reference to the interesting paper by Dr. Arthur Compton (June 13, p. 719) giving comparative statistics of treatment in Egypt, may I point out that his figures deal only with death rates and do not, and in the circumstances cannot, give figures for the duration of illness. From the point of view of the medical branches of all three Services, whose aim is to return a fit patient to duty at the earliest possible moment, these figures are as important as the death rate.

Through the courtesy of Dr. Compton, Major Jameson, R.A.M.C., and I were able to try out the bacteriophage treatment of dysentery in a Service hospital during the autumn of 1940. The series was small, consisting of 12 cases with 8 controls which were treated with the then standard treatment of sodium sulphate and fluids. All patients recovered, as did the controls, but there was little variation in hospital time between the two groups, certainly not enough to justify the continuation of the bacteriophage treatment. The introduction of sulphaguanidine in the spring of 1941, which enabled us to reduce the duration of illness, even in some cases of *B. shiga* infection, to 11 days from the onset, even when the patient was not admitted before the third day, appeared to make the further trial of bacteriophage superfluous.

There are, of course, other points to consider: (1) Dr. Compton's figures deal with a whole community, whereas we were dealing with a limited age group (20–50), which, moreover, did not include women, children, or old persons, and none of our patients was suffering from other diseases. (2) Civilians in Alexandria are so "phage-minded" that to my knowledge they treat themselves with bacteriophage on the slightest suspicion of "Gyppy tummy," whereas in our cases treatment with bacteriophage was rarely begun before the second or third day. (3) Our cases were all "virgin soil," whereas, owing to the endemicity of bacillary dysentery in Alexandria, I should imagine that the local inhabitants must all possess a partial immunity with its concomitant titre of dysenteric bacteriophage, which is greatly increased by treatment with this substance. (4) We had no opportunity of trying out the prophylactic value of bacteriophage, to which, I know, Dr. Compton attaches importance.—I am, etc.,

D. C. WILSON,
Surgeon Commander, R N V R.

Active Rehabilitation in the R.A.F.

SIR,—Those Fellows of the Royal Society of Medicine who were present at a recent meeting at an R.A.F. hospital, I am sure, could not fail to have enthused over the technique and film of rehabilitation of fracture patients. We were shown how patients who were confined to bed with a fractured limb were given hourly exercises to tone up not only the muscles of the injured limb in plaster or splints, but also those of the trunk and other free limbs. Thus once the period of recumbency is over the patient is able to take part in active rehabilitation team-work or games. A film was shown in which men with legs in plaster took part in cycle team-work and played games such as football, etc. All were under the supervision of a massage orderly or medical officer.

How different from our feeble efforts still in most civilian hospitals, where a patient in plaster lies and physically rots in bed, or loafs about on a stick in ward or corridor, where the best effort a masseuse of the C.S M.M.G. can do is her routine stock-in-trade of massage or faradism to the injured limb. Surely the wonderful effort made in the R.A.F. medical team must produce magnificent results—a man going back to his job with zest, rather than the half-hearted way the workman who has had a fractured limb, labouring under the worry of litigation under the Workmen's Compensation Act, is cajoled back to his normal self.

Surely the time has come for the Chartered Society to take up the new spirit in training its members, and to run a refresher course in modern rehabilitation methods at which some of these R.A.F. methods and results could be preached by Mr. Watson-Jones. Nor did I fail to note that the medical officer himself, putting dignity to the wind, showed his patient how co-ordination and normal gait should be attained in walking or skipping: rather different from just going round a ward in a white coat giving instructions to a masseuse or sister. I am aware that these are not new methods to such pioneers as Mr. H. E. Griffiths at the Albert Dock Hospital or Mr. E. A. Nicoll at Mansfield, but in the words of the final caption on the R.A.F. rehabilitation film, some of us surgeons dealing with fractures with our masseuses must 'Go to it."—I am, etc.,

London, N W 1. G. O. TIPPETT, F.R.C.S.

Mental Symptoms in Bromide Intoxication

SIR,—Dr. Howard Kitching's interesting article (June 20, p. 754) prompts me to describe briefly 2 cases which occurred in my practice some years ago.

1. Man aged about 50. Symptoms of effort angina. Small doses of sodium bromide were administered over a period of 2 or 3 months. A consultant considerably increased the dosage. Three days later a policeman rang my night bell and informed me that he had found one of my patients wandering in the road in an almost nude condition. I hastened to the patient's flat and found him restless, agitated, and tremulous. He appeared hallucinated and did not recognize me. The question of certification arose and the climax came with refusal to take medicine. I was surprised to note the gradual disappearance of mental symptoms.

2. Lady aged over 70, suffered from arteriosclerosis and hyperpiesis. Bromide had been given for some weeks. On one of my periodical visits I found her incoherent, confused, and depressed. Her speech was slurred. Slight cerebral haemorrhage appeared to have supervened. Medicine was discontinued. At the end of a week the patient was bright, cheerful, and speech was normal.

Dr. Howard Kitching's reference to the number of N.H.I. prescriptions containing bromide (Barbour, Pilkington, and Sargant, 1936) is of special interest. It seems possible that many cases of mild intoxication are overlooked. My experience of skin lesions is that they are more likely to occur when initial dosage is comparatively large.—I am, etc,

Nottingham. J. J. GIBB.

Operations and Workmen's Compensation

SIR,—Your article on the legal aspect of operations as they relate to injured workers and workmen's compensation (June 20, p. 776) is most instructive; moreover, it is gratifying to see that you recommend a broader vision in this matter taking into account the psychological and sociological attitude of the worker. There can be no doubt that the worker's mental attitude towards the workmen's compensation law as it now stands is a very unfavourable one. So long as he remains under the impression that doctors employed by insurance offices are biased in favour of getting him back at any price to some sort of light work, and to achieve thereby payment of compensation for partial incapacity, his reluctance to undergo operations, for good or evil, will remain.

It is deplorable that the matter leads to dispute between the doctor of the insurer and the worker's doctor. There are reasons enough to make the latter reluctant to accept the opinion of his opponent. Will the effect of the operation be of lasting value? Will the worker after operation really find the desirable "light work"? What will be his position if, after being put on light work with compensation for partial incapacity, a second accident occurs, perhaps resulting from his disability, and the process of litigation begins all over again? What will be the worker's position if, after the operation, he needs appliances, costly to procure and costly to repair and maintain, while there is no statutory provision under either the National Health Insurance or Workmen's Compensation Acts for their supply?

The danger that "professional medical witnesses," highly skilled in presenting a particular aspect of the case, may exercise much influence on a lay court, to use Dr. W. A. Brend's apt observation (*Traumatic Mental Disorders in Courts of Law*, 1938, p. 93), cannot be denied, and the demand for medical boards which, as Dr. Brend puts it, "would tend to select their expert witnesses and advisers more for professional status and integrity than for their skill in masked advocacy" appears to be fully justified. The whole problem is another proof of the need for redrafting as soon as possible industrial accident insurance in this country. Indeed the unsatisfactory conditions relating to operations under the present workmen's compensation law illustrate once more that the latter tends to prolong invalidism, a matter which has been recently discussed on a broad background and with much vigour before the Royal Society of Medicine by such authorities as Dr. Bernard Hart and Mr. H. E. Griffiths, from the medical point of view, and by His Honour Tom Eastham, K.C., from the legal.—I am, etc.,

HERMANN LEVY.

Adrenaline Bronchoconstriction

SIR,—The chief action of adrenaline is to produce vasoconstriction, and those who maintain that asthma is the result of muscular bronchospasm find difficulty in explaining how an injection of adrenaline stops an asthmatic attack, because its action on muscular fibre is very slight, beyond reducing blood supply. When an injection of adrenaline is given it produces a systemic vasoconstriction and the blood pressure rises, but this is quickly followed by a reactionary vasodilatation, when it will be found that the blood pressure falls below its original level, and it is then that the relief of dyspnoea is experienced. This systemic vasodilatation relieves the local vasodilatation of the bronchial mucosa, which had previously been maintained as compensatory to the systemic vasoconstriction and was the cause of the dyspnoea. Repeated large doses of adrenaline are apt to interfere with, or prevent altogether, the subsequent vasodilatation reaction, and so relief of the dyspnoea is not obtained; in fact the condition may be made worse by continuing the adrenaline injections. When this state has been reached it will be found that a single injection of morphine will usually give immediate relief, after which, not infrequently, no further adrenaline is needed, and in any case a smaller dose will then be found effective.

All this difficulty arises from the inherited traditional belief—one of the hardest things in medicine to overcome—that asthma is the result of muscular bronchospasm, and this makes it necessary, in order to explain how adrenaline relieves an asthmatic attack, to pervert its natural action on the vasomotor system, and make it act, for this occasion only, as a muscular dilator.—I am, etc.,

London, W 1. ALEXANDER FRANCIS.

Respirator Dermatitis

SIR,—J. Petro (May 23, p. 631) has well described and illustrated his careful investigation of contact dermatitis caused by rubber respirators. In therapy his mainstay was calamine lotion. Because the irritant is usually a reducing agent, I believe he would get better results from the use of an oxidizing medicament, such as 1 in 3,000 potassium permanganate solution in cool moist compresses frequently refreshed, or sodium perborate 5% to 10% in a greaseless ointment base or hydrous wool fat.

The anti-oxidant of rubber can often be neutralized, as Obermayer pointed out (*Arch. Derm. Syph.*, Chicago, Jan., 1933, **27**, 25), by soaking the rubber appliance overnight in 4% sodium hydroxide in water. The appliance must then be rinsed thoroughly before use, and after hydroxide treatment it may prove innocuous. The "dry, scaly stage," which Petro described as being resistant to treatment, may represent complication of dermatitis venenata by seborrhoeic dermatitis extending from the scalp. I have noted such complication (*Synopsis of Diseases of the Skin*, The C. V. Mosby Company, St. Louis, 1942, p. 82), and I recommend for it the use of 2% crude coal tar in lanoline, to which water is added to make the salve creamy. The scalp must be treated simultaneously. Washing should be done with a sulphonated oil rather than soap. I hope that this criticism is constructive and useful.—I am, etc.,

Kansas City, U S A. RICHARD L. SUTTON, jun., M.D.

Doctors as Politicians and Strategists

SIR,—I am a member of the Socialist Medical Association but was not present at the meeting to which your annotation refers, and do not think I should have voted for the resolution there stigmatized, because I do not know the precise connotation of the phrase "second front"; arithmetically there seem to be at least four "fronts" at the present time if a "front" is a locus where gallant men are fighting and dying in large numbers. But I suggest that your contributor should descend from the pantomime elephant on which he is perched and choose a more lowly quadruped, say, a donkey. Had the S.M.A. passed a resolution to the effect that, on *medical* grounds, the "formation of a second front" was desirable, it *would* have deserved ridicule. But the fact, quite as obvious to the derided man in the street as to your contributor, that members of the S.M.A. have no more knowledge of strategy than any other sample of educated men and women, acquits them of any charge of seeking to exercise an illegitimate influence on public opinion. Why a society of medical men and women should have less liberty to express an opinion on matters of general interest than any other incorporation of the King's subjects is not obvious. A much greater danger to the prestige of our profession is when medical individuals or societies express dogmatic opinions on subjects which are, or may be thought to be, within the scope of their expert knowledge but have in fact never been seriously studied by them. Examples of this fault are sufficiently numerous.—I am, etc.,

Loughton. MAJOR GREENWOOD.

SIR,—Your annotation (July 4, p. 16), apart from giving publicity to the Socialist Medical Association, elaborates the well-worn text that the doctor must stick to his last and not dabble in politics.

You state that "the grim realists who are courageously directing Russian policy must feel mildly amused at the picture of the English doctor turned strategist." May I refute that statement with the words of Georgi Miteryev, People's Commissar of Public Health in the U.S.S.R., who in a message last week to Sir Alfred Webb-Johnson, which was read at a meeting of the Anglo-Soviet Medical Council on June 29, said: "We highly appreciate the help rendered us by the scientists of England and the entire people of the British Empire in our common struggle against the enemy of all progressive mankind, and are confident that the opening of a second front in Europe in 1942 will bring closer the day on which peoples of our countries together with all the freedom-loving peoples of the world will celebrate a final victory over bloodthirsty Hitlerism." Judging by results, Stalin (who doubtless should have stuck to his last in the theological seminary where he received his early training) and the Soviet people know what they are talking about.

Since the early establishment of a second front in Europe is the declared policy of our Government, I suggest, Sir, that the Prime Minister, who has already discussed this question with the Soviet Foreign Minister, should be left in no doubt as to the support this country will give him in carrying out this essential step towards a speedy victory. Why, therefore, is it "slightly ridiculous" for a body of socialist medical workers to express their support of this policy at the present time?—I am, etc.,

London, S.W.17. L. T. HILLIARD, M.B.

SIR,—I desire to protest against your annotation "Doctors as Politicians and Strategists." I consider that this article is neither courteous nor well reasoned. It is the privilege of every adult British citizen to vote on political issues, and it is his duty to render himself competent to vote by a careful study of politics. The successive crises of Manchukuo, Spain, and Czechoslovakia have demonstrated the intimate connexion between policy and strategy. The "grim-realists" who are directing Russian policy were the first to emphasize the importance of universal political education, and they would hardly excuse members of a learned profession who confessed themselves too preoccupied to study urgent political questions. I should be very sorry if your annotation were allowed to pass without protest from at least one member of the B.M.A.—I am, etc.,

London, W.C. O. F. H. ATKEY.

SIR,—The activities of the Socialist Medical Association mentioned in your columns give rise to several interesting questions. To begin with, the formation of a Socialist Medical Association implies that there is such a thing as socialist medicine? What is socialist medicine? Do members of the Socialist Medical Association claim to practise a peculiar kind of medicine which is unknown to, or not understood by, their non-socialist colleagues? Or do socialist patients differ so much from the ordinary run of humanity that they can only obtain efficient medical treatment from socialist doctors? Or is it just a political stunt?—I am, etc.,

Epsom. A. J. COLBY-TINGEY.

SIR,—The writer of your annotation takes considerable exception to a recent resolution passed at the annual general meeting of the Socialist Medical Association, in which our support for the opening of a second front in Europe in 1942 was expressed. Perhaps your writer is unaware that this is the official policy of our Government and of the United Nations. May I refer him to a statement issued by the Foreign Office on June 11, on the treaty between the Soviet Union and our own country, in which these words occur: "Full understanding was reached between the two parties with regard to the urgent tasks of creating a second front in Europe in 1942." One is driven to conclude that there are only two possible explanations of your writer's warmth of disapproval of the S.M.A. resolution, the first being that he has taken this opportunity of disagreeing with the expressed policy of the United Nations. We hesitate to think that you would be willing to give space to a writer with such aims, and are therefore left with the second explanation—that in him parochialism has grown to such an extent that he has forgotten that a doctor is not only a doctor but is also a citizen, with the full duties and privileges of citizenship.

Your writer says, "One would have thought that medical men had enough to do now . . . in matters concerning the organization of their profession," but he completely ignores the fact that the S.M.A. memorandum from which he takes his quotations goes on to outline proposals for immediate steps which we consider should be taken in order that the medical services may the more efficiently meet the demands which will undoubtedly be made on them when the second front is opened. We would remind him that the plans now being made for the reorganization of the profession *after the war* will have no chance of being put into effect unless the medical profession considers how to achieve the utmost degree of efficiency in the prosecution of the war *now*. No one reading this annotation would realize that the S.M.A. resolution was the preamble to a series of proposals for increasing efficiency. Your writer, like the rest of us, is entitled to hold his own opinions and to express them. He is not entitled to misrepresent the facts.—I am, etc.,

ALECK W. BOURNE,
Hon. Secretary, Socialist Medical Association.

*** Space will not allow this interesting correspondence to be continued. Needless to say, both of Mr. Aleck Bourne's "possible explanations" are entirely wide of the mark.—ED., *B.M.J.*

Analytical Chemists and E.M.S. Laboratories

SIR,—I am grateful to Dr. Griffith Evans, president of the North Wales Branch of the British Medical Association, for his letter (June 20, p. 774) directing attention to the serious injustice done to public analysts and other analytical chemists in various parts of the country through the operation of the Emergency Public Health Laboratory Service.

The Institute of Chemistry has been in correspondence with the Ministry of Health on this matter since November, 1939, but although the Ministry may appreciate that public analysts and other analytical chemists play, and have for a long time played, a most important role in the preservation of the health of the community throughout this country by the examination of food, water, milk, etc., it has apparently overlooked the fact that the maintenance of the laboratories in which this work is done may be seriously jeopardized if the analysts are deprived of any large section of their professional practices by unfair competition.

Analytical and consulting chemists, like medical men, both individually and as members of a professional body, strongly uphold the tenet of professional procedure which forbids soliciting for practice; yet circular letters have been addressed to medical officers of health and other medical practitioners offering the services of emergency public health laboratories and soliciting in such terms as, "Hoping that we may be of assistance to you in the future." Your readers may well imagine the feelings of medical men if attempts were made to interfere in this way with their professional practices.

The correspondence between the Institute and the Ministry has been somewhat protracted and has not yet been concluded, but it is encouraging to find a supporter in the medical profession who appreciates not only the impropriety of the proceedings referred to, but the extreme danger of transferring work of the character indicated from persons of long experience in a particular district to others comparatively recently qualified.—I am, etc.,

RICHARD B. PILCHER,
Russell Square, W.C.1. Registrar and Secretary, Institute of Chemistry.

SIR,—It was most refreshing to read the letter from Dr. Griffith Evans with reference to stranded public analysts, and to find that the pledge given in 1939 by Sir Arthur MacNalty had not faded from the memory of everyone. There can be little doubt that it is no more than a memory, however, as it has never been possible to persuade any of the authorities to implement it, or any other member of the B.M.A. than Dr. Evans to support it.

It might, perhaps, be not amiss to remind Dr. Evans that charity begins at home, and that while defending members of other professions he might do well to note that his words apply verbatim to the unfortunate pathologists who have been stranded by the "new order" in pathology. Many of these have offered themselves with their laboratories, equipment, and staff to this "new order," and their offers have been not merely refused but ignored. These methods of "liquidating" the existing members of a profession seems to savour of the very principles against which this war is being waged. Those who venture to protest are reminded that a national emergency exists. Surely such an emergency is just the time when the help of these unfortunate individuals is most needed, and it is now clear that the emergency service is to be used as a Trojan horse of the woodenest kind to ensnare the profession after the war is over.—I am, etc.,

PATHOLOGIST.

Nurses in Hospital

SIR,—The brutality of matrons (and sometimes of sisters) to their nurses is notorious. It needs no investigation. (It is not universal. I know one hospital well in which the nurses, and particularly the probationers, are watched over with an almost maternal care.) Why does this state of affairs exist and why is it allowed to continue?

I think it is because: (1) the care of the nurses is left entirely to the matrons; and (2) the matrons are chosen for their organizing and disciplinary capacity without regard to their humanity. The fact that matrons, as a class, are conscientious workers, devoted to duty, only makes matters worse. They have been through the mill and have survived. They are healthy and hard and they think others should be the same. An occasional slacker or would-be valetudinarian among the nurses confirms the matrons in their mercilessness.

The remedy lies with hospital boards and medical officers. Matrons must be made to realize that they are responsible for the health and comfort as well as for the efficiency of their staffs. To this end there must be propaganda. The Ministry of Health and the nursing press are obvious means. Perhaps two or three actions against hospitals for compensation in carefully selected cases in which life or health has been needlessly sacrificed might help. Have the nurses an organization that could carry this out?

The feeding of nurses and their opportunities for relaxation are, on the whole, much better than they were, but there is still room for immense improvement in some hospitals.—I am, etc.,

Colwyn Bay. S. L. B. WILKS.

Obituary

JOHN CHARLES DAVIES, M.D.

Many members of the B.M.A. will learn with regret of the death of Dr. J. C. Davies, J.P., which took place at his home at Rhos, near Wrexham, on June 24. He had been president of the North Wales Branch and chairman of the Denbigh and Flint Division, and served on the Welsh Committee for six years, on the Insurance Acts Committee for twelve years, and on the Rural Practice Subcommittee for thirteen years.

John Charles Davies was born at Pant in May, 1859, and after studying medicine at the London Hospital qualified M.R.C.S., L.S.A. in 1882, took the L.R.C.P. in 1884, the D.P.H. in 1899, and the M.D. of Durham University in 1901. During sixty years of practice at Rhos he won the love and esteem of all the neighbourhood. He held many local appointments and was consulting surgeon for the North Wales district of the Great Western Railway and surgeon to the Ruabon Accident Hospital. To the end of his days Dr. Davies kept abreast with new discoveries and movements in the world of medicine and surgery, and made many journeys to attend medical functions and conferences. When in London he rarely missed the chance of a visit to the Royal College of Surgeons, and right up to the outbreak of the present war he annually went for fourteen days to some postgraduate course. He was heart and soul for B.M.A. work, and apart from that his chief hobby was the permanent mounting of pathological specimens from cases under the care of his son, Dr. A. Lloyd Davies, in the War Memorial Hospital at Wrexham.

Dr. Davies was instrumental in forming the first Territorial company in Rhos, of which he was captain. In November, 1914, he led his company to France, and after enduring many hardships of war he was transferred to the R.A.M.C., where he worked in field ambulances and other forward units in France and Flanders, and retired from the Army with the rank of lieut.-colonel. On returning to civil life he continued in active practice, and was attending patients until three weeks before his death at the age of 83. In 1928 Dr. and Mrs. Davies received a public testimonial from the people of Rhos in recognition of his great and beneficent services. Of no one can it be more truly said that he lived for his profession and his patients.

C. W. PAGET MOFFATT, M.B., D.P.H.

Dr. Christopher William Paget Moffatt, late M.O.H. for Bolton, one of the most prominent members of the Public Health Service, died on May 18, aged 79, in Southport, where he had lived in retirement for some years.

Paget Moffatt received his early education in Brussels, where his father was British chaplain for the Colonial and Continental Church Society. He afterwards studied in the Universities of London, Göttingen, Cambridge, and Liverpool. Before entering medicine he studied modern languages and obtained the M.A.Lond., being placed at the head of the list in both French and German. He was at this time well known as a teacher of languages, and was for some years on the staff of the University Correspondence College. He was the author of two textbooks, *Science French* and *Science German*, still used with unfailing success for the purpose for which they were originally intended. Paget Moffatt later began the study of medicine at Cambridge, where he graduated B.A. (Nat. Sciences

Tripos), afterwards taking the Conjoint diplomas, the M.B. (Kanthack gold medal in pathology) and B.Ch.Camb. in 1904, and the D.P.H. 1905. His thesis for the M.B., on myelopathic albumosuria, was published in the *Lancet*. He took his clinical course at Liverpool, where after qualification he held the appointments of medical officer to the Northern Dispensary, hon. anaesthetist to the Royal Southern Hospital, and clinical assistant to the throat and ear department at the Royal Infirmary.

Deciding to enter the public services, he accepted an appointment as assistant M.O.H. and assistant school medical officer to the Bolton County Borough in 1908. In 1914 he was appointed deputy M.O.H. and tuberculosis officer, which positions he held until 1921, when, on the retirement of Dr. Gould, he was appointed medical officer of health and school medical officer. He also acted as medical superintendent of the borough isolation hospital from 1914 to 1931, and from 1922 to 1931 was senior medical officer to the venereal diseases department. From all these positions Dr. Paget Moffatt retired in 1931. After leaving Bolton he was engaged for two years as temporary M.O.H. for a combined district at Epsom pending the alteration of certain areas under a scheme of the Surrey County Council. He was a member of the British Medical Association, and of the Society of Medical Officers of Health, of the North-Western Branch of which he was president in 1926-7.

Paget Moffatt (writes a former colleague) was a man of outstanding personality. He brought to his public health duties a thorough training in medicine, together with a wide and accurate scholarship. During the whole period of his administrative appointment he maintained an active interest in the various hospitals and clinics under his control, particularly the infectious diseases hospital; for clinical medicine was his real interest. He loved attending patients and they loved him. He never allowed the doctor to be submerged into the official. It was difficult to think how he found time for his many activities, but he was a rapid worker. He was never irrelevant. His long experience enabled him to grasp and solve problems very quickly and to translate his decisions into prompt action. He was an excellent companion, there being no dull moments in time spent with him. He will long be missed by those who had the privilege of his friendship.

Dr. **ALEXANDER BRYCE**, who died on June 7 in his 80th year, had been a member of the B.M.A. since 1888 and was honorary secretary of the Section of Therapeutics when the Association met at Birmingham in 1911. He studied medicine at the University of Glasgow, graduating M.B., C.M. with first-class honours in 1886, and M.D. with honours in 1893. As a student he won the Brunton memorial prize, and after qualification was assistant to the professor of medical jurisprudence at Anderson College and took the D.P.H. of Cambridge. It was Lawson Tait, the eminent surgeon, who persuaded Bryce to start a practice in Birmingham. The two met on a golfing holiday. Bryce, having completed his brilliant career at Glasgow University, had begun to practise in Killin; he was there for just three years. He went to Birmingham in 1894 and quickly took his place in rank with the galaxy of medical men then busy in Birmingham—Tait, Gilbert Barling, Stacey Wilson, Thomas Chavasse, James Sawyer, and Jordan Lloyd. Some of his friends urged him to specialize in surgery, but Bryce preferred to go ahead as a general practitioner and to specialize only in branches that particularly appealed to him: dietetics and manipulative surgery. He quickly built up a considerable practice, and was associated with Robert Jones in orthopaedic work. In 1899, to further his knowledge of the American approach to dietetics and to manipulative treatment, Bryce visited the United States, and when he came home he gave himself more and more to the study of these subjects. His book *The Laws of Life and Health*, designed for popular instruction, went through several editions and was reissued in revised form shortly before the outbreak of war. In 1923 he took up an appointment as chief medical officer for the Britannic Assurance Company and retained it until he retired in 1939.

We regret to announce the death at Oxford on June 29 of Dr. **WILLIAM DUNCAN STURROCK**, assistant obstetric physician to the Radcliffe Infirmary, and since 1927 medical officer to Radley College. He was born on May 16, 1880, and from Charterhouse went up to Magdalen College, where he gained a first class in the Final Honour Schools in Physiology, and then went on for his clinical studies to King's College Hospital, graduating B.M., B.Ch. in 1906. After holding house appointments at King's and at the Royal Free Hospital he began practice at Oxford in 1908, and took his D.M. in 1912. He served throughout the last war in Flanders and Macedonia, reaching the rank of lieut.-colonel in command of the 82nd Field Ambulance, and after the Armistice was posted to Transcaucasia. He was twice mentioned in dispatches and awarded the D.S.O. in 1918. He joined the B.M.A. in 1908, and was vice-president of the Section of Obstetrics and Gynaecology at the Oxford Meeting of the Association six years ago. He had also been president of the Oxford Medical Society. Sturrock was a keen golfer and fisherman, and his son's performance as an outstanding member of the Oxford crew gave him obvious pleasure.

By the recent death at the age of 84 of Dr. **HERBERT RYDING MOSSE** of Aldwick, near Bognor Regis, formerly of Horsham, the two principal medical charities have lost a generous friend of a type that they can ill spare, for he had subscribed annually to both the Royal Medical Benevolent Fund and the Royal Medical Foundation of Epsom College for many years, and the total of these benefactions fell little, if at all, short of £600. In addition, he handed to Epsom College in 1928 stock then valued at £1,000—worth a good deal more now—to found a leaving exhibition, tenable for one year only, by a boy entering on some definite career. Dr. Mosse studied at Charing Cross Hospital Medical School, whence he became M.R.C.S., L.S.A. in 1882, and M.D.Durh. in 1885. He was house-surgeon at Charing Cross Hospital, R.M.O. at the Bolingbroke Hospital, Wandsworth, and M.O. to the Wandsworth Provident Dispensary. He was a keen archaeologist and historian, and the author of books on various aspects of Sussex history and prehistory. He was a Fellow of the Royal Horticultural Society, and a member of various other learned bodies.

Dr. **ERIC J. WHYMARK** died on June 4 at the early age of 43 years, after a short illness. He was educated at the Liverpool Collegiate High School and at Liverpool University, taking the M.B., Ch.B. degrees in 1923. After qualifying he held appointments as house-surgeon at the David Lewis Northern Hospital, and medical officer to the Brownlow Hill Institution, Liverpool. At the time of his death he had been in general practice for fourteen years, and had specialized in anaesthetics, holding appointments of honorary anaesthetist at the Liverpool Royal Infirmary and anaesthetist at the Walton Institution. Up to two years ago he was honorary anaesthetist at the Women's Hospital. During the latter months of the last war he served in France as second lieutenant with the 9th Batt. of the King's Liverpool Regiment. Dr. Whymark took an enthusiastic interest in anaesthesia, being a valued member of the committee of the Liverpool Society of Anaesthetists, and his colleagues greatly mourn his loss. Whether in anaesthetic work or private practice his one thought was for the welfare of his patients, and he was held in high esteem by all.

Universities and Colleges

UNIVERSITY OF BIRMINGHAM

At a Congregation on July 4 the following degrees were conferred:

HON. LL.D.—Arthur Stanley Barnes, M D, D Sc., F R.C.P, Dean of the Faculty of Medicine, University of Birmingham

M.D.—G. S. Hall.

M B, CH.B—*‡‖W. H. Bond, *‡¶J. C. Fulford, †A. W. Blackwell, †B. T. Davis, †G. M Holme, †Elizabeth A. Johnson, J. W. Abbiss, Margaret R. D. Banks, Winifred M Biddle, Jean S. I. Brown, G. B. Cliff, Margaret I. Coghill, Christine M. Edmonds, Margaret S. Garden, Lilian M. A George, J. T A. George, Elizabeth J. F. Heynemann, B. Hyde, D. H Joseph, ‡A. C. Kendall, J E. Kerton, Jean D MacArthur, D. McL. McDonald, Mary P. McHugh, D J S McIlveen, T. A Phillips, ‡M. C Platten, P F. Rudd, D. C. Sachdeva, P. R Sondhi, P. R Stephens, J MacF Stuart, H O Thomas, R. S. Thorpe, A Watson-Jones.

The following scholarships, medals, and prizes have been awarded:

Queen's Scholarship (fourth year), I. Macnab; (fifth year), R. W. Tudor; (final year), J. C Fulford. *Ingleby Scholarships*, W. H. Bond, J. C Fulford. *Foxwell Memorial Medal*, M. C. Platten. *Gamgee Memorial Medal*, W. H. Bond *Priestley Smith Prize in Ophthalmology*, G. M Holme. *Russell Memorial Prize*, Elizabeth A. Johnson. *Butterworth Prize*, J. C Fulford. *Leith-Newman Prizes in Pathology* (fourth year), Medical, Theresa Lazar; Dental, N. Norris. *Thompson Prize in Anatomy* (third year), R. H. Strudwick. *Windle Prize in Anatomy*, L. D. Abrams. *Humphreys Memorial Prize*, D. H Goose

* First-class honours † Second-class honours. ‡ Distinction in medicine, ‖ Distinction in surgery ¶ Distinction in midwifery.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

FINAL M B., CH B.—[1][2]G. H Valentine, [1][3][4]G. H. Wattley, [5]Nancy R. Baldwin, R. F. Brooks, Rosalie M Child, D G Davies, J. Deighton, G F. McD Hall, Joyce Kennard, [4]A G H Mitchinson, E. W. Moore, J L. Pardoe, A R. Rowe, N. Slade, M H Thomas, Jean Wallace, G A. Walton, *In Group II (completing examination)*: K. L. Brown, A. H M Oakes

[1] Second-class honours. [2] Distinction in obstetrics. [3] Distinction in medicine. [4] Distinction in public health [5] Distinction in surgery.

Medical Notes in Parliament

Health in Scotland

In the House of Commons on July 8 Mr. Tom Johnston presented the health, housing, and education estimates for Scotland. He said there was evidence of improvement in the physical condition of school children despite the strains of war and, in some areas, an intensification of overcrowding. There was an increase in most respiratory diseases and in cerebrospinal meningitis, and a disturbingly high rate of infant mortality, but on the whole the public health was not deteriorating. Infant mortality per 1,000 births rose from 68 in 1939 to 78 in 1940 and 83 in 1941. He had asked the Department of Health's Scientific Advisory Committee under Sir John Boyd Orr to report quickly on the causes of this rise and to suggest remedial measures. The committee had co-opted a sub-committee of 12 experts on child health in Scotland. Meanwhile, infant mortality figures for 1942 showed, so far, a definite improvement.

With regard to infectious diseases the incidence of scarlet fever had fallen by one-half, and that of measles was also down; but there were increases in diphtheria, enteric fever, and whooping-cough. The number of diphtheria notifications, which averaged about 10,000 yearly before the war, rose in 1940 to 15,711; in 1941 there were 13,586, but for 1942 so far the number was again the pre-war average To-day 73% of school children and 58% of pre-school children in Scotland were immunized. Among the immunized children there was one death in about 1,000 cases; among the non-immunized there were 427 deaths out of about 7,000 cases. Referring to the outbreak of small-pox in Glasgow (*Journal*, July 11, p. 59), Mr. Johnston said that of 33 cases 20 had never been vaccinated and 13 had not been vaccinated since infancy. There had been 4 deaths. The City Medical Officer of Health and the Chief Medical Officer of the Department declared that the small-pox was of the most virulent and infectious type. The population of Glasgow had responded promptly to the appeal and 400,000 persons had gone voluntarily to be vaccinated. There was an adequate supply of lymph for all the population in the industrial area around Glasgow. Several medical officers of health reported that since the outbreak of war there had been a considerable increase in venereal disease, and the Scottish Office was considering whether further measures of control were possible. There was a disturbing increase in scabies; examination and treatment of verminous persons and the cleansing or destruction of verminous clothing were being carried out in a number of areas in Scotland. Cerebrospinal fever, a disease largely accelerated by wartime conditions, was still 5 times the pre-war figure, but in the first half of 1942 a considerable decline had been observed. Tuberculosis still showed an upward tendency, notifications for 1941 being 8,302, or over 800 cases more than in the last pre-war year. Mr Johnston here interposed the remark that the general health of Scotland would suffer greatly if next winter there was an acute shortage of domestic fuel. He spoke of plans for using timber-mill waste as a fuel reserve next winter.

Hospital Accommodation

Before the war Scotland was short of some 3,600 hospital beds; now it had, under Government ownership, 9 first-class acute hospitals with 8,000 beds, and 66 convalescent ones with 3,800 beds. So long as the beds were not filled with war service cases they should be used, together with the doctors and nurses who were standing by, to reduce the waiting-lists in the voluntary hospitals. Already nearly 6,000 of these waiting-list cases had been dealt with. An experiment in providing specialist diagnosis and treatment was being tried in the Clyde valley. Panel doctors' co-operation had been invited in this experiment, whereby any panel patient between the ages of 15 and 25 could be referred to the Regional Medical Service for specialist diagnosis and, where necessary, hospital and convalescent home treatment. These facilities were provided in the State hospitals and there was no charge. The scheme began in January, 1942, and by July 3 some 610 cases difficult to diagnose had been dealt with. In some cases the hospital doctors recommended that the Ministry of Labour should transfer the patient to more suitable employment. Mr Johnston said he hoped to see the system of specialist diagnosis and free treatment greatly extended, both in age groups and in areas. It already covered an area in which about 44% of the panel patients in Scotland resided.

Colonel Elliot asked for information about the supply of nurses for fever and tuberculosis hospitals, and Mr. Westwood (Under-Secretary of State for Scotland) replied that there was a definite shortage of nurses in all spheres of hospital work.

Colonel Elliot thought that if the gross number of beds and the gross number of nurses and reserved nurses in Scotland were taken they would find they had enough nurses. When the question of the E.M.S. was raised the Minister of Health and the Secretary of State for Scotland had said that girls would not be asked to serve in tuberculosis hospitals. He thought an invitation should be extended to see whether girls were willing to release the Government from that pledge and to serve anywhere. The rate for contracting tuberculosis in sanatoria was not, in general, as great as the rate for contracting it in ordinary hospitals, because greater attention was given to the subject. In time of war the nursing of tuberculosis was a form of service which they might not unreasonably ask the younger generation of women to accept.

Maternity Services

Replying to the debate, Mr. Westwood said he had been asked for details of the local authorities where doctors had refused to work under the schemes for maternity benefit. An arrangement had been made with the British Medical Association through its central body, but some local Branches of the Association refused to accept the terms. There was no scheme in operation in Argyll, but a meeting had been arranged with the doctors with a view to an agreement. All doctors in Dumbartonshire, except those in Helensburgh, had agreed to work the scheme. In Orkney meetings were being held with the doctors concerned. In Selkirk county the doctors had refused, but the matter was being taken up with the B.M.A. The scheme was not yet operating, but meetings with the doctors had been arranged in the burghs of Ayr, Dundee, and Kirkcaldy. In Clydebank burgh only two doctors had agreed to give their services. Dumfries county had a scheme which was not yet submitted, and in Dumfries burgh the scheme was not in operation. From the city of Edinburgh a scheme was submitted in draft. Glasgow had been allowed to postpone operation of the scheme until December, 1942. Mr. Westwood dealt with the provision of nurses, and said that a committee had been set up under Prof. T. M. Taylor, Aberdeen University, to draw up an agreed scale of salaries and emoluments for State-registered nurses employed in Scotland in hospitals and in the public health service, including the district nursing service, and for student nurses. The scope had been extended to cover midwives, health visitors, school nurses, and tuberculosis visitors. A grant to cover part of the cost of any increased expenditure on nurses' salaries was to be paid to hospital authorities. The Department awaited the report of that committee. There was a shortage of approximately 200 nurses for tuberculosis.

Call-up of Doctors' Staffs

On July 7 Sir Leonard Lyle asked the Minister of Labour whether, in view of the serious shortage of doctors for the civilian population, he would allow the maximum leniency with regard to the calling-up of their essential staffs, such as dispensing and surgical assistants and secretaries. Mr. Tomlinson, who replied, said that arrangements had already been made for safeguarding essential female staff employed by doctors. Qualified dispensers were not being withdrawn from their employment, and applications for the deferment or retention of secretaries and other assistants were considered individually in the light of their qualifications and the possibility of adequate substitution. Sir Leonard Lyle asked if a very serious situation was not already occurring with regard to the call-up of doctors, and if it would not grow worse, as was the case with the call-up of miners for the Forces. Mr. Tomlinson: It is precisely because of these circumstances that the procedure outlined is taken. Sir Francis Fremantle: Is there any appeal from a decision given against the deferment of the secretaries? Mr. Tomlinson: No, not in the ordinary way, but there is always an appeal to the Minister himself in the event of an obvious mistake having been made.

Analgesics given by Midwives.—In reply on June 11 to Dr. Summerskill, Mr. Brown reported that out of 188 local supervising authorities in England and Wales, 61 had made arrangements, before December 31, 1941, for the instruction of their midwives in the administration of analgesics at childbirth He would consider the issue of a circular to the other authorities urging like action. Sir Francis Fremantle asked Mr. Brown, if such instruction were not part of the regular training of midwives, to see that it was introduced.

Compensation for Nystagmus.—On June 16 Major Lloyd George informed Sir Francis Fremantle that in 1933 9,603 miners were in receipt of compensation for nystagmus, including 1,535 new cases and 8,068 cases continued from previous years. In 1938 the new cases numbered 1,019 and the continued cases 4,183, making a total of 5,202. Figures for the war years were not available

Deaths from Cancer and Diabetes.—On June 23 Mr. Ernest Brown informed Mr. Leach that the numbers of deaths in England and Wales from cancer and diabetes in 1940 were: cancer, 68,922; diabetes, 5,352. The figures for 1941, which were provisional, were: cancer, 69,228; diabetes, 4,865

The Services

CASUALTIES IN THE MEDICAL SERVICES

Acting Major **JOHN EWART EDSON**, R.A.M.C., died on June 10. He was educated at the University of Sheffield and King's College Hospital and graduated B.Sc. (with first-class honours in physiology) in 1929, proceeding M.Sc. in 1930, M.B., Ch.B. (with honours) in 1931, and M.D. in 1940. He was also admitted M.R.C.P.Lond. in 1936. He had held house posts at Sheffield Royal Hospital, and in 1935 was appointed assistant medical officer to the Mayday Hospital, Thornton Heath, Surrey, later becoming the senior assistant medical officer of the hospital. He entered the R.A.M.C. as temp. lieut. in May, 1940, and was promoted capt. a year later. He was a member of the B.M.A.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales*, with the exception of measles, of which there were 244 fewer cases than in the preceding week, there was a general rise in the notifications of infectious diseases. The largest increases were those of dysentery, acute pneumonia, and diphtheria, with 80, 62, and 59 more cases than in the previous week, the two latter diseases being evenly distributed throughout the country.

Although the figure for whooping-cough was only 5 in excess of that for the preceding week, individual counties displayed considerable fluctuations. Rises were recorded in Yorks West Riding, Lancashire, and Kent of, respectively, 35, 30, and 24, and a fall of 81 was reported in Hertfordshire.

The heaviest falls in the incidence of measles occurred in Middlesex 129, Hampshire 63, Surrey 57, and Hertfordshire 54, but, in contrast to the general trend, rises were reported from Kent and Nottinghamshire, of 94 and 75.

The increase of 80 cases of dysentery was the biggest difference between two consecutive weeks since last August. Fresh outbreaks occurred in Cumberland 38 cases (Penrith U.D. 31, Ennerdale R.D. 7) and Denbighshire 20 cases (Colwyn Bay M.B. 11, Ruthin R.D. 6, Wrexham R.D. 3). In Yorks West Riding 28 cases were recorded (16 from the outbreak in Wortley R.D., and the remainder distributed through five areas): 13 cases from five administrative areas were recorded in Lancashire.

In *Scotland* the notifications of measles were 253 fewer than in the preceding week, Glasgow having 477, a fall of 223.

Small-pox

Six deaths from the outbreak in Glasgow have been recorded up to July 10. A vigorous campaign for vaccination has been carried out and over 400,000 of the inhabitants have been vaccinated. The cost of the outbreak has been estimated at £30,000. In Swindon the local authorities have made chicken-pox a notifiable disease, and over 18,000 people have been vaccinated.

Returns for the Week Ending July 4

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,396, whooping-cough 1,457, diphtheria 728, measles 7,581, acute pneumonia 734, cerebrospinal fever 105, dysentery 242, paratyphoid 14, typhoid 4.

Vital Statistics of New York

The New York Tuberculosis and Health Association, with the co-operation of the various United States Bureaux, has issued a handbook containing the recent statistics of New York and the five boroughs of the city. The birth rate in New York, which had been declining (it was halved between 1915 and 1936), has during the last five years shown a tendency to a slight increase, and the rate of 14.4 per 1,000 of the population recorded in 1940 was the highest rate since 1933. The infant mortality was 33.3 per 1,000 live births for the white population and 54.7 for the coloured. The general death rate for 1940 was 10.2 per 1,000, 0.2 above the value for 1938, which was the lowest death rate ever recorded. The principal causes of death were heart disease and cancer, which accounted for one-third and one-sixth respectively of the total deaths.

The report consists of 17 tables and 14 diagrams, without any text at all. In the foreword it is stated: "Comparative death rates have been computed bringing out areas of the city where special attention is needed." This is hardly the case, as no attempt has been made at standardization for age or sex distribution; the rates are all crude rates. The diagrams, although of artistic merit, are not informative and are often confusing. The tabulation of leading causes of death by rank is unwieldy and makes it very difficult to follow the trend of mortality by age: in one table this method resulted in 18 lists of 10 causes of death.

No. 25

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	108	7	29	4	7	211	13	50	5	14
Deaths		—	3				2	1		
Diphtheria	719	36	162	55	19	919	36	184	29	21
Deaths	12	—	3	5	1	24	—	6	2	2
Dysentery	151	9	41	—	—	113	9	27	—	—
Deaths		—		—	—				—	—
Encephalitis lethargica, acute	6	—	2	1	—	6	1	—	—	—
Deaths		—	—				2	—		
Enteric (typhoid and paratyphoid) fever						127	1	19	4	—
Deaths						2	—	—	—	—
Erysipelas			37	9	3		—	39	8	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	31	6	12	6	2	32	1	10	9	2
Measles	6,375	745	607	49	264	8,958	293	107		10
Deaths	7	1	3	3	—	10	—	1	8	—
Ophthalmia neonatorum	94	94	14	—	—	75	1	8	1	1
Deaths										
Paratyphoid fever	8	—	3	3						
Deaths	1	—	—		—					
Pneumonia, influenzal*	655	35	3	10	2	668	22	14	2	1
Deaths (from influenza)	6	—	2	—	—	6	21	2	—	9
Pneumonia, primary			216	18				206	11	
Deaths		22		8	15		—		10	—
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	12	—	1	—	—	9	—	1	—	—
Deaths		—					—	—		
Puerperal fever	—	4	14	4	2	1	1	10	3	1
Deaths		—					—			
Puerperal pyrexia	184	8	17		6	115	2	9		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,320	64	211	48	23	955	36	124	75	13
Deaths	—	—	—	—	—	—	—		—	—
Small-pox	2	—			—	—	—	—		—
Deaths	—	—	2	—	—	—	—	—	—	—
Typhoid fever	6	—	6	7	1					
Deaths	—	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough	1,394	132	34	48	29	4,837	160	263		7
Deaths	8	—	1	2	1	34	3	4	—	—
Deaths (0–1 year)	288	38	58	23	23	278	16	67	35	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,886	566	552	187	117	4,214	512	626	197	145
Annual death rate (per 1,000 persons living)			12·4	12·5	†			13·6	13 1	—
Live births	5,976	656	952	464	299	4,612	321	881	433	187
Annual rate per 1,000 persons living			19·7	31·0	†			17·9	28·7	
Stillbirths	239	17	33			213	17	25		
Rate per 1,000 total births (including stillborn)			34					28		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

A whole-day conference under the joint auspices of the Nutrition Society and Food Group (Society of Chemical Industry) will be held at British Medical Association House, Tavistock Square, London, W.C., on Saturday, July 25, beginning at 11 a.m. The subject for discussion will be "Dehydration of Foods and the Effect on their Nutritional Value." The following speakers will take part: Dr. Franklin Kidd on the Principles and Practice of Food Dehydration; Dr. E. M. Cruickshank, Dr. J. G. Sharp, and Dr. E C. Bate-Smith, on Meat and Eggs; Dr. G A. Reay, on Fish; Dr R. J. L Allen, Dr. J. Barker, and Dr. L. W. Mapson, on Vegetables; and Sir Joseph Barcroft, on the Utilization of Dehydrated Foods. It is proposed to hold a conference on "Trace Elements in Nutrition," probably towards the end of October Further particulars can be had from the Hon Sec., Dr. Leslie Harris, Nutritional Laboratory, Milton Road, Cambridge. The Scottish Group of the Nutrition Society is planning the third conference in the series on "Food Supplies in Relation to Human Needs"—namely, "Signs and Symptoms of Deficiency Diseases" This will probably be held in August or September. Further information may be obtained from the Secretary of the Scottish Group (Mr. J. S. Thomson, Rowett Research Institute, Bucksburn, Aberdeen).

The twenty-first Annual General Meeting of the Medical Society for the Study of Venereal Diseases will be held on Saturday, July 25, at 2 p.m., at 11, Chandos Street, Cavendish Square, W. Mr. Aleck Bourne will give an address on non-gonococcal vaginal discharges, their diagnosis and treatment.

The 101st annual meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, Cavendish Square, W., on Thursday, July 23, at 10 15 a.m., when, following the business part of the meeting, there will be a discussion on "Psychopathic Personality." The speakers will include Prof. D K. Henderson, Major D. C. Carrol, Surg. Capt D. Curran, Wing Cmdr R. D. Gillespie, and Lieut.-Col. A. A. W. Petrie.

The London Missionary Society announces that Mr. R. M Alderton, F.R.C.S., and Dr. Annie Sydenham, members of the Hong Kong staff of the society, are now interned in the Stanley Gaol in Hong Kong.

The Minister of Health visited last week "the country branch" of the London Hospital which has been completed at Brentwood, Essex. Taken over early in 1941 as an Emergency Medical Service hutted hospital, it is now a modern bungalow-type building with 360 beds. The work was financed by the Ministry of Health and the hospital is staffed and run by the parent institution. Much of the equipment has been brought from Whitechapel and the rest provided through the aid of "Bundles for Britain" and the Red Cross and St. John War Organization. A number of beds are reserved for cases for which the Ministry is responsible. The Minister said that this arrangement was part of the general desire for the Emergency Scheme to help the big London teaching hospitals in any way found to be practicable to maintain at least some of their work under their own identity in safer and more peaceful surroundings. He added: "Apart from the many thousands of extra hospital beds which we have provided in various ways under our Emergency Hospital Scheme, we have, under our building programme alone, added over 51,000 beds to the nation's hospital accommodation. The vast majority of these beds have been provided in the form of single-story hutments. Many form sturdy self-contained hospitals—complete with operating theatres and equipment down to the last detail. Others are extensions to existing hospitals."

Letters, Notes, and Answers

QUERIES AND ANSWERS

Autoserotherapy for Hay-fever

Dr. E. M. Fraenkel (Buxton) writes in reply to C. E B: I refer to my letter "Treatment of Allergy" in this *Journal* (1942, 1, 654). The simplest method for the practitioner is the use of the patient's blood. The blood is drawn from the cubital vein by a sterile syringe of 10 or 20 c.cm. and immediately injected into the gluteal muscle. I recommend the use of 10 c.cm. the first time, 15 c.cm. after 5 days, and 20 c.cm. again after 5 days' interval. In order to prevent clotting, 0.5 c.cm. to 1 c.cm. of a sterile 5% to 10% solution of sod. citrate can first be taken into the syringe.

Income Tax

War Damage Insurance

"Delta" showed in his income tax return £32 10s. paid for War Damage Insurance of his x-ray apparatus, and £7 4s, 50% of the contribution payable on his house. No deduction for income tax purposes is allowed for these payments. He has received £31 in respect of an x-ray tube that was damaged as a result of enemy action, and this sum has been deducted from his apparatus account.

*** Section 84 of the War Damage Act, 1941, provides that such payments shall not be taken into account for income tax purposes, but that sums received by virtue of the arrangements made under that Act have to be offset against expenditure on repairing or otherwise making good war damage. As "Delta" suggests, one would normally assume that if insurance contributions are not allowable for income tax purposes the resulting receipts should not be taken into account, but that view is overruled by the specific enactment referred to above.

LETTERS, NOTES, ETC.

The Medical Directory, 1943

J. & A. Churchill, Ltd, 104, Gloucester Place, Portman Square, London, W.1, write: To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification.

Films in First-aid Teaching

Films, and in especial colour films, have come to stay in the teaching of first-aid practice. It is essential that such films should be good both in matter and in the manner in which they have been produced. We recently described such a film taken in colour by Mr. B. H. Humble and Dr A. G. Mearns of Glasgow, and lately have had the opportunity of viewing another produced by Mr W. McAdam Eccles, who since the beginning of the war has been medical officer in charge of a central aid-post in London. The primary object of this film was to show to St. John and Red Cross personnel, particularly those who had not received their "baptism of blood," the precise details, on the night of a raid, of what actually occurs in a post receiving varied casualties. A whole night's work is depicted, and very well photographed, the work of an efficient amateur in the person of Dr. D. W. Seth-Smith. The film shows the organization of the aid-post, with nurses, orderlies, medical officers, and other workers engaged in their prescribed duties on a plan worked out with great thoroughness, and is an example of really good team work. Certainly no pains were spared to present casualties varied in type and differing in their seriousness. The film gives details of treatment which are of great value in teaching, such as are difficult to be grasped except by seeing them actually carried out. The treatment shown is necessarily that which is given by skilled persons in a well-appointed aid-post. In addition, methods of carrying the wounded, the need for quick perception of the gravity or otherwise of injuries, and the decision as to the disposal of the patients are all excellently portrayed Actual bleeding-points are controlled by digital pressure, by pressure forceps, and by suturing, as in the case of a bad scalp wound.

The producers had the invaluable help of Quartermaster J Magrill, B.R.C.S., whose skill as a designer of wounds and in stage management is great. Further, his spoken commentary as the film is thrown upon the screen shows him to be a master of the subject. It is, perhaps, unfortunate that a sound track of his comments has not as yet been made, so that the completed film could travel freely about the country and over-seas, and thus give that visual aid to many instructors now at work, and so bring new ideas and new interest before the keen persons in their classes The film is an 8 mm one and is silent, and its running time is about half an hour. We commend it unreservedly to all concerned in the efficient training of personnel who have to treat air-raid casualties. Applications to view it may be sent to: The Manager, Colour Film of Casualties, B.M.A. House, Tavistock Square, London, W.C.1.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* of July 11, 1842:

"The poor man must have his doctor as well as the rich, and care should be taken that he be not driven, by expense, to seek advice from sources less competent than such as now supply it to him. The general practitioner should be upheld in making proper charges for his time and skill; but for many and obvious reasons, it would be unwise to deprive him of the power of dispensing his own medicines. If duly qualified practitioners acted under a public licence, the protection of the profession against unqualified and ignorant pretenders might well be left to the authorities of the state, and medical men would thus be relieved from the onerous and invidious task of prosecuting offenders; but the best protection of the profession is to be sought in an enlightened public, who, it must be acknowledged, are not backward in remunerating medical men for their services, and the skilful and duly qualified practitioner will always in the end have the advantage over the empiric and incompetent intruder."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 25 1942

REHABILITATION IN THE E.M.S.

BY

Sir ROBERT STANTON WOODS, M.D., F.R.C.P.

Consultant Adviser in Physical Medicine, Member of the Committee on Rehabilitation, E.M.S., Ministry of Health

The Oxford Dictionary defines "rehabilitation" as "restoration to privileges." In the medical sense this would signify restoration to the privileges of health, so far as this is possible. In considering the rehabilitation of an individual it is logical to include not only the whole therapeutic procedure but also the mental and material environment to which he is subjected from the moment of the onset of his disease or the infliction of his injury. In the more restricted sense of the term, however, which alone is brought under survey here, efforts to rehabilitate can be considered under the heads of passive physical therapy or the application of physical agents, active (volitional) exercise, and productive occupation.

In many instances the whole of the programme may with advantage be started as soon as the patient arrives in a hospital bed. In general, it can be stated that, if there are no indications to the contrary, the earlier this special rehabilitation treatment is begun the better. Thus, for example, a patient who is admitted from the waiting-list for an abdominal operation will often benefit from pre-operational abdominal and general exercises; the precursors of an operation for an internal derangement of the knee may very usefully be faradic and "active" (volitional) contractions of the thigh muscles; while an individual with a lower limb in plaster ought to begin weight-bearing exercises as soon as he is ambulatory.

In the past a prescription of "rehabilitation" therapy has too often been made out with a view solely to recovery of the diseased or injured region, to the neglect of the general mental and physical make-up. Recent conceptions of the aims of treatment render it improbable that this error will persist; indeed, the danger is that the pendulum should swing too far, to the neglect of those other, equally indispensable, extrinsic factors—massage, electrotherapy, thermotherapy, etc.

Aims

In the strict sense of the term there is no form of treatment which can be designated "curative"; in choosing any therapeutic or prophylactic procedure, one's aim ought always to be to elicit such responses in the tissues and in the mentality of the individual as are likely to assist in the recovery or maintenance of health. To no part of medical or surgical treatment does this apply with greater force than to so-called "rehabilitation" therapy; the physical agents employed can, without gross exaggeration, be looked upon as tissue "insults," and it is necessary to be continually alert lest the insult be so gross, or the tissue so debilitated, that the latter is incapable of response, and consequent harm result.

The therapeutic effects of almost all these physical agents depend primarily upon a stimulation of the peripheral circulation—venous and possibly lymphatic in some cases, arterial in others. As regards massage, this is obvious. To the effects, however, of electrically stimulated muscle contraction a similar statement applies, and this therapeutic measure is an excellent instance of the ease with which the optimum dose of the tissue stimulus may be overstepped. Until recently the therapeutic effectiveness of this stimulus has been in dispute. Magladery and Solandt (1940) have, however, demonstrated that the wasting of denervated muscle can be retarded by such stimulation, properly applied. They have further shown that the maximum effective "time" dose is of the order of "a stimulus which is interrupted for 5 seconds every 5 seconds and applied for two minutes three times a day." This is in contradistinction to the method usually taught, in accordance with which a current of almost maximal intensity of stimulus is applied at a rate of about 2 per second with no prolonged pause, the whole treatment lasting up to 10 minutes or even longer—a total of stimulation time incomparably greater than that of Magladery and Solandt's maximum. This matter is worthy of stress, especially as, in a recent article (Gutmann and Guttmann, 1942), the statement appears that "the galvanic exercise treatment is the more successful the more the individual [denervated] muscles are exercised." Over-stimulation of such wasted and grossly abnormal muscle is entirely comparable to the administration of large doses of strychnine to a failing myocardium. A similar caution is relevant to all physical, as indeed to all therapeutic, agents. The dose must be graduated in accordance with the residual capacity of the individual and of his tissues to respond; an adequate dose for one would constitute gross over-stimulation in another.

Certain conditions also are notoriously sensitive to excessive *active* use: that in which the danger is most commonly recognized is dislocation of an elbow, especially in children or adolescents, though certain derangements of the knee are also susceptible. On the other hand, the safe or rather optimum degree of activity can often be assessed only after trial, under skilled medical supervision. Every rehabilitation department ought therefore to be continually supervised by a medical man skilled in the use of physical agents. Reference will be made later to the lack of this feature in the majority of hospitals otherwise well equipped, and to the reasons for this defect.

There is a growing tendency to decry the value of so-called passive therapy and to depend almost entirely upon the therapy of active function. Both are indispensable and can often be usefully employed concurrently at certain stages in the history of an injury or an ailment. Where normal tissue function is for any reason suspended, and tissue nutrition, through defective blood supply, is in consequence suffering, artificial stimulation of functional and vascular activity may partially replace normal conditions. One of the most striking and tragic illustrations of neglect of this principle is the permanently board-like hand which may result from the complete immobilization, with weight extension and without physiotherapy, of an upper limb for a high humeral fracture. "Passive" and "active" therapy do not constitute stages in treatment. Voluntary effort ought to form part of rehabilitation treatment at as early a stage as it may do so with safety, and passive therapy is with advantage often continued long after recovery of function has begun.

Provision in the E.M.S.

In the Emergency Medical Service there is very extensive provision of facilities for all these activities. Because in time of war the great preponderance of disability in the Services is due to injury, while in totalitarian war a large proportion of civilian disability is also due to enemy action, the earliest hospitals in the E.M.S. to be fully equipped in this respect were the so-called orthopaedic centres. At each of these there have for some time existed departments of physiotherapy of

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local and general remedial gymnastics, and of occupational therapy. At every such centre which has been enlarged by the building of hutted extensions these activities are housed in several specially designed huts; while at those centres at which the original hospital buildings did not necessitate this enlargement, suitable indoor spaces have been allocated to these purposes and the appropriate structural alterations made.

It was, however, obvious from long before the beginning of the war that these comparatively few orthopaedic centres would be insufficient for the numbers of war casualties which occurred or arrived in this country. The next step, therefore, was a much wider provision of rehabilitation facilities in the Service, in accordance with a decision of the Minister that every Class I E.M.S. hospital of 300 beds and upwards should reserve and prepare enough space to accommodate physiotherapy and indoor treatment by remedial exercises.

Later still, three types of fracture department, "A," "B," and "C," were selected—"A" and "B" as parts of general hospitals for long-stay and short-stay fractures, respectively, while the "C" departments, for civilian out-patients, are situated partly in hospitals and partly in certain clinics. In connexion with the "A" departments, as full provision for rehabilitation treatment, in proportion to size, is being provided as at orthopaedic centres; while "C" hospitals and clinics have been chosen because they already possess rehabilitation facilities adequate to their functions.

The *housing accommodation* for such a rehabilitation department at a large, hutted orthopaedic centre consists of the following: (1) A building, 144 ft. by 24 ft., for massage, electrotherapy, radiotherapy, thermotherapy (including short-wave therapy in some), and the earlier stages of remedial exercise; at one end of the building are "offices" for the staff. (2) A gymnasium, 60 ft. by 24 ft., for more advanced local and general rehabilitation gymnastics. (3) A room or rooms for handicrafts and carpentry.

Outdoor space is generally available for the more active forms of therapy, and full use is made of this, and especially of football, cricket, tennis, and even golf facilities. Stereotyped "P.T." is dead.

In *equipping* these departments with technical apparatus, at first only the most simple types were provided, and particularly such types as would be in greatest demand for the treatment of battle and bomb casualties. Gradually, however, it has been possible to supply some of the more specialized forms of equipment, and the rehabilitation departments are becoming more and more elaborately set out, while at the same time the provision of unessential varieties of apparatus is avoided.

The *technical personnel* which are recognized as being necessary to carry out the varied treatment belong to three groups—namely, members of the Chartered Society of Massage and Medical Gymnastics, male physical-training instructors, and occupational therapists.

With such facilities as have just been briefly outlined, rehabilitation activities at a large orthopaedic centre are obviously extensive, complicated, and diverse. The simplest of these begin in bed, and it is now the routine in E.M.S. hospitals for every patient who is confined to bed to perform at stated times during the day such exercises as are medically advisable, so that when confinement to bed is no longer necessary the individual ought to find himself at a much more advanced stage of general fitness than he would have been under the former regime of almost complete passivity. Pre-operational exercise and muscle stimulation are also coming more and more into use, to the obvious advantage not only of the muscle groups at the site of operation but of the patient's general tone and resistance.

All those who are ambulatory ought to attend the various departments. In the so-called "physiotherapy" department the members of the C.S.M.M.G. not only administer the various therapeutic agents there in use but also supervise the earlier stages of remedial exercise, with patients singly or in groups and exercising either freely or by means of gymnastic apparatus.

Many large hospitals are now provided with physical-training instructors, in the majority of instances supplied by the Army gymnastic staff and consisting of N.C.O.s who, in addition to their instructional training, have undergone a special course of remedial gymnastics. As soon as a convalescent is capable of doing so, he joins one of the carefully graded groups for physical exercise. In its nature this is entirely divorced from the old "physical jerks," and is made up of a combination of more or less formal physical training with indoor and outdoor games. In the winter much of this treatment is carried out in the gymnasia, already described; but advantage is taken of any out-of-door space, and at many of the E.M.S. hospitals it is possible to make use of football, tennis, and golf rehabilitation.

Occupational therapy is a standard part of treatment at all orthopaedic centres and at every hospital with a "Group A" fracture department, and trained personnel for this work are increasing in numbers, the Ministry having instituted an intensive course of training at one of the orthopaedic centres. The remedial aspect of productive occupation is partly physical and partly psychological, and the occupations consist of light crafts such as weaving, basket-making, and wool-mat-making, as well as of heavier work, mainly carpentry. In addition to these, at many centres the hospital gardens function as remedial agents.

The fullest advantage cannot be taken of such a complex organization, in which the same patient is undergoing treatment in all the three main divisions of rehabilitation, unless there is an efficient system of timekeeping, and at some large E.M.S. hospitals such a system is in use. This is under the supervision of an *organizer*, whose duty it is to see that every patient observes his therapeutic time-table.

Medical Personnel.—It must therefore be obvious, and it is now officially recognized, that *specialized medical supervision* of these activities is essential to the complete efficiency of a rehabilitation department in order to ensure the correct application of all the methods and physical agents used and, of even more urgent importance, to hold the proper balance between activity and rest in a population consisting not only of convalescents but of convalescents at varying stages of recovery. This medical supervision, however, has provided the most difficult of all the problems in connexion with the organization, and it would be idle to suggest that the difficulty has been overcome. That it has not is due to the very great expansion of rehabilitation facilities under the Emergency Hospital Scheme—at the newly established orthopaedic centres, in all Class I hospitals of 300 beds and over, in the special fracture hospitals, and at certain other special centres, such as neuroses centres, head centres, etc.; whereas it is almost literally accurate to say that before the war there were no specialists in physical medicine attached to hospitals outside the Metropolitan Area and the comparatively few large provincial centres. Even in London a typical "sector," with a teaching hospital at its apex, might furnish one or at most two such individuals in normal times attached to the teaching hospital, while with wartime expansion there have sprung up in the sector four or five other centres each of which may at present contain two or three times as many casualty beds as its parent and each of which ought to be provided with a physical medicine specialist. In the extra-metropolitan "regions" the situation is even worse, and is being progressively aggravated by the withdrawal into the Army of ever greater numbers of medical men. This withdrawal threatens to render futile, owing to lack of candidates, a scheme for an intensive course of training of medical men in rehabilitation therapy set up under the Emergency Medical Service. The desirability of such medical supervision, now officially recognized, ought to be obvious; its virtual indispensability, however, is fully realized only after comparing centres where it exists with those where there is no such unified control.

The policy of the Ministry is, at any rate at present, not in favour of the setting up of rehabilitation "centres." After the war, however, it is almost certain that such institutions will be found necessary, and the present emergency might, if the individuals were available, lead to the equipment of a number of men and women with a training which would render them competent to supervise a form of therapy whose post-war establishment will represent a great and long-advocated advance in the treatment of injury and disease.

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DIPHTHERIC HEART-DISORDERS IN CHILDREN

BY

C. NEUBAUER, M.D.

R.M.O., City Hospital for Infectious Diseases, Walker Gate, Newcastle-upon-Tyne

Among all the ill effects which diphtheria may cause in childhood the damage inflicted on the heart is the most serious. The vast majority of deaths in children due to this disease occur as a result of injury to the cardiovascular system. A few cases of the laryngeal type result in death from mechanical obstruction and some others from pharyngeal paralysis. Practically all the remaining deaths are due to some form of cardiac failure.

Knowledge of the pathology, clinical signs, and treatment of diseases of the heart has been much increased in recent years by electrocardiography, and it is proposed to give an account of 100 cases of diphtheria with myocardial lesions observed from the onset to either convalescence or termination. These fall into three groups: (1) lesions of the heart musculature; (2) abnormalities of rhythm; (3) interference with conductivity.

The Myocardial Lesion

The clinical signs of this condition are well known. Chief among them are listlessness, pallor, and increase or decrease in the pulse rate. Albuminuria may be found, and when present to a marked extent during the early stages of the disease is regarded as a bad prognostic sign.

The Electrocardiogram.—Alterations of the T-wave, S–T stretch, or of both, are often found. The T-wave is low in comparison with the preceding P-summit, the height of which is normally half that of the T. In other cases the T-wave is either absent or inverted or diphasic, in which latter case the inverted part is followed by a final wave. These signs are regarded as pathological in children if they occur in lead I or leads I and II, or in all three leads. It has been shown in recent years that the degree of dislocation of the S–T stretch is of as much importance as variations of the T-wave in myocardial lesions, perhaps of even greater importance. The S–T stretch is compared with the level of the preceding P–R stretch to estimate its dislocation. Slight dislocation of less than 0.5 mm. may be disregarded, but any dislocation exceeding 1 mm. is pathological. It must be remembered that variations of this type are seen normally in lead III, that a flat or diphasic T-deflection may appear in lead II in children with meteorism, and that after treatment with digitalis the S–T stretch is dislocated and the T-wave flattened in lead II. If these variations are kept in mind the abnormalities in the electrocardiogram can be considered as due to myocardial damage caused by the diphtheric toxin. Indications of the pathological changes in the myocardium are sometimes found when the clinical signs are still doubtful. At the same time evidence of myocardial damage is sometimes still found when clinically the child appears to be quite recovered. The importance of the latter fact is obvious. At this hospital no child who has had a myocardial lesion is discharged until the electrocardiogram has returned to normal. Failure to ascertain that a myocardial lesion has completely cleared up may account for reports about slow recovery after diphtheria in certain cases, and for those tragic instances when a child dies suddenly at home after discharge from hospital. The electrocardiogram returns to normal again after 3 to 4 weeks in light cases, after 6 to 7 weeks in moderately severe cases, and after 10 to 13 weeks in severe cases in which a myocardial lesion is present without any disturbance of conductivity. In the present series of cases 38% show evidence of myocardial damage without any disturbance of conductivity. Some examples of variation in the T-wave and S–T stretch in cases of diphtheric myocarditis are shown in Figs. 1–6. All of them are lead II.

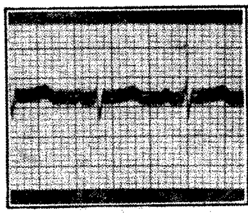

FIG. 1

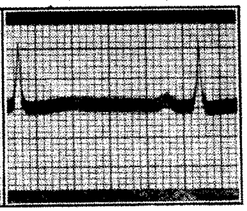

FIG. 2

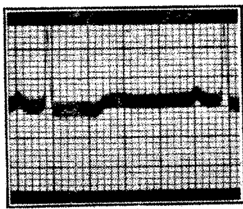

FIG. 3

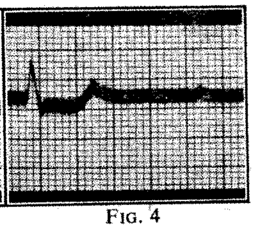

FIG. 4

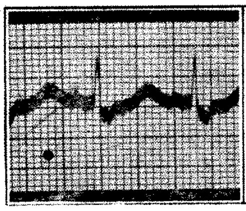

FIG. 5

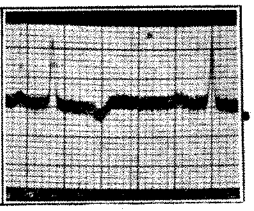

FIG. 6

FIG. 1.—T-wave very low
FIG. 2.—T almost isoelectric.
FIG. 3.—S–T stretch dislocated, T diphasic.
FIG. 4.—S–T dislocated and almost horizontal.
FIG. 5.—S–T a steep line, connecting S with T.
FIG. 6.—S–T dislocated, T inverted.

Abnormalities of Rhythm

Sinus Tachycardia.—Sinus tachycardia is very often seen during the febrile period of diphtheria, and is of no special significance. Tachycardia which persists into later convalescence should be carefully investigated. If the tachycardia is due to a myocardial lesion, evidence of the latter will be found together with the signs of the tachycardia.

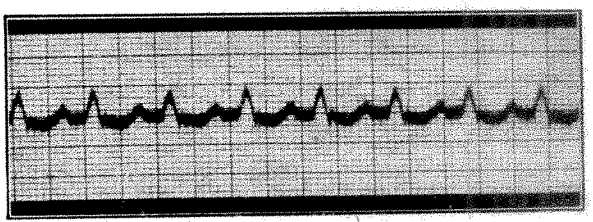

FIG. 7

Case 1: Fig. 7.—Beryl H., 4½ years; 29/12/1941; 15th day of disease.

Lead II: Regular tachycardia, rate 120. R notched; voltage 4/10 mV; duration 0.12 sec. S–T below the base-line. T diphasic.

Sinus Bradycardia.—Bradycardia is often found in the early convalescent stages of diphtheria as in other infectious diseases. The condition may, however, be due to cardiac damage. Gross bradycardia should always be carefully investigated to exclude a cardiac lesion. An electrocardiogram enables a differential diagnosis to be made at once.

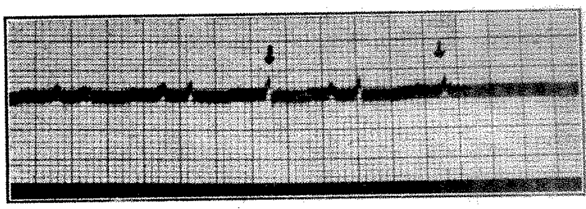

FIG. 8

Sinus Arrhythmia.—Sinus arrhythmia is a common cause of cardiac irregularity in childhood and has no pathological significance. It should be carefully distinguished from more serious forms of irregularity, as otherwise the activity of a healthy child may be quite unnecessarily restricted.

Extrasystoles.—Extrasystoles are not generally regarded as of serious import, and to a certain point the same may be said of them when they occur during the course of diphtheria.

Case 2: Fig. 8.—Robert L., 5 years; 22/8/1941; 22nd day of disease.

Lead II: P–R 0.23 sec. (partial a.-v. block). Ventricular complex of very low voltage; splintered and notched. T inverted. There are two extrasystoles, indicated by arrows.

Interference with Conductivity

The Auriculo-ventricular Block

Partial a.-v. Block.—This is a serious condition in which there is a lesion either of the a.-v. node itself or of the bundle of His and the surrounding myocardium. It occurs in severe infections, mostly of the gravis type. Clinical evidence of the condition is limited to bradycardia together with enlargement of the heart, but a definite diagnosis is impossible without an electrocardiogram. This latter shows a lengthening of the P–R interval, which normally in children does not exceed 0.12 second. A P–R interval of 0.2 second or more must be regarded as definitely pathological. Partial a.-v. block was found in 17% of the present series.

Case 3: Fig. 9.—Rosalie B., 3 years; 18/10/1941; 13th day of disease.

Lead II: Action regular. P–P 1.47 sec. Rate 40. P–R 0.36 sec. R notched near the peak. S–T below the base-line. T upright.

Complete a.-v. Block.—Clinical signs. An early symptom of the condition is often a syncopal attack in which the child is blanched and collapsed. The most marked feature is the extreme bradycardia, the pulse rate dropping to 30–40 a minute. Following a syncopal attack the patient remains pale and cyanotic, with coldness of the face and extremities and a livid tinge in the cheeks. The expression is anxious and there is often precordial or abdominal pain, together with marked restlessness and vomiting. Within one or two days the liver shows evidence of enlargement. Complete a.-v. block was found in 5% of the present series.

The electrocardiogram shows that the P-summits occur at equal intervals. The ventricular complexes also occur at equal intervals, but their rate is much less than that of the auricles. The varying length of the P–R intervals shows that there is no connexion between the auricular and ventricular contractions.

Case 4: Fig. 10.—Rosalie B., 3 years; 20/10/1941; 15th day of disease.

Lead II: P–P 0.65 sec. Auricular rate 92. R–R 2.00 sec. Ventricular rate 30. The auricle is beating three times more quickly than the ventricle. It is a 1:3 block. R widened and notched; duration 0.18 sec.; voltage 1/4 mV. T upright.

Lead III: P–P 0.65 sec. Auricular rate 92. R–R 2.30 sec. Ventricular rate 26. Duration of ventricular complex 0.14 sec. T inverted.

Bundle-branch Block

Partial Bundle-branch Block.—In the present series 19% of the cases showed evidence of this condition, which, as in the case of partial auriculo-ventricular block, can only be definitely diagnosed by use of the electrocardiogram. This shows a prolonged duration of the ventricular deflection, which normally does not exceed 0.05 second. In this condition it may be prolonged to 1 second or more, while the ventricular deflections are seen to be splintered and notched.

Case 5: Fig. 11.—Francis W., 5½ years; 24/2/1942; 9th day of disease.

Lead I: Action regular. R–R 0.75 sec. P indiscernible. Ventricular complex of low voltage. R splintered and thickened; duration 0.1 sec. S–T below the base-line. T isoelectric.

Lead II: P–P 0.80 sec. Rate 75. P–R 0.20 sec. Ventricular complex splintered at the peak; voltage 6/10 mV; duration 0.1 sec. S–T far below the base-line. T diphasic.

Lead III: R–R 0.80 sec. P indiscernible. Ventricular complex splintered and notched; voltage low; duration 0.05 sec. T isoelectric.

Complete Bundle-branch Block.—This condition occurred in 4% of the present series. The chief characteristics seen in the electrocardiogram are that R, S, and T waves are of high voltage; that a marked R-deflection is followed by an inverted T, while an exaggerated S-deflection is followed by an upright T, and that the duration of the ventricular complex is prolonged together with splintering and notching of the deflections.

Case 6: Fig. 12.—Ronald R., 5 years; 4/9/1941; 10th day of disease.

Lead I: P–R 0.31 sec. R splintered and notched; voltage 7/10 mV; duration 0.15 sec. T inverted.

Lead II: Voltage of S 1¼ mV; duration 0.11 sec. T upright.

Lead III: Exaggerated S; voltage 1 mV; duration 0.14 sec. T upright.

Left bundle-branch block.

Case 7: Fig. 13.—Jean W., 2 5/12 years; 25/2/1942; 8th day of disease.

Lead I: P–P 0.82 sec. Auricular rate 73. S–S 2.39 sec. Ventricular rate 25. S splintered; voltage 6/10 mV; duration 0.14 sec. T upright.

Lead II: Auricular deflection almost indiscernible. S–S 2.10 sec. Ventricular rate 28. Ventricular complex shows a notched downward deflection, the voltage of which is 1/3 mV, the duration 0.1 sec.

Lead III: Ventricular complex shows a very high R; voltage 1¼ mV; duration 0.1 sec. T inverted.

Right bundle-branch block.

Auricular Fibrillation

The electrocardiogram has shown that auricular fibrillation does not only occur in severely damaged hearts, but may also be seen as a transitory phenomenon in children when the heart muscle is undamaged.

Transitory Auricular Fibrillation.—This condition may arise in children during diphtheria, and may last a few hours or a few days. No abnormal clinical signs can be detected either before or after the attack, and the patient is not disturbed or distressed. The prognosis is good. The electrocardiogram shows typical auricular fibrillation, but there are no other signs of myocardial damage. The condition occurred in 2% of the present series.

Case 8: Fig. 14.—Irene G., 5 years; 9/10/1941; 29th day of disease.

Lead II: Action irregular. R–R 0.56 to 0.64 sec. Ventricular complex of normal configuration; voltage 8/10 mV; duration 0.05 sec. P-summits absent. The ventricular deflections are connected by oscillations. T-waves deformed by oscillations falling with them.

Lead III: Action irregular. R–R 0.60 to 0.63 sec. P absent. Ventricular complex of normal configuration; voltage 6/10 mV; duration 0.05 sec.; connected by oscillations.

Two days later the electrocardiogram did not show anything abnormal. The child had a normal convalescence.

Auricular Fibrillation in Severe Heart Lesions.—Patients who develop this condition show signs of myocardial damage for a period, sometimes long and sometimes short, before the onset of auricular fibrillation. The prognosis is very poor, especially in those cases in which congestion was present before the fibrillation started. According to Lewis, "the auricular fibrillation loads the already defective muscle with an extra burden." The electrocardiogram shows all the signs of a severely damaged heart muscle.

Case 9: Fig. 15.—Robert B., 3 years; 12/2/1942; 55th day of disease.

Lead I: Action irregular. P indiscernible. There are oscillations in the first cycle. Ventricular complex: voltage very low (1/4 mV). S–T on the base-line. T round.

Lead II: Action irregular. P absent. There are oscillations connecting the ventricular deflections, which are of low voltage (1/2 mV). T round and deformed by oscillations.

Lead III: Action irregular. P indiscernible. Voltage of ventricular complex 1/2 mV; duration 0.05 sec. T very low in some cycles, isoelectric in others. There are oscillations between the ventricular complexes.

The Occurrence of Death from Diphtheric Heart-disorders in Children

Death may occur, sometimes with startling suddenness, in the first ten days of the disease. This often happens in severe cases of the nasopharyngeal type due to the gravis strain of the organism. The fatal issue in these cases is usually brought about by one of three conditions:

A. *Gross Myocarditis.*—The electrocardiogram shows evidence of extreme myocardial damage.

Case 10: Fig. 16.—Alan W., 9 years: admitted 26/7/1941. Onset 25/7/1941. Severe nasopharyngeal diphtheria. K.L.B.+. Anti-diphtheria serum 60,000 units intravenously. 28/7/41: Membranes separating. 2/8/41: Vomiting, pallor, cold extremities; blood pressure 110/84. 3/8/41: Electrocardiogram taken 12 hours before death.

Lead I: Action irregular. R–R 0.85 to 0.87 sec. P imperceptible. Ventricular complex splintered; voltage 1/5 mV; duration 0.16 sec. S–T dislocated. T isoelectric.

Lead II: R–R 0.85 to 0.89 sec. P absent. Ventricular complex shows a downward deflection of 1/5 mV voltage and 0.15 sec. duration. T faintly indicated.

Lead III: R–R 0.80 to 0.87 sec. P indiscernible. Ventricular complex: voltage 1/3 mV, duration 0.1 sec. T isoelectric.

B. *Acute Complete Heart-block* (*Case 11: Fig. 17*).—Rosalie B., 3 years. Onset gradual, about one week. Admitted 11/10/1941. Severe pharyngeal diphtheria. K.L.B.+. Anti-diphtheria serum 30,000 units intraperitoneally. 12/10/41: membranes separating. 16/10/41: blood pressure 76/63. 18/10/41: syncope; partial a.-v. block; myocardial lesion. 19/10/41: complete heart-block; pulse 36; cardiac dullness enlarged; liver swollen; vomiting. 20/10/41: pulse rate 20; cyanosis; electrocardiogram taken 2 hours before death.

Lead III: Complete a.-v. block. Auricular fibrillation.

C. *Ventricular Tachycardia* (*Case 12: Fig. 18*).—Brian D., 3 years, admitted 13/12/1941; 4th day of disease. Severe nasopharyngeal diphtheria. 60,000 units anti-diphtheria serum intraperitoneally. Extremely ill; pale; hands and feet cold. Heart enlarged; "tick-tack" rhythm. Electrocardiogram shows complete heart-block. 12 p.m.: Child very restless; pulse weak. 14/12/41: semi-conscious; cyanotic. Offensive oral fetor. Electrocardiogram taken 1/2 hour before death. Regular tachycardia. R-R 0.49 sec. Rate 122. P indiscernible. The ventricular complexes are atypical, and one complex follows the other without any interval. Duration 0.18 sec. T diphasic. There is a longer interval after the last cycle in the third lead.

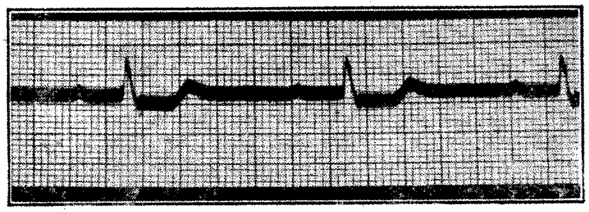

FIG. 9

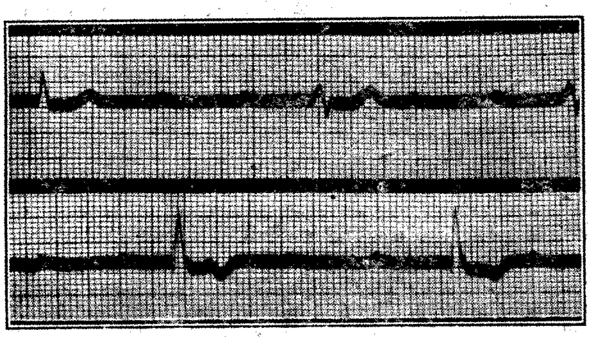

FIG. 10

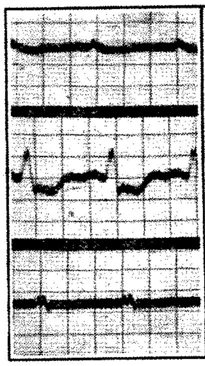

FIG. 11

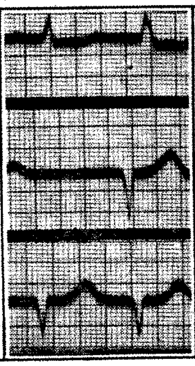

FIG. 12

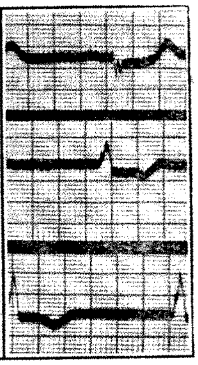

FIG. 13

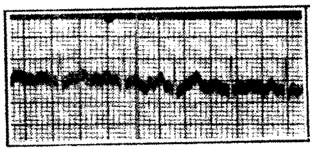

FIG. 14 (*a*).—Lead II.

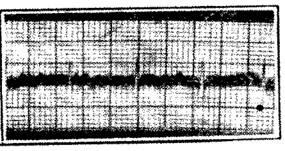

FIG. 14 (*b*).—Lead III.

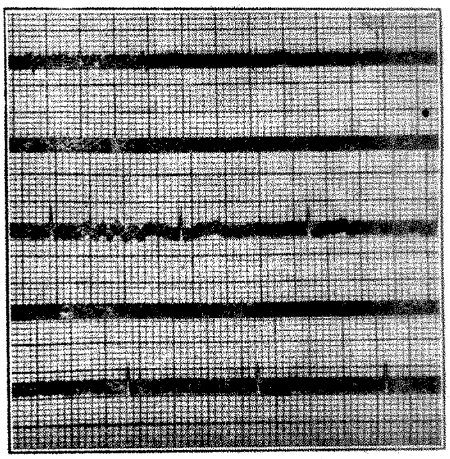

FIG. 15

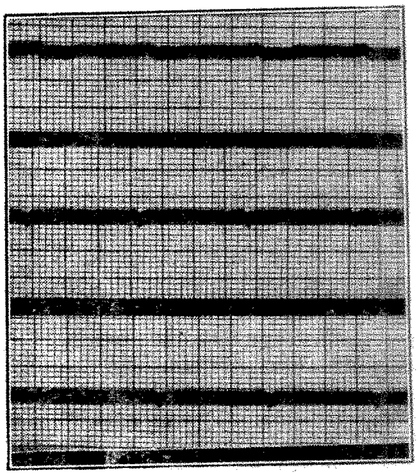

FIG. 16

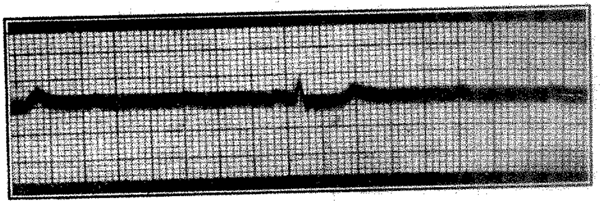

FIG. 17

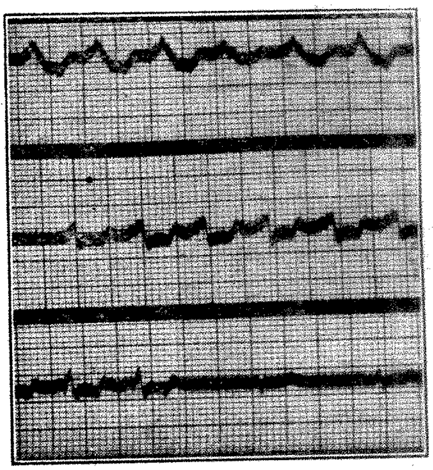

FIG. 18

The examples given above are sufficient to show that electrocardiographic investigation in support of careful clinical examination of the patient is desirable in the treatment of any case of diphtheria other than the mildest, and especially when there is reason to suspect the presence of myocardial damage. It is only by the use of the electrocardiogram that a clinical suspicion of myocarditis can be definitely confirmed.

In general it is possible to discharge a patient who has suffered from a mild attack of diphtheria in four weeks, from an attack of moderate severity in six to seven weeks, while those with a severe infection may have to be retained in hospital for three months or longer. Where evidence of a myocardial lesion has been found the patient should not be discharged until the electrocardiogram has returned to normal.

I wish to express my thanks to Dr. J. A. Charles, medical officer of health, Newcastle-upon-Tyne, for permission to carry out the investigation, and to Dr. E. F. Dawson-Walker, medical superintendent of the Hospital for Infectious Diseases, Walker Gate, for assistance in the preparation of this article.

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A CASE OF INTRA-UTERINE INFECTION OF THE FOETUS BY GAS-GANGRENE ORGANISMS

BY

F. H. KEMP, M.B., M.R.C.P., D.M.R.
Assistant Radiologist to the Radcliffe Infirmary

AND

J. A. STALLWORTHY, F.R.C.S., M.R.C.O.G.
Assistant Obstetrician and Gynaecologist to the Radcliffe Infirmary

The following case is recorded as one of unusual clinical and radiological interest.

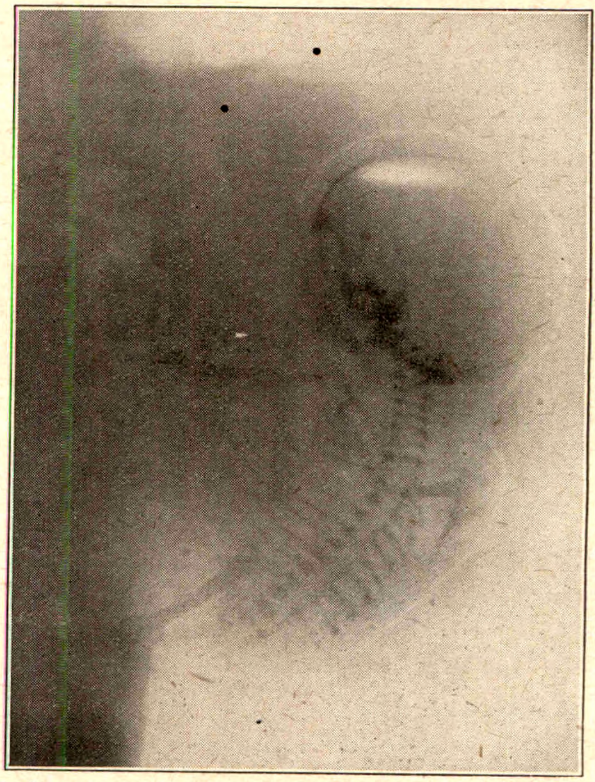
Case Report

The patient, a 2-para aged 30, was 16 weeks pregnant when she first attended the ante-natal clinic at the Radcliffe Infirmary in November, 1940. Her first child, weighing 6 lb. 11 oz., was born in 1930, and the second, weighing 9 lb. 8 oz., was stillborn the following year. Two months after the second confinement it was discovered that the patient was suffering from diabetes mellitus, and it would seem probable that this condition was present during the pregnancy and was responsible for its unfortunate ending. From the time diabetes was diagnosed in 1931 until the patient attended the Radcliffe Infirmary in 1940 she had required 30 units of insulin daily, and at her first ante-natal examination she was found to have just a trace of sugar in the urine, but no acetone or albumin.

Obstetrical progress was uneventful until Feb. 7, 1941, when complaint was made of sickness, and hydramnios was found to be present. The blood pressure was 110/80, and the urine was free of sugar and albumin. Foetal parts could not be felt, and, to investigate the cause of the hydramnios, a radiograph was taken. One apparently normal foetus presenting by the vertex was reported. The following week there was a considerable increase in the size of the uterus; acetone and sugar were present in the urine, but there was no albumin. The patient was more uncomfortable and was admitted to hospital. The foetal heart was audible and foetal movements were felt. In the next 10 days the abdomen increased rapidly in size and oedema of the lower extremities occurred. At this time the foetal heart could not be heard, so a second radiological examination was made on Feb. 27. It revealed a breech presentation but no overlapping of the skull bones or other features suggesting foetal death. On March 4 the patient stated that she could not feel any foetal movements, and no foetal heart could be heard.

On March 8 a further radiograph revealed a breech presentation with slight overlapping of the skull bones and a large bubble of gas within the shadow of the foetal head (see Fig.). Other films taken with the patient standing upright demonstrated gas and a fluid level within the foetal skull. The foetal brain and its investing membranes seemed to have collapsed, as the air bubble could readily be displaced to different positions by changing the woman's posture. No other bubbles of gas were seen within the foetus. The previous films were re-examined, and the second radiograph, taken on Feb. 27, showed several smaller gas bubbles within the shadow of the foetal skull which could not be accounted for by gas in the mother's intestinal canal. The diagnosis was that of intra-uterine foetal death, and it was suggested that there was a gas infection of the foetal skull. Arrangements were made for the pathological laboratories to investigate the foetus bacteriologically as soon as it was delivered.

On March 16 spontaneous delivery of a macerated foetus occurred. The foetal body was soft but the skin was intact. Within an hour of delivery radiographs were taken of the foetal body and the presence of gas in the skull was confirmed. No further collection of gas was seen in any situation. The skeleton was well developed and both lower femoral epiphysial centres were ossified. Dr. A. H. T. Robb-Smith opened the skull, and some of the macerated cranial contents were taken for bacteriological examination. There was extreme maceration but no naked-eye appearance of gas infection of the tissues. Sections from the brain and liver showed an extreme degree of autolysis, but no gas-forming organisms were seen. Bacteriological culture of the smears taken from the cranial contents was reported by Dr. Vollum to show a pure culture of an organism which was identified as *Cl. welchii*. The puerperium was uneventful, and except for a temperature of 99° on the third and fourth days it was apyrexial.



Radiograph taken on March 8. Intracranial gas bubble is well shown.

It is interesting to note that on Dec. 28, 1941, this patient was delivered of a healthy living female child after spending many weeks in hospital so that her diabetes could be controlled.

Discussion

This is a case of intra-uterine infection of the foetus with gas-forming organisms occurring in a woman suffering from diabetes mellitus. Hydramnios and increasing oedema of the lower extremities developed at the thirty-second week of gestation, and at this time there was considerable difficulty in controlling diabetes. A fortnight later, at the thirty-fourth week, there were signs suggesting foetal death, and radiographic examination revealed bubbles of gas within the foetal skull. Seventeen days after this a macerated foetus was delivered and a pure culture of *Cl. welchii* was obtained from its intracranial contents. There was no evidence of maternal toxaemia due to gas-forming organisms either before or after delivery. It would appear that the foetus died 17 or 18 days before delivery, as the heart had been heard on Feb. 25 but not on the 27th. The films taken on the 27th revealed small collections of gas in the foetal skull. Presumably the infection occurred after the death of the foetus, although it is possible that it was the cause of death. It is difficult to explain the path of infection: there had at this time been no interference and no vaginal examination had been made. There was no evidence of a low-lying placenta and no apparent focus of infection elsewhere in either the mother or the infant. It would seem, therefore, that infection was blood-borne and transmitted through the placenta. Unfortunately the placenta was not examined bacteriologically. It is also difficult to know why infection was localized to the foetal skull, especially in view of the fact that gas was known to be present for 17 days before delivery and was detected in no other organ either by radiological examination or at necropsy. It is known that the liquor was not grossly infected, for no gas was present in the amniotic sac. Had the foetal skull been opened during the process of birth a pure culture of *Cl. welchii* would have been liberated in the genital tract. That this is possible should be considered when perforation is performed on a dead foetus or when Willett's forceps are applied to the scalp of such a foetus.

The relevant questions to be answered are: How often does gas infection of a foetus occur, and what is the path of infection? It is not uncommon for gas to be seen in all the principal vessels of the body within 24 hours of delivery, presumably secondary to infection of the placenta or the vessels of the umbilical cord; but one of us has investigated 8 cases, in addition to the one recorded, of suspected foetal death by examining the mother in the erect position, and no gas shadows have been observed.

THIOUREA AND WOUND REPAIR

BY

W. R. FEARON, M.B., Sc.D., F.I.C.
Department of Biochemistry, University of Dublin

The value of local applications of urea in the treatment of septic wounds was demonstrated in 1915 by Symmers and Kirk, and has been confirmed by many subsequent workers, including Millar (1933), Foulger and Foshay (1935), Robinson (1936), Muldavin and Holtzmann (1938), and Stonham (1941); while Cummins (1942) has shown that urea in concentrated solutions is an effective bactericide.

In 1929 Hammett reported that mitotic division and cell proliferation during wound repair were promoted by certain organic compounds containing a thiol, or sulphydryl group, and he advanced the theory that tissue reconstruction was associated with the presence of free –SH groups (Hammett and Reimann, 1929), an explanation also put forward by Rapkine (1930), and accepted by Riley (1940) in an important survey.

Now, thiourea, the sulphur analogue of urea, resembles urea in many of its properties, and, furthermore, contains a latent or masked –SH group; consequently, its possible therapeutic effect in wound repair appears worthy of investigation. Thiourea is of very low toxicity, and may be obtained in a pure form, since its solubility in water at ordinary temperature is only about 1 in 30, which is much less than that of the ammonium thiocyanate from which it is prepared. Thiourea is much more stable than the typical thiol compounds. Its aqueous solution may be sterilized by boiling, and keeps well, although long exposure to air and light results in some decomposition, as shown by the gradual appearance of a precipitate of sulphur and dicyanamide.

Clinical Reports

For the preliminary investigation, ulcers of the static chronic type were selected for treatment. Two series of observations were made, the first being undertaken by J. G. Waugh, M.B., B.Ch., of this University, to whom I am indebted for the following report:

Fifteen cases were treated, in which the ulcers were characterized by extreme chronicity and recurrence due to fibrosis, exposure to trauma, poor blood supply, or polysepsis. After preliminary cleansing, the thiourea was applied in the form of a 1% aqueous solution on a gauze dressing kept freely moist with the reagent. Application in all cases was followed by a brisk local reaction, accompanied by convergence of the epithelial margin. The response increased up to the eighth day and in some cases progress continued up to the twelfth day. After this, application of thiourea had no further obvious effect, and if persisted in merely tended to soften and macerate the epithelial margin.

The second series of cases was investigated by E. Kawerau, M.B., B.Ch., the treatments being carried out in Dublin at Dr. Steevens's Hospital and at the Adelaide Hospital.

Thirty-two cases were treated, the subjects being mostly working-class women beyond middle age. In all of them the ulcers were due to a varicose condition of the veins of the leg, and in more than half had a chronicity of over 5 years. Observation of all the cases showed that thiourea has a definite stimulative effect on the proliferating granulation tissue. When conditions are favourable the optimal response is reached within 12 days, although large ulcers of 0.5 cm. depth have filled with healthy granulation tissue up to their epithelial margins within a week. When this has occurred the treatment should be discontinued, as otherwise fibroblastic proliferation becomes exuberant and impedes epithelial growth, as already pointed out by Riley.

Method of Treatment

The procedure adopted in applying the thiourea is important. The most effective results followed the use of a 1% aqueous solution of thiourea (B.D.H.), applied on gauze or lint and kept moist by renewal every three to four hours. If the dressing is allowed to dry it adheres to the granulating surface, and is apt to cause damage when the dressing is renewed. If evaporation is prevented by use of a completely occlusive covering over the dressing, there may, for some unexplained reason, be considerable local pain. The difficulty of providing a continuously moist dressing for externe patients was overcome by the use of a hygroscopic paste, prepared by boiling 1 g. of thiourea and 2 g. of starch in 100 ml. of water. When the mixture had become of uniform consistency it was allowed to cool, and then 5 ml. of glycerol was added. This paste was applied on gauze or lint cut so as to fit the ulcer surface accurately. This was covered with a larger piece of lint, a thin layer of cotton-wool, and finally a broad bandage. No occlusive material is used. Where practicable the dressing is reapplied daily.

Conclusion

The mechanism of the action of thiourea and the other thiol compounds effective in promoting wound repair awaits elucidation. The only physiological property so far ascribable to thiourea is that of inhibiting the catalytic oxidation of ascorbic acid in aqueous solution (Fearon and Kawerau, 1942). As ascorbic acid is intimately associated with collagen formation and fibroblastic growth (Eddy and Dalldorf, 1941), the therapeutic action of thiourea may reside in its protective effect on the vitamin mobilized locally for tissue repair.

I wish to record my thanks to my two collaborators for the trouble they have taken in the clinical investigation of the action of thiourea; I also gratefully acknowledge the grant from the Medical Research Council of Ireland, which has made it possible for Mr. Kawerau to undertake his part in the work. The case histories and details of individual treatment will be published elsewhere.

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F. R. Whitehouse and C. H. Watkins (*Proc. Mayo Clin.*, 1942, 17, 140) record a case of multiple diseases of the lungs treated by sulphadiazine. After the second course of this drug the patient had severe bleeding from the gums, and thrombocytopenia was detected, the platelets numbering on one occasion only 20,000 per c.mm. The value for Hb was 10.5 g. per 100 c.cm. of blood. The drug was discontinued, and improvement resulted from a transfusion. Four weeks after this the patient had to be given sulphadiazine again, and thrombocytopenia recurred. The authors urge that thrombocytopenia as the result of sulphonamide therapy should always be suspected when purpura occurs during treatment.

CERVICAL RIB AND HYPERHIDROSIS

BY

E. D. TELFORD, B.Chir., F.R.C.S.

Emeritus Professor of Surgery, University of Manchester

(From the Neurovascular Clinic, Manchester Royal Infirmary)

The usual signs that a cervical rib is causing trouble are pain and muscular weakness. It is also generally recognized that in some instances there are vasospastic phenomena which may lead to gangrene of one or more fingers.

A consequence of cervical rib which is not so widely known is hyperhidrosis of the hand; the sweating here may be profuse and very troublesome. In a series of 92 patients on whom I have operated for symptoms of cervical rib there were 81 of the common textbook type. Of the remaining 11 cases, 5 were examples of pressure by a normal first rib, 4 showed predominantly vascular symptoms, while 2 patients complained mainly of profuse hyperhidrosis of the affected hand. Short notes of these two cases are as follows:

Case I

A housewife aged 38 had for some weeks felt an aching and weakness of the right hand, with very profuse sweating. She was right-handed, and her troubles were worse at the end of a day's work. When seen her right hand was normal in colour and temperature, but was covered with drops of sweat, which had saturated the bedclothes where the hand rested. Operation showed a large cervical rib articulating by a fibro-cartilage with the first rib at the scalene tubercle. The accessory rib showed clearly the groove in which the lowest trunk of the plexus had rested. Removal of the rib was followed by a rapid and complete return to normal.

Case II

A probationer nurse aged 18 had been perfectly well while working as a typist, but within 6 weeks of taking up nursing she complained of increasing weakness of the right hand, with aching pain and troublesome sweating. She was right-handed, and the cause of her trouble was no doubt the change from a light sedentary occupation to one of physically much heavier work. A radiograph showed a small cervical rib on the right side. At operation this rib was found not to extend as far as the plexus, but was continued as a tense fibrous cord in the substance of the scalenus medius. The lowest trunk of the plexus rested on this cord, and it was seen that with each inspiration the cord became taut and pressed so hard on the lowest trunk that this structure was lifted up with each breath. Division of this fibrous cord, together with section of the anterior two-thirds of the scalenus medius, was followed by prompt and complete recovery.

Commentary

It would seem well-nigh certain that the explanation of these cases of hyperhidrosis of the hand is to be found in the irritation by the cervical rib of those sudomotor sympathetic fibres which are running in the lowest trunk of the brachial plexus. This explanation is in line with that generally accepted for the vascular complications of cervical rib.

Todd (1913a, 1913b) was the first to suggest that these vascular phenomena were the result of irritation of sympathetic fibres. Telford and Stopford (1931) carried his work a stage further by showing that in some individuals the vasoconstrictor fibres passed through the lowest trunk of the plexus as an undistributed bundle, and that this bundle lay directly upon the cervical rib. Given a patient with cervical rib who has this disposition of sympathetic fibres, then the symptoms caused by pressure and friction on the lowest trunk will be predominantly vascular in type. This explanation, although widely accepted, has been challenged by some writers who still believe that the vascular symptoms are to be explained by mechanical interference with the subclavian artery. Be this as it may, mechanical interference with the artery will not explain hyperhidrosis of the hand; whereas the view that the excessive sweating is the result of sympathetic stimulation dovetails very neatly with the explanation of the vascular symptoms.

Sudomotor and vasoconstrictor fibres are known to be intimately associated throughout their course and distribution, and if a leash of fibres containing both types be exposed to irritation by friction or pressure, the factor of their relative position with regard to the rib will determine whether vasospasm or hyperhidrosis figures more prominently in the clinical picture.

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DESERT SORES

BY

H. M. RAPPORT, M.R.C.S.

Captain, R.A.M.C.

The following article is in no sense intended to be authoritative or academic. It is merely a collection of views acquired after treating over 1,000 patients for desert sores.

The desert sore is a chronic ulcerative condition of the skin characterized by its tendency to local extension and delayed resolution. It appears in patches of various dimensions from the size of a threepenny-piece to that of a half-crown or occasionally even larger. The ulcers may be single or multiple; the edge is usually irregular in outline. They are roughly divisible into two main types—primary and secondary.

The primary type appears as a spontaneous blister which ruptures and leaves behind a suppurating sore. The secondary type is superimposed on any slight cut, abrasion, or burn. In this connexion it is interesting to note that the skin is far more susceptible to injury in the climate of the desert. The minimum amount of trauma will invariably result in a breach of the skin surface. A not uncommon origin for a desert sore is a simple boil which ruptures and then fails to resolve. Lastly, bites due to fleas, bugs, and mosquitoes occasionally suppurate and give rise to the desert sore.

Aetiology

The aetiology appears somewhat obscure, but certain factors without doubt tend to promote the condition. When the diet is seriously lacking in fresh green vegetables or the equivalents, I have noted a marked rise in the number of sores seen. The adequate provision of a comprehensive scale of rations naturally presents many difficulties in countries such as the Western Desert, where, on the whole, the rations are exceptionally good; but now and again essentials are lacking.

Patients tend to ignore their sores and leave them uncovered in the early stages. As a result, flies, which are very prevalent, tend to spread the condition. In the same way, the contact of sand with the sores tends to make them worse. When water is short, and washing as a result is on a very primitive scale, I find that the impregnation of dirt in the skin will often give rise to blisters, which subsequently become desert sores. General ill-health is usually associated with a profusion of desert sores, but in this connexion I find it difficult to differentiate between cause and effect. Very very occasionally when cases show rapid deterioration I have swabbed the sores, and the Klebs-Loeffler bacillus has been found. In my series of 1,000 cases 2 proved to be due to diphtheritic infection.

The condition is almost universal among the troops in the desert, but I find that newcomers are especially susceptible. The fair-skinned men seem to show the greatest susceptibility. An interesting feature is the presence of sores among the Egyptian and Libyan natives, several of whom I have treated. Their response to treatment is no better than that of our troops.

The lesions are, in my experience, seen chiefly on the extremities, and by far the commonest site is the hand. The actual sores are difficult to classify, but I recognize four stages:

(*a*) A small shallow ulcer with yellow base. The edges are not inverted, but there is a distinct tendency to undermining of the edges of the skin in close proximity to the sore, where pus forms, and eventually the ulcer elongates along these new channels. At this stage the sores are usually painful and tender.

(*b*) The sore has reached the indolent stage. It fluctuates between partial resolution and extension, and is now usually almost painless. Pus continuously exudes from the lesion.

(*c*) At this stage the sore becomes flush with the surface of the skin, with exuberant granulations, a dry scab forms, and the condition seems almost resolved. Then from one corner of the scab pus appears; the scab loosens and is eventually shed, and the base of the ulcer is once again a suppurating sore.

(*d*) Eventually in a shorter or longer time, which may vary from one week to six months, the sore heals and leaves a permanent purplish-blue scar.

Any of the sores may pass through one or more of these stages, but may remain for an indefinite period in stage *b*.

Treatment

The treatment from the point of view of prophylaxis is naturally the provision of a diet which is comprehensive in all essential material constituents, especially vitamin C. In the Army, ascorbic-acid tablets can be issued on medical recommendation at the scale of one 25-mg. tablet per man daily when the ration is considered to be deficient in vitamin C. This amount of ascorbic acid I prescribe in every case. All cuts and abrasions should be covered in the first instance to prevent access of flies and sand. Sanitation in the field must be of the highest possible order to reduce the fly menace to the minimum.

The general treatment consists in allowing the severe cases to rest from work entirely in the first instance. This may be impracticable, but an attempt should be made to release patients from all but the most essential duties. I find ascorbic acid in larger doses—1 tablet of ascorbic acid (25 mg.) t.d.s.—of considerable advantage. Where it has been possible to obtain tablets containing all vitamins these have been far more effective. When after several weeks of intensive local and general treatment patients fail to respond, or even show signs of marked deterioration, they have to be evacuated to the base hospital as there is no chance of recovery in the field. Local treatment in my experience has resolved itself largely into the question of "trial and error." Its effectiveness varies from one individual to the next. An agent which effects a rapid cure in one patient may exacerbate the condition in another, and vice versa.

After experimenting with many pastes, ointments, and powders I have found the following agents to be most generally effective:

(i) Powdered suphapyridine incorporated into paraffin. molle flav. (three 0.5 g. tablets of sulphapyridine to 2 oz. of paraffin. molle flav.). This is applied locally and the dressing renewed after three days. I have tried in a few cases scrubbing the sores with a nail-brush and applying elastoplast over the sore with sulphapyridine paste in direct contact with the sore; the process is painful and has, in my opinion, little advantage over that first mentioned.

(ii) Powdered sulphapyridine applied alone to the sore is sometimes effective, especially in stage *b*.

(iii) Lotio eusol is often helpful in those cases which only partially respond to (i). It often increases susceptibility to treatment with (i) if the patient has applications of eusol for a few days in between treatment with (i). Acriflavine 1 in 1,000 concentration is also in the same way sometimes effective.

(iv) Patients in stage *c* often respond well to pasta flava (pulv. hyd. oxid. flav. 3 parts, pasta zinci oxid. co. 97 parts).

I make it a practice never to persist in the application of any one agent longer than 2 weeks, as the sores seem to acquire a tolerance to it after a while. If a temporary change of agent is adopted for a few days I find that on resumption of the original agent its effectiveness is often increased. This tolerance to a particular agent is a very real one, and when the agent is persisted in I have frequently seen rapid deterioration. The advisability of "ringing the changes" must be carefully considered in cases not showing response to a particular treatment. In the treatment of all sores it is essential that they be completely covered to ensure freedom from contamination with extraneous matter. In the case of the fingers I find the application of splints a great aid to resolution and a distinct deterrent to chronicity.

Illustrative Cases

I have chosen 4 brief case histories which illustrate certain points I have previously mentioned:

Case 1.—A major aged 27, fair-skinned, seen first with five small sores on the fingers. Treatment was given as outlined earlier in this paper, and while some sores resolved, others remained weeping with no tendency to resolution. At the same time numerous new sores were appearing. After 15 weeks' treatment we reached a large town where diet was both liberal and varied. All his sores disappeared in 5 days.

Case 2.—A captain aged 37, dark-skinned; slow response to treatment. He went on leave to base, where he acquired tab. multivite (B.D.H.), which he took in a dose of 1 tablet thrice daily. He returned one week later with all his sores healed, and he has had none since.

Case 3.—A lieut.-colonel aged 43, medium complexion, had numerous desert sores which were very resistant to treatment until pasta flava was tried; these rapidly cleared up after three applications. In his case other agents tried caused exacerbation of the condition.

Case 4.—A quartermaster-sergeant aged 28, fair-skinned, seen first with numerous desert sores and widespread furunculosis. All treatment failed and his general condition made removal to hospital essential. He took 3 days to reach base hospital, and on arrival his lesions had entirely healed!

Conclusions

The condition of desert sores is one to which people normally domiciled in a temperate climate are very susceptible while living in the desert. Added to this is the difficulty of maintaining the diet on a basis comprehensive enough to ensure adequate amounts of essential foods and vitamins. Finally, the conditions attendant upon active service render adequate treatment difficult and the follow-up of patients is of a standard which compares unfavourably with what one might desire.

Medical Memoranda

An Obscure Cause of Haematemesis

A fatal case of haematemesis due to ingestion of foreign bodies seems worth recording, in virtue not of the nature of those bodies but of their location at necropsy.

CASE REPORT

An undersized and under-developed girl aged 16½ was admitted to the Worcester Royal Infirmary on July 29, 1941, having been ill for 5 days with pain in the lower part of her back severe enough to keep her in bed. It was noticed that she showed a morbid interest in her complaint. There was a history of pyelitis some years previously. On admission she was vomiting green fluid and there was tenderness in the left lumbar region of the abdomen; the urine was, however, without obvious abnormality. The temperature was 100.6° and the pulse rate 96. A tentative diagnosis of perinephric abscess was made and conservative treatment initiated. Thirty-six hours after admission the patient suddenly became restless and complained of thirst; she shortly afterwards started vomiting blood, some 20 oz. being lost over a period of several hours. In spite of restorative measures she deteriorated rapidly and died 5 hours later.

At the post-mortem examination, held 24 hours afterwards, the stomach was found to be distended with recent blood-clot, but there was no evidence of either gastritis or gastric ulcer. The spleen was normal in appearance. The pancreas was much enlarged, and on opening it a haematoma the size of an orange was seen to occupy most of the head and body of the organ. This haematoma showed organization at the periphery, but in one point there was a commencing abscess cavity. A sharp object was accidentally located in the haematoma; this proved to be a sewing-needle. On further exploration two other needles were found, half the eye of one of them being missing. The duodenum was then opened, and at the junction of the middle and distal thirds on the mesial wall an ulcer was found in direct communication with the pancreatic haematoma; it was rounded and admitted the tip of the little finger; the edges were injected, but the walls were not indurated. On opening the splenic artery a small haematoma was seen in its wall. This artery had apparently been penetrated by one or other of the needles, thus giving rise to the fatal haemorrhage, for the artery had presumably bled into the intrapancreatic haematoma already present, and the haematemesis was due to the passage of blood through the perforation of the duodenum into the stomach. On opening the intestines a fourth needle was encountered at the hepatic end of the transverse colon; it was embedded in the substance of the transverse mesocolon close to the bowel wall. This needle had presumably perforated the duodenum, travelling to its destination in the substance of the transverse mesocolon, the alternative and less probable route being through the small intestine and ascending colon with perforation of the large gut at the site where it was found.

COMMENTARY

References in the literature to the site of foreign bodies in the respiratory and intestinal tracts at various intervals after ingestion gave only one example of a foreign body having perforated a hollow viscus to enter another organ. Prof. Ameline (1937) instances a woman aged 68 who accidentally swallowed a glass-headed pin. She was admitted to hospital 7 days later. There were no physical signs in the abdomen and no symptoms except a subjective sensation of the pin having become lodged in the stomach. Repeated radiographs confirmed that the pin had perforated the posterior gastric wall. Fifteen days after the accident gastrostomy was performed. The pin was found embedded in the posterior wall of the stomach, the point being fixed in the pancreas. It was removed and the patient recovered.

In our case a history was obtained of the girl having previously swallowed other foreign bodies, but we could not get any information about the needles which caused her death.

Of 17 cases recorded—1 by Ameline (1937), 1 by Kennedy (1935), and 15 by Jackson and Jackson (1936)—of ingestion of pins and needles, 9 were found in the bronchi, 2 in the pharynx, and 4 in the oesophagus, while the remaining 2 were in the stomach.

The interesting features of this case are: the absence of any history of having swallowed foreign bodies, with resulting difficulty in diagnosis; the penetration of the pancreas, with expansion of the pancreatic tissue around the haematoma; and the perforation of the splenic artery, with subsequent aneurysmal rupture and fatal haemorrhage.

I am indebted to Mr. T. Bates for permission to publish this case, and to Dr. W. H. McMenemey, who performed the post-mortem examination, for his very kind help and criticism.

Nottingham. MURIEL BANNISTER, M.B.

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Diverticulum of the Jejunum

H. C. Edwards, in his *Diverticula and Diverticulitis of the Intestine* (Bristol, 1939), says that jejunal diverticula give rise to two main symptoms: (1) vague abdominal discomfort and sometimes pain, particularly after meals; (2) flatulence, sometimes very pronounced and associated with loud borborygmi. The condition is uncommon. Edwards found it only 9 times in 2,820 necropsies at King's College Hospital—an incidence of 0.31%. As this condition is unusual and presents difficulty in diagnosis, the description of a case in which dyspepsia with pain thought to be due to a duodenal ulcer was eventually proved to be due to a large jejunal diverticulum should be instructive.

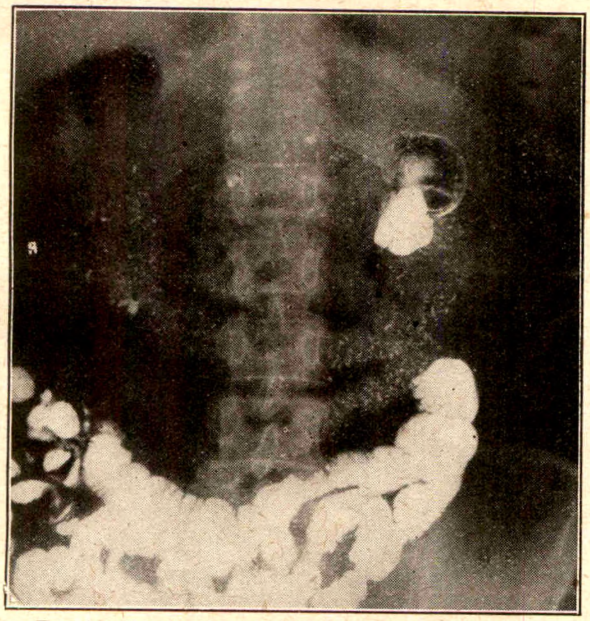

FIG. 1.—Showing barium filling the diverticulum of the jejunum 3 hours after injection of barium.

CASE REPORT

The patient, a married woman aged 56, had for more than 14 years complained of attacks of abdominal pain accompanied by much flatulence. In 1924 she had had a left nephrotomy for a large renal calculus; the history about this time is somewhat confused by the renal pain. From 1926 onwards the attacks of upper abdominal pain accompanied by much flatulence, which was relieved by bringing up gas and also by taking food, were well defined. In 1926 a laparotomy was performed after a diagnosis of duodenal ulcer had been made; but no ulcer was found, and the gall-bladder was normal. As a result of these findings, from 1926 until 1939 the attacks were treated symptomatically on the assumption that they were largely due to nervous dyspepsia.

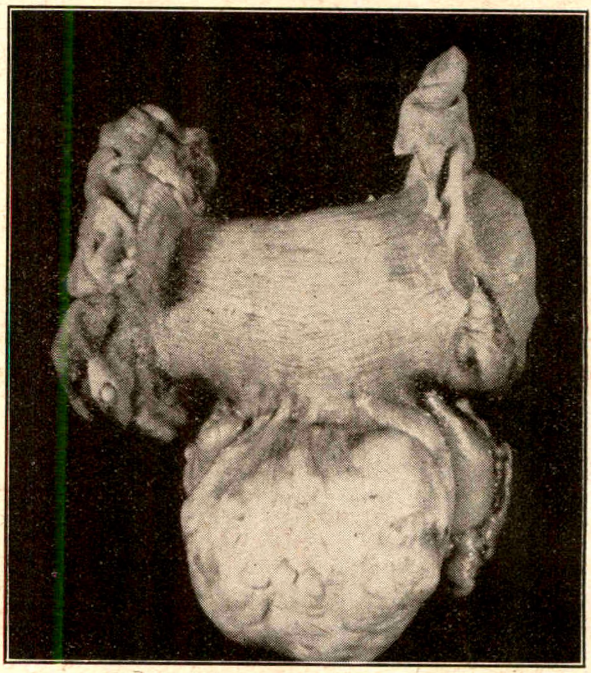

FIG. 2.—The specimen. The diverticulum is on the mesenteric border.

In Nov., 1939, after a particularly severe attack, a new radiological examination was made. Previous *x*-ray examinations of the stomach, duodenum, and gall-bladder had been negative. On this occasion Dr. R. O'Donoghue demonstrated a large jejunal diverticulum (Fig. 1) 18 inches from the gastro-jejunal flexure. There were also several small diverticula in the small intestine. These emptied with the intestine, but the large diverticulum retained the barium for more than 48 hours.

The patient was an obese subject with chronic bronchitis, and the operation had to be postponed owing to her developing bronchopneumonia. After suitable convalescence, laparotomy was performed under local anaesthesia on April 10, 1940. In spite of the many adhesions from the previous laparotomy, the diverticulum, which was on the mesenteric border of the intestine, extending into the mesentery, was easily located. The segment containing the diverticulum was excised and the continuity of the jejunum restored by end-to-end anastomosis, which was reinforced by a free omental graft. The patient made an uninterrupted recovery, and has remained quite free from her former symptoms. She is, in fact, better in health than at any time during the past twenty years.

Examination of the specimen (Fig. 2) showed that the diverticulum was about the size of a tangerine orange. When it was distended with water it held nearly half a pint.

F. E. C. DEVEGNEY, M.D.Geneva.
London, W. HAMILTON BAILEY, F.R.C.S.

In an investigation of carbohydrate metabolism in animals reduced to a subacute state of thiamine deficiency, H. A. Harper (*J. biol. Chem.*, 1942, **142**, 239) found that, compared with normal animals, there was a decrease in the rate of absorption of glucose from the intestine. There was also a decrease in the extent of hepatic glycogenesis, as well as in the rate of breakdown of glycogen.

Reviews

TREATMENT AFTER OPERATION

After-treatment. A Guide to General Practitioners, House Officers, Ward Sisters and Dressers in the Care of Patients After Operation. By H. J. B. Atkins, D.M., M.Ch., F.R.C.S. (Pp. 252; illustrated. 15s., plus 7d. postage.) Oxford: Blackwell Scientific Publications.

After-treatment is of paramount importance in determining not only the state of a patient's convalescence and subsequent health, but even his chances of survival. Such treatment is very largely in the hands of those named in the subtitle to this book and, as so much depends upon it, it should be thoroughly understood by them. The book is an excellent account of the recognized methods and should be very welcome at the present time. In addition to the after-treatment of operations it includes that which should follow certain injuries, such as burns, and head injuries producing cerebral concussion or contusion, the management of which may come within the province of those for whom it is primarily intended. Appendices on "Writing Reports" and "Appearing in Court" make valuable additions which are likely to prove especially useful to house-surgeons.

In his account of the after-treatment of head injuries the author regards the revolutionary practices of the Oxford School as too experimental to merit description, but his advice to give half a grain of luminal night and morning for as long as a year after a severe head injury may be regarded by some as a measure no less experimental than any of the practices of the Oxford School. We regret his omission of the treatment of closed head injuries by continued gentle dehydration, but perhaps the most noticeable oversight is the absence of any reference to "tidal drainage" of the bladder, which has recently been shown to be a valuable advance in dealing with the paralysed bladder of spinal cord lesions.

For the most part, however, there is little to criticize. If some of the statements are rather too dogmatic to be entirely and universally acceptable—e.g., that rectal saline after "closed" resections with obstruction is unsuitable because it may aggravate paralytic distension (and there are surgeons who regard proctoclysis as a valuable part of the after-treatment of these very cases)—such dogmatism at least has its value in making clear-cut teaching for readers. The illustrations are good and sufficient in number to enliven the text, which is easily read and printed in clear type, and the whole makes an attractive volume of convenient size. We regard this as a valuable book which will meet a real demand to-day for a concise account of post-operative management. It should make a particular appeal to the practitioners, house-surgeons, and sisters who are left to tide the patient over that critical period—after the surgeon has departed.

BODY MECHANICS

Body Mechanics in Health and Disease. By Joel E. Goldthwait, M.D., F.A.C.S., Lloyd T. Brown, M.D., F.A.C.S., Loring T. Swaim, M.D., John G. Kuhns, M.D., F.A.C.S. With a chapter on the Heart and Circulation as Related to Body Mechanics, by William J. Kerr, M.D., F.A.C.P. Third edition, completely revised and reset. (Pp. 316; 121 figures. 30s.) Philadelphia, London, Montreal: J. B. Lippincott.

This book is an interesting attempt to correlate functional disorders, and even organic disease, with faulty body mechanics. The authors, four of whom are orthopaedic surgeons and one a physician, claim that different anatomical types, such as the slender and the stocky, have a differing susceptibility to disease, and that long-continued persistence in faulty body mechanics may so interfere with the normal physiology of structures and organs as eventually to cause actual organic disease. While the authors do not make any exaggerated claims that organic disease can in every case be cured by correction of mechanical faults and improvement of posture, they quote many cases in which much benefit has resulted from this, even in such conditions as long-standing gastric ulcer, gall-bladder diseases, diabetes, disseminated sclerosis, and polyarthritis. From this it seems obvious that improvement could be much greater if treatment were undertaken earlier, before organic disease was advanced or, preferably, present at all. Prevention is better than cure, and the authors put in a strong plea, with which there will be general agreement, for early detection of postural defects in childhood and their correction by remedial exercises. Treatment is considered in detail and tables are given of the exercises which have been found most useful in practice. The book is well illustrated and a comprehensive bibliography is appended.

The reviewer, who is an orthopaedic surgeon, found himself in substantial agreement with the principles and practice expressed in this book, but it should have a wider appeal to many sections of the profession, particularly perhaps to general practitioners and school medical officers, who have the opportunity of detecting early deviation from the normal, and to physicians charged with the treatment of the "chronic" medical case. It could also with advantage be read by members of the massage profession.

TROPICAL DISEASE

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases. By Richard P. Strong, M.D., Sc.D., D.S.M., C.B. Sixth edition. (2 volumes. Pp. 1,747; 398 figures; 1 plate. £5 5s. net.) London: H. K. Lewis & Co. 1942.

In these far-travelling days the British medical man will be apt, sooner or later, to find himself in the presence of one or other of the strange diseases of subtropical and tropical lands. To whom then must he turn for help and scientific guidance? There are several textbooks, by well-known British authors, which will appeal to him, and here is one, by an American, with which he ought to be acquainted. Stitt's treatise in two volumes, which weighs like a Service rifle, is not the sort of thing to take into the field, but it contains much that will reward careful study before embarkation. There are few tropical medical subjects—and these are either quite out of the ordinary or very unimportant—which the reader will not find fully discussed.

The reader will learn that there are many anophelines which can transmit malaria, but that only a few are of any practical importance; that anophelines can fly or be carried for miles, but that it is not the long-distance record breaker that causes the real damage; that there are four malaria parasites which are accepted as species, but that *Plasmodium falciparum* is the one to beware of. The malarial diseases are still the gravest medical problem of the Tropics. Their distribution, signs and symptoms, pathology, and treatment are set out in orderly and thorough manner. All the other diseases are discussed in a similar way. There is a reasoned presentation of the facts, supported by evidence from a host of workers on each subject. It is true that the majority of the authorities cited are American, but this is not a matter for surprise. The population of the Americas is very large, and for various reasons the number of persons there who are carrying out research along medical lines is relatively great. Further, there are many tracts of country in which tropical diseases are rife even to-day, so that many American workers have ready access to local material.

The reader of "Stitt" will learn why it is now held that the larvae of the guinea-worm, *Dracunculus medinensis*, do not penetrate the cuticle of *Cyclops* but are ingested by this crustacean, and why *Ascaris* prevalence is considered by many to be a good indicator of the local level of social hygiene. He can find much evidence which shows that yaws is syphilis, and also much which shows that it is not. He will observe that the positive Wassermann reaction, often accepted as entirely specific, is viewed with an increasing scepticism where certain tropical diseases are concerned. He may also observe that Strong finds very confusing the use of such similar names as granuloma inguinale and lymphogranuloma inguinale for two different venereal diseases, and he may well agree with him.

It is significant that Strong, in these volumes, gives a useful amount of space to the various means of prevention of disease. The advances during recent years in the methods of diagnosis and treatment have been great, and there is little doubt that future advances will be greater still. But they are unlikely to lead to a substantial diminution of disease, except in a few cases. One of the most hopeful auguries for the future is the conviction, rapidly growing among medical men, that the abolition of the causes of disease is a matter which lies within their province, and indeed constitutes one of their prime functions. Strong's revision of "Stitt" with its salutary emphasis on the best means of preventing disease is a welcome sign of the times.

Notes on Books

Three volumes of the Oxford Medical Outline Series, on *Abdominal Surgery*, on *Thoracic Surgery*, and on *Surgery of the Head and Neck* respectively, have recently reached us; others of the series have also been published, while still others are in the course of preparation. The object of these volumes (American in origin) appears to be to cover in outline form the chief features of the surgery of the region considered. Developmental, anatomical, and pathological aspects are dealt with, and, as the author of one volume writes, the aim has been to arrange fundamentals in an orderly manner. A number of blank pages interleaved with the text enable the student to expand the outlines thus presented to him. Written by practising surgeons, these volumes give a modern summary of the subjects treated, and if because of their tabulated character, unrelieved by illustrations or diagrams, they make rather too rich and concentrated a diet to be readily assimilated by the general reader, they should at least be valuable as refreshers to senior medical students. They are clearly printed, well tabulated, and of convenient size. While their chief appeal will probably be to the candidate undergoing a coaching course or on the eve of his examination, the coach as well as the coached should find them helpful. The price in this country is 12s. 6d. each volume.

Preparations and Appliances

INSTRUMENTS FOR THE ANEURYSM NEEDLE TECHNIQUE

Mr. HAROLD DODD, Ch.M., F.R.C.S., surgeon to the King George Hospital, Ilford, writes:

The following instruments have been found useful for the aneurysm needle technique of ligaturing blood vessels before dividing them rather than the conventional "clip, cut, and tie," especially in gastric resections, nephrectomies, ligature of the cystic duct, the appendicular mesentery, the thyroid vessels, and for ligature and injection of varicose veins.

A Dissector-director.—Dissectors, directors, and dissector-directors are numerous, and an addition to this many-patterned class must be justified by real usefulness. The instrument illustrated (Fig. 1) is a good length, round-pointed, deeply grooved, and slightly curved at the tip. The generous channelling is its claim to distinction: this enables the aneurysm needle to be passed easily under the tissues without engaging in something below or at the sides, and particularly it permits the blade of the scissors to slide underneath for easy cutting; most directors are too shallow and narrow for this.

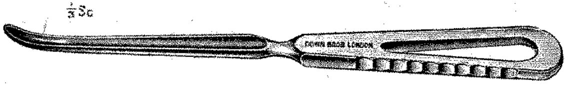

FIG. 1

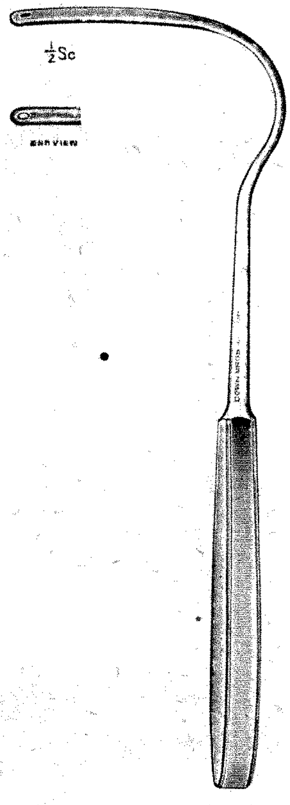

FIG. 2

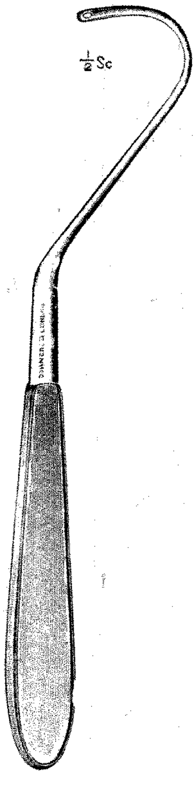

FIG. 3

An Aneurysm Needle.—The aneurysm needle shown in Fig. 2 is characterized by a long beak which enables it to carry a ligature round inaccessible pedicles like the coronary or renal artery, and then to bring it back close to the surface of the wound. Since this instrument has been made it has been found that Mr. Winsbury White had designed a somewhat similar needle for kidney operations.

A Delicate Aneurysm Needle.—This aneurysm needle (Fig. 3) is light in weight and fine in shaft and tip. It is used for passing behind delicate leashes of vessels behind the duodenum.

"*Seeking Forceps.*"—These seeking forceps (Fig. 4) are invaluable for defining the delicate vessels encountered behind the duodenum and about the thyroid gland.

The four instruments described above are made by Messrs. Down Bros.

A Light-weight Needle-holder.—The needle-holder shown in Fig. 5 has been found suitable for the dainty suturing required in plastic operations on the skin, on the kidney pelvis in the child, on the common bile duct, and for nerve and tendon suture. It is characterized by a certain grip of the finest needles, and its agreeably light yet dependable spring. It has an attractive bend of the handles which fits them snugly into the palm of the hand. The way in which it is held is illustrated. It will be found strange at first, but comfortable and efficient after practice. It was made first by Messrs. Vann Bros.

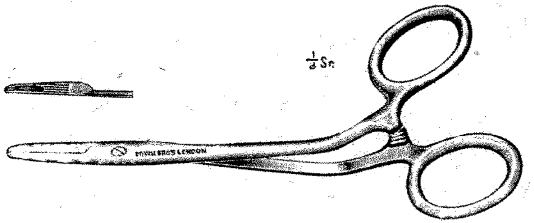

FIG. 4

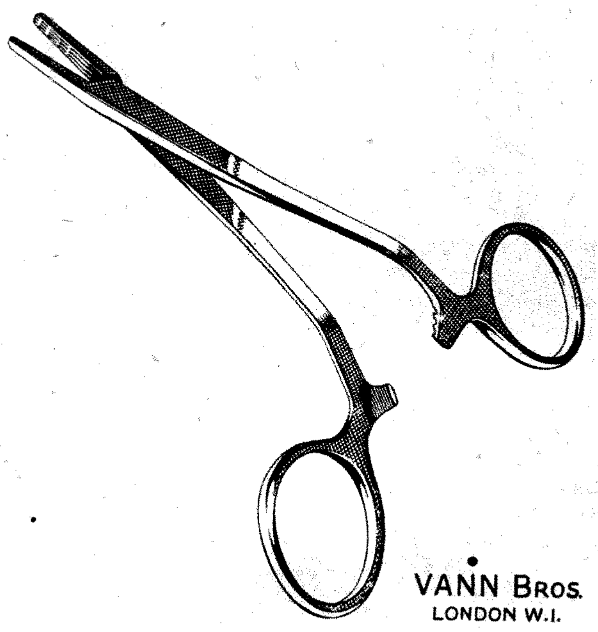

FIG. 5

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 25 1942

SOCIAL MEDICINE

As was announced last week, it has been decided to establish at Oxford an Institute of Social Medicine and to appoint a professor to be in charge of it. The purposes of the Institute have been set forth as follows:

> To investigate the influence of social, genetic, environmental, and domestic factors on the incidence of human disease and disability.
>
> To seek and promote measures, other than those usually employed in the practice of remedial medicine, for the protection of the individual and of the community against such forces as interfere with the full development and maintenance of man's mental and physical capacity.
>
> If required by the University to do so, to make provision in the Institute for the instruction in Social Medicine of students and practitioners of medicine approved by the Board of the Faculty of Medicine in the University of Oxford.

With the warm approval of Lord Nuffield, the Nuffield Provincial Hospitals Trust has decided to devote £10,000 a year of its income for the next 10 years to the creation of a Professorship of Social Medicine and to the foundation of the Institute in which he will work. The Institute will be managed by an administrative committee on which the Trust will be directly represented by six members. Those who read Sir Farquhar Buzzard's paper in the *Journal* of June 6 probably guessed that this was by no means an arm-chair essay, and that one sentence in particular presaged a new departure in a university which can no longer with justification be described as a "home of lost causes." The sentence was: "We still await the establishment of the first chair and the first department of social medicine in this country."

The broad idea of "social medicine" is of course not new, and it may be interesting to recall here the proposal made in 1908 that the B.M.A. should form a Section of Medical Sociology as one of the Sections of its Annual Meetings. The promoter of this was the late Dr. E. R. Fothergill. Supporting him was Dr. Alfred Cox, then representing Consett, Gateshead, and subsequently Medical Secretary of the Association, and happily still alive and active. Dr. Cox's words, as reported, are strangely apposite now, 34 years later. "If there was one thing," he said, "more apparent than another in the present day, it was the vast interest that the State was taking in the affairs of the every-day citizen, and it was quite certain that much proposed legislation could not be carried out without the assistance of the profession." It is interesting, too, to recall that one representative wanted to know whether "Sociology" meant "Socialism."

The move now made by Oxford is the end-point of a series of reactions that have been taking place in the medical test-tube for some time now. And it is also the beginning of a new series of reactions the end of which it is difficult to foresee. That the change has been heralded by one who has had a distinguished career in clinical medicine is itself significant. This imaginative move has not had its origin in the public health service or in the Government Department officially concerned with "health." It has as its common origin an ancient university and a wealthy industrialist. This, too, is significant. The new Institute of Social Medicine will incorporate in itself much that was inchoate in the minds of practising doctors, and will become the focus of the aspirations of those far-seeing medical men who have for long realized that the stethoscope, the bottle of medicine, and the scalpel represent in essence the failure of Medicine to get to the roots of illness. Sociologists have themselves often been criticized for neglecting the individual and concentrating too much and too long on the group and on mass reactions of human beings. Medical men have perhaps erred in the opposite direction by giving too exclusive an attention to the individual patient. But Medicine has, we believe, set about its task in the right way—the way of the biologist who must observe, collect, and classify. There is a regrettable tendency nowadays to belittle the clinician. Yet it is because the clinician has for centuries kept to the fundamental scientific discipline of observing and, where possible, measuring, that facts are now available to be observed in their interrelations by the statistician and the epidemiologist. And let it not be forgotten that the sanitarian and the epidemiologist are helpless without the clinician to recognize the disease in the first place, and the laboratory worker to confirm and refine the diagnosis in the second. The clinician must himself now learn to see health and disease through the eyes of the public health worker, must see the sick person as a unit in society worked upon by a multiplicity of physical and psychological circumstances. He must become more aware of the lesson stressed at Peckham—that the family is the health unit. All this will not happen to-day or even to-morrow, for the change in medical thought that is taking place and seeking expression in action does not find a medical profession educated to take the fullest possible part in "Social Medicine." Nor is the curriculum yet planned so to mould the medical student's mind that it will adapt itself to the new medical world that is slowly taking shape. We may even wonder whether enough of those who teach the student have minds elastic enough to stretch to new conceptions.

In a leading article entitled "Social Factors in Medicine" last year[1] we observed that few individual men had had more influence on the public health movement in the 19th century than John Snow, and that he had been "less concerned with propaganda than with proving by scientific inquiry that cholera was a water-borne disease." There is always the danger that doctors will approach medico-social issues with propagandist aims that are not strictly medical in origin. There is, too, the danger that doctors will go still further in usurping the place of the priest in society through a flush of humanitarian feeling, and that the medical profession will return to its beginnings in the temples of Aesculapius. It is the men like John Snow, who in their professional life stick close to fact and inquiry, that bring about the big changes that make for social betterment—an end which every good doctor must wish for.

TUBERCULIN PATCH TEST

The intradermal injection of tuberculin, as used in the Mantoux test, has provided much valuable information on the incidence of tuberculosis in large groups of people; its value to the practitioner is perhaps not as widely recognized as it merits. The basal data are available in the classic investigation by D'Arcy Hart.[2] He tested 1,030 clinically tuberculous patients with the routine Mantoux dose, 0.1 c.cm. of 1 in 1,000 old tuberculin, and obtained 96% of positive reactions. Among the clinically non-tuberculous at early ages the readings were mostly negative: 93.5% negative among 121 children aged 0–2, 83% among 124 aged 3–5, and 69.5% among 245 aged 6–10. The Mantoux result is clearly of much significance at early ages. Furculow,[3] in a valuable study in the U.S.A., used the "purest" tuberculin available, the Seibert P.P.D., and obtained the same type of result: 99% of 468 adults with clinical tuberculosis gave a positive Mantoux result, while less than 10% of 309 young people aged 6–9, with no clinical signs or known history of contact with tuberculosis, gave a positive reading. Bradshaw[4] feels that the diagnostic value of the test is underrated. At the Great Ormond Street Children's Hospital between 1934 and 1938 he tested 3,010 children referred by the clinicians: in 748 the test was positive. One important point was that in the examination of "wasters, contacts, adenitis and arthritis suspects" the test enabled three-quarters of the "suspects" under 4 to be cleared of suspicion of tuberculous infection; even in the 10–12 group half could be cleared. Bradshaw regarded the test as not devoid of some risk of reaction in erythema nodosum and phlyctenular conjunctivitis. In adult life the test is not so generally useful, for few who live in cities escape contact with the tubercle bacillus. Most recover but thereafter give a positive Mantoux response. Of 134 clinically non-tuberculous adults tested by D'Arcy Hart 88% were positive to the routine Mantoux dose. The positive percentage differs in different populations, and with the decreasing incidence of tuberculosis up to the beginning of the war the Mantoux rate was probably falling. New York City in 1921–8 showed a positive rate for age group 12–13 of 45.5%, whereas in 1934 the rate had dropped to 35.2. If the incidence of tuberculosis in the general population is low, adults who are negative to the Mantoux test will be more numerous and a negative Mantoux response will be of significant help to the physician, as was pointed out by M. P. Crowe.[5] Together with a low erythrocyte sedimentation rate it will justify a reasonably confident decision that baffling symptoms in a patient are not due to an active tuberculous infection.

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[1] *British Medical Journal*, 1941, 1, 715.

[2] Med. Res. Cncl. Spec. Rep. Ser., 164, 1932, London.

Invaluable as the intradermal test is, the method has drawbacks. The dilution of tuberculin to be used will keep for only a short time; the needle prick, though not bothering adults, may cause tears in children; finally, tuberculin adheres so tenaciously to glass that a special syringe must be kept for the test, and indeed for each dilution. In the presence of suggestive symptoms the medical man cannot accept a negative Mantoux result, but must know if his patient falls in the extra group of 7% inculpated by tests with the stronger dilutions 1 in 100 and 1 in 10. In order to avoid some of these difficulties Grozin[6] in 1933 let fall a few drops of tuberculin on to adhesive plaster, which was then applied to the skin of the patient. He called the method "the patch test." Vollmer[7] improved it by saturating filter paper with undiluted tuberculin, drying it, and attaching it to the adhesive side of the plaster. He has devoted much attention to the test, and has reported[8] on 2,900 patients, of whom approximately 720 were tuberculous. In 98% the results of the Mantoux and patch tests agreed. A number of recent papers, notably in America and Australia, testify to wide interest in the patch test. Reismann and Grozin[9] in New York State examined 1,000 patients by the Mantoux and the patch method: 49 were positive to both tests, 3 responded only to the Mantoux, and 2 to the patch test only. Furculow tested 612 patients aged 6–19: 123 were positive to the Mantoux test. The patch test missed 6.7% detected by the Mantoux test, and in 7.4% gave a positive where the Mantoux test failed. Though a few writers have described much larger discrepancies,[10] the majority of reports indicate that the patch test will give the right answer in about 95% to 98% of young patients. It appears to be less trustworthy in adults, for whom the Mantoux test seems preferable.

In descriptions of discrepancies many points of interest have been noted. All tests of the kind have a basal small error. Even when the same dose was injected from the same syringe intracutaneously into the two arms of the same patient, the results in the two arms differed in 3%. Different brands of tuberculin have given different percentages in tests on the same patient. Savage[11] in the U.S.A. recorded 60% and 47.6% in duplicate Mantoux tests with two commercial tuberculins. Even two small pieces of filter paper under the adhesive plaster at adjoining spots have on rare occasions given one a positive and the other a negative reading. Error has arisen from the application of the patch to skin that has been exposed to much sun and wind, or from failure to remove all grease from the skin with ether, acetone, or benzene before applying the patch. Again, different workers have used different tuberculins, O.T. or P.P.D. Colebatch[12] has also described false negatives due to the deterioration of patches during transit. When all these points are borne in mind, and when the practitioner can be satisfied that he has at his disposal a standardized uniform "patch," the test will probably prove of considerable value to anyone who is impelled by the exigencies of practice to sacrifice the greater accuracy of the Mantoux test to the convenience of the patch test. While a positive reading may be accepted, it is wise to accept a negative one only provisionally, subject to the result of a Mantoux test with the second dose, 0.1 c.cm. of 1 in 100 tuberculin. If the Mantoux test is not being as much used in general practice as it should be—and evidence points that way—the use of a properly standardized patch will be preferable to no test at all

DIARRHOEA AND VOMITING

The fact that the "peak" occurrence of diarrhoea in the summer months presents nothing like the tragic problem of twenty-five years ago has perhaps led to some neglect of the study of the curious relation between hot weather and this alarming metabolic disturbance of the young. It is commonly taught that summer diarrhoea has been abolished because of three main factors: the educational work of the infant welfare centre, the increased use of dried milk, and the disappearance of manure-covered streets with the advent of the motor car. These factors all presuppose an infective origin of the condition, but it was never clearly established that even the minority of cases were due to recognized pathogenic organisms. Recent work has suggested that a virus ought to be considered, but the fact that diarrhoea still occurs more frequently in warm weather, despite all the improvements in hygiene, suggests that heat might act in some ways other than by favouring the growth and distribution of some infective agents. Just before the war R. M. Campbell and A. A. Cunningham[13] studied a group of 574 infants with diarrhoea and vomiting admitted to the Park Hospital, London County Council. Grouping the cases by the month of the onset of symptoms, they found the largest number of cases to occur in July and September, and the smallest in January. More than half the cases admitted had occurred in the five months June to October. As gastro-enteritis may be a disease of mixed causations, it might be thought that the seasonal incidence of any series of cases would be the result of the interplay of a variety of infections of different epidemic constitutions. All cases without any evidence of parenteral infection (bronchitis, pneumonia, otitis, urinary infections, and so forth) early in the illness were analysed in the same way for monthly incidence, but the results were essentially the same, and the warmer months yielded an undue proportion of cases. Of the whole series there was evidence on admission of parenteral infection in less than one-third of the total number, and, taking the series as a whole, parenteral infection had no apparent effect upon the general death rate, which was 27.7% for the whole series. A distinction between dehydrated and non-dehydrated cases not only indicates the chief danger of diarrhoea and vomiting for the young but gives the clue to treatment and perhaps to causation. The mortality for the dehydrated group was 53.7% and for the non-dehydrated only 2.4%. It is small wonder that the authors summarize therapy by stating, "Whilst the general nursing management must be of a high order . . . the most important single factor in treatment is the relief of dehydration." For dealing with dehydration the authors favour the continuous subcutaneous route, ringing the changes on normal saline, Ringer's solution, and 3% glucose in 0.25% saline. In seriously ill patients this is supplemented in the first twenty-four hours by intraperitoneal and intravenous therapy. The profound disturbance in cellular chemistry set up by a negative water balance is probably not yet sufficiently appreciated. Recent biochemical studies have shown how serious this may be, and Campbell and Cunningham promise a further paper on water and salt metabolism. Meanwhile the effect of hot weather in facilitating fluid loss might be borne in mind as a possible factor in turning a mild gastro-enteritis into a deadly biochemical disturbance. Breast-feeding as a preventive measure can once again be supported by the Park Hospital figures. In the whole series only 4.5% of the infants were breast-fed at the time of onset, and only 3 out of the 18 died. About four-fifths of the infants contracted the disease at home, and it would appear that extra fluid (plain boiled water or even weak saline) might be a useful measure of prophylaxis for all babies, however fed, in hot weather.

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[3] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 2405.
[4] *British Medical Journal*, 1939, **1**, 825.
[5] Ibid., 1942, **1**, 266.
[6] *Amer. J. Dis. Child.*, 1933, **46**, 17.
[7] Ibid., 1937, **54**, 1019.
[8] *J. Pediat.*, 1940, **18**, 627.
[9] *Amer. J. Dis. Child.*, 1941, **62**, 1197.
[10] *Amer. Rev. Tuberc.*, 1941, **44**, 94.
[11] Ibid., 1941, **43**, 527.
[12] *Med. J. Austral.*, 1941, **2**, 640.
[13] *Arch. Dis. Childh.*, 1941, **16**, 211.

A NATIONAL AMBULANCE SERVICE

Hospital regionalization when it comes about will presumably carry with it regionalization of the ambulance service, for the ambulance, its promptitude, its equipment, and the skill of its attendants, may be as important in life-saving as the hospital bed itself. Ambulance provision is now probably, in bulk, not inadequate, but it needs co-ordination to avoid overlapping on the one hand and delay on the other and to overcome those difficulties which occasionally arise when there is doubt as to which authority is responsible for providing transport. The ambulance is now such a familiar vehicle that it is hard to believe, as we are told in a booklet issued by the Home Service Ambulance Commitee of the Joint Council of the Order of St. John and the British Red Cross Society, that before 1914 the civil population of England had practically no ambulance service. Many will remember the hand-propelled litter in charge of the police; in a provincial town of 20,000 population the other day we saw one of these in service after an accident. The last war gave a great impetus to ambulance organization, and at its end a number of people, under the auspices of the Joint Council, resolved to carry wartime experience into civil life by providing a range of ambulance stations throughout England and Wales. This Home Service Ambulance, which is by far the largest single ambulance organization, has 136 stations, and 320 others are affiliated, and last year it carried nearly 200,000 patients. In Scotland the St. Andrew's Association has over 100 ambulances, 23 of them in Glasgow. In addition there are the services of the local authorities, and London and other authorities have excellent ambulance fleets. Many hospital contributory schemes provide transport facilities for their members, many hospitals run their own ambulances, and, finally, there is the A.R.P. service, largely of improvised vehicles. The need for an adequate regional and divisional organization of standard vehicles and stretchers is apparent. Standardization is important if there is to be free interchange. In its 23rd annual report the Home Service Ambulance Committee points out that ambulances accommodating only a 6-ft. stretcher will be a great disadvantage in a widespread post-war interhospital scheme, and urges all ambulance builders, looking to the future, to build or modify their vehicles to accommodate the 7 ft. 9 in. stretcher. No doubt also the term "ambulance" will increasingly connote first aid as well as transport, and at convenient centres in each region there will be a first-aid ambulance unit with resuscitation and blood-transfusion apparatus. The committee already maintains such units in large industrial and in certain coastal and mining areas. In the recasting of the hospital system of the country a well-coordinated ambulance provision will not be the least of the essentials.

"LEKARZ WOJSKOWY"

Just one year ago the Polish Army Medical Corps published the first number of its journal, *Lekarz Wojskowy*, in this country. We have recently received the February-March-April issue for this year, and it bears adequate testimony to the energy of the editor and to the skill and knowledge of the contributors to what is, in these days, quite a substantial number. There are, for example, articles by Dr. Bohdan Hejduk on the organization of field surgery in modern war; by Prof. Antoni Jurasz, who is Dean of the Polish Medical School in Edinburgh, on considerations on surgical shock; by Dr. J. Skladal on the principles of physical diagnosis of latent and preclinical lesions of the lungs; and by Dr. A. Fidler on the theory of true uraemia. There is, too, a report of the congress of the Polish and Czechoslovak doctors held in Edinburgh in September of last year. Most of the articles are in Polish, but there are good summaries in English which will enable the English reader to get some idea of the work and views of the doctors of the great Slav nation which has been our close ally since September, 1939.

DOCUMENTARY REPRODUCTION

Micro-film processes for automatically recording documents have received much attention, particularly in America, during the last 5 or 8 years, and now in this country they have come into prominence through the risk of destruction of original documents by enemy action. Legal and banking documents are now being copied regularly and conveniently by the camera, and libraries are making large use of the facilities offered by the new developments in photographic technique. Much of this work is done with miniature cameras, often by 35-mm. cinematograph cameras taking pictures 18 x 24 mm. A thousand pages can be recorded in this way on a film spool measuring 3¼ x 1¼ in. Sixteen pages of a scientific paper, for example, will go on one foot of film. As for the time taken by micro-film copying, we learn that in Bermondsey 500 folios of parish registers were recently photographed in a few hours, a work which, if undertaken by hand, would have occupied months. The recording apparatus is a camera embodying a lens system giving high-quality definition over a wide field of view. The viewing or projecting apparatus is of different kinds. A hand viewer is necessary for the rapid recognition of titles of documents; this needs a lens magnifying perhaps no more than seven times. Then there should be a table viewer for reading the image while the reader sits with an illuminant so arranged that the room need not be in complete darkness; here the magnification may be twenty times. Another form of viewer may be used for projecting the image over a typist's shoulder on to a small screen when the document has to be recopied. The difficulty has been hitherto the expensiveness and complication of much of this apparatus. Recently Mr. B. K. Johnson, a teacher at the Imperial College of Science, showed to the Optical Group of the Physical Society a range of simple instruments constructed by him, which, we understand, are about to be manufactured by a commercial firm. The camera in the recording apparatus can be used at a low aperture, such as F/8, but the average grain size of the film now produced is just about equal to the resolving power of a camera lens working at the wider aperture of F/4.5. Part of the simplicity of Mr. Johnson's devices is due to the realization that most of the documents to be copied are of quarto or at least not larger than foolscap size, so that, accepting this limitation, one can do away with any automatic mechanism for moving the camera lens. A device is incorporated for moving the film along for the correct distance for each exposure. A different plan is pursued at the National Institute of Medical Research, which has been interesting itself in the micro-film process for recording papers from journals for storage in its library. Here it has been found that for simplicity of working a small repeating back camera, using flat film, is preferable to an arrangement for the use of roll film, with its gates and sprockets; the flat film is moved by a small lever. These methods of documentary reproduction are still in the stage of infancy, and the future will no doubt see great developments. The recent introduction of a new sensitive material (micro-negative copying film, panchromatic) is a further step towards the accurate registering of minute detail. With modern high-resolution films it is by no means impossible to copy a page of a daily newspaper containing small advertisements in such a way that every word is clearly readable; this is customarily done with the double frame size of picture measuring 24 × 36 mm. It may be added that micro-film is now being largely used also for taking enlarged photographs of microscopical preparations at low magnification.

TOWARDS THE CLEAN CITY

In the vast dreamland of social reconstruction, the contours of which are only dimly seen, all sorts of movements, admirable and less admirable, are staking out their claims, and they are right to do so because, in spite of the indeterminate nature of the ground, the "concessions" will probably go to those who are there first. A body early in the field is the National Smoke Abatement Society, which has prepared a memorandum entitled *Smoke Prevention in Relation to Initial Post-war Reconstruction.* The memorandum leaves out of account long-term proposals and concerns itself only with the ways in which smoke can be prevented in the new buildings which will begin to arise all over the country when the war is over. So far as these are commercial buildings, it is thought that by requiring all new installations of fuel-burning equipment to receive approval of a special authority, by banning open fires, and by making obligatory the use of smokeless fuel, a clean atmosphere could be achieved in the blocks of shops and offices which make up the centre of a modern city. For industrial plant there must be control of new installations and in many cases also of use and maintenance. It is the multitude of domestic chimneys which will always be the difficulty. But here again the construction of new houses depending entirely upon gas and electricity might be encouraged, and even though one open fire per house be conceded, the grates can be so designed as to use smokeless fuel. The memorandum urges that there should be smokeless central zones in cities, so that the shopping and promenade streets and the central parks and gardens may be pleasant, cleanly places instead of places of greyness and grime as they are now. Indeed, there might come about a state of affairs in which the central part of a great city, instead of enjoying only half the amount of sunlight which is the portion of the outer suburbs, would be brighter and sunnier than they. The same society has issued a pamphlet entitled *No Clean City,* in which smoke is shown, by telling quotations and still more telling photographs, to be the enemy of health and amenity. We notice one quotation by the M.O.H. for Manchester: "The abolition of smoke from our midst would do as much for the improvement of public and individual health in our industrial centres as any other single action open to this country."

PHOTOGRAPHING ANTIBODY ACTION

There is much in microbiology which can only be deduced, since it cannot be seen, and the limits of what can be achieved by direct observation were thought to have been reached when Barnard perfected photography by ultraviolet light. A long step further has been taken by the introduction of the electron microscope, and the possible uses of this instrument in biology are now beginning to be explored. Some idea of what it may achieve can be gained from a paper by S. Mudd and T. F. Anderson,[1] which is illustrated by photographs showing the action of antiserum on bacteria. They were taken at a magnification of 8,000 diameters and printed at one of 25,000. These sensational pictures show monstrous bacilli with long and exceedingly fine flagella. Their first usefulness is, indeed, in showing that flagella are much thinner than stained preparations would lead anyone to believe, the estimated thickness of a flagellum of *Bact. typhosum,* for instance, being only about 290 A.U. Admixture with homologous serum—heterologous having no such effect—causes both changes in the bacterial cell wall and a measurable increase in the thickness of the flagellum, attributable to deposition of antibody molecules on its surface. It is known that the antibody globulin molecule is elongate, and from its known dimensions and the measurements here made it could be concluded that the molecule was lying flat on the surface of the flagellum. By deduction not only from these observations but from work by others these authors conclude tentatively that in a low concentration of antibody patchy deposition takes place with the molecule lying parallel with the surface; with somewhat higher concentrations molecules so disposed form a continuous film, but in higher concentrations still a radial disposition is assumed. Another point vividly illustrated is that flagella sensitized by antibody attract particles of other kinds. When the serum used contained a precipitate, this was adsorbed on the surface of the bacterial cell and its flagella, with the result that they are entangled in large irregular masses of granular material. But these photographs are chiefly of interest as a portent: clear pictures at such a magnification afford an almost unlimited prospect for new observations.

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[1] *J. Immunol.,* 1941, **42,** 251.

SAVING COTTON-WOOL AND USING SAWDUST

BY

DUNCAN C. L. FITZWILLIAMS, Ch.M., F.R.C.S.

Among the schemes brought forward by the different professions for saving shipping space, it is strange that the medical profession should have overlooked one that could be very effective. It is the saving which might be made in the use of cotton-wool. Cotton-wool is a light and therefore bulky commodity and must take up considerable space. As it is grown chiefly in America, it must be imported, either in the raw state or as the finished article. An enormous quantity is used in hospitals, surgical centres, surgeries, and for many purposes throughout the country.

Cotton-wool has two great qualities for which it is used in surgery. First, it diffuses the pressure of bandages, splints, and apparatus over certain areas of the body. Fat people, therefore, scarcely require any of this "padding," as their own fat carries out this function, but wont and custom dictate that we should apply rather more to them than to thin people, because they are larger and have a greater surface. Splints used to be padded with cotton-wool, but with the application of plaster to fractures this is no longer necessary; and our results are better, as the apparatus does not slip out of position, showing that it was largely custom which dictated the use of cotton-wool. Fomentations are always covered with large quantities of cotton-wool, which is thrown away when the fomentation is removed, but a folded soft towel is just as good and can be applied again and again.

The second reason for the use of cotton-wool is its absorbent qualities for septic wounds or where there is discharge, but how many septic wounds do we see to-day? If we consider why we apply huge quantities of wool over a simple appendix wound we shall find that we do so because the theatre sister hands it to us. If it must be used the quantity might well be cut down to one-quarter. The same thing could be said of nearly all clean operations.

Enormous saving could be made in the dressing of clean wounds; often the whole dressing is discarded, and a big wodge of cotton-wool applied over a new one, even when the wound is already practically healed. If there is any need for wool over a fresh wound, there can be little need for it when the wound is nearly healed. Some saving might also be made in the amount of gauze used. This saving of shipping space can only be brought about by the thoughtful co-operation of the surgeon, the assistant or house-surgeon, and the sister or nurse, chiefly the sister, as she can control the nurse and the amount the surgeon applies; but it should be remembered there is no more conservative body of people than hospital sisters. The surgeon would do well to give orders on the subject.

Dressings from Sawdust

Some time ago the B.B.C. broadcast a request for suggestions for the use of sawdust. Perhaps the following experience might prove useful, for my brother and I managed a hospital of 100 beds in Rumania during the last war for many months without any dressings at all except sawdust, and a better dressing could not be asked for. We had no surgical equipment except our pocket surgical cases and the housewife of the matron; this may sound romantic, but was nevertheless a fact. How the other needs were supplied makes interesting reading, but cannot be gone into now. I will deal only with the sawdust dressings.

We had nothing except an ambulance; the buildings and bedding were of course supplied. The shops throughout Rumania were supposed to be completely denuded of material of every kind, but it was found that material could be produced when it was learned that we belonged to the British Red Cross, and it spoke volumes for the reputation and credit of this country that we obtained what we wanted, although we had little money and could only give "chits." All the shopkeepers were Jewish, and most of their goods had been sold to the Germans before they came into the war. What was left had been commandeered, and there was little chance of their being paid for it. Small wonder, then, that we were right when we thought that there might be something hidden away if we could get at it. Through an accommodating person we bought all the linen, gauze, and muslin we wanted, and smuggled it into the ambulance.

Next a meeting of lady volunteers was called, and their help and their sewing-machines were asked for. They had nothing: we had even to supply the thread; but they were set to work to make linen or muslin bags of different sizes. The material was torn into various lengths and widths and then folded over so that only three sides needed sewing. Coarse black thread was used because it showed up against the white material. One-quarter of the last side was left unsewn and open.

Preparing the Sawdust

We arranged for cartloads of sawdust to be delivered from the saw mills, which abound throughout Rumania, and dumped on clean sheets laid on the floor of a previously cleaned shed. It was then put through a large sieve, which removed all the coarse pieces of wood mixed with it. These were thrown away, and the remainder was sifted well through moderately fine sieves; this process was repeated twice so that all the fine dust was removed. The sawdust from these mills consists partly of real fine dust and the rest is crushed wood in the proportion (speaking from memory) of about one of the former to three or four parts of the latter. It was important to remove as much dust as possible to prevent it getting into the wound, so this fine sieving was done very thoroughly twice.

What was left was a coarse granular substance consisting of crushed wood pulp torn from the interior of the tree trunks by the great broad teeth of the circular and band saws. Considering its source I should imagine that the amount of septic organisms in it was very small. This granular substance was put into the bags through a funnel, until the bag was between one-third and one-half full. The opening in the bag was then sewn up with thick coloured thread, usually red, in such a manner that when the bag had to be emptied, all we had to do was pull the knot at the beginning and the thread came out, thus restoring the opening. The bag was then shaken, turned inside out, washed and boiled, and used again.

The bags varied from about 6 in. by 4 in. for small wounds to 12 in. by 10 in. for large ones or those with much discharge like empyemata. Most of the wounds were horribly septic and discharged freely, and this coarse granular material proved to be highly absorbent. The sawdust swelled as it got wet, so that the pads were always larger when removed than when first applied; hence it was necessary that they should be only one-third to one-half full.

In our improvised hospital the bags were put in tins in the oven, and people were assured they were sterile. Whether this was true or not I do not know; they were never tested bacteriologically, but they were all we had. Layers of material, which had been sterilized by boiling, were first applied to the wounds, and then the bag of appropriate size was added, and the whole fastened in place with improvised bandages. There were no other dressings of any sort, but the hospital was filled to capacity.

I can vouch for the fact that we came to regard these dressings as almost ideal for their simplicity and effectiveness, and we only relinquished them with regret. The credit for the idea should be given to that extraordinarily inventive genius Charles Cathcart, F.R.C.S., of Edinburgh, who mentioned the possible use of sawdust in surgery in an article either in the *British Medical Journal* or the *Lancet* before the last war. I had read this article with great interest; probably it would pay others to look it up.

Since 1932 a specific dietary disease of silver foxes has been recognized as one of the important problems of the fur industry. Its pathological characteristics are similar to those of Wernicke's disease or haemorrhagic polio-encephalitis in man. In foxes the disease is called Chastek paralysis, and it first appeared among the animals on the Chastek fur farm in Minnesota, where in one month it killed one-third of the entire ranch population of more than 200 foxes. Apparently the disease appears among foxes when 10% or more of certain types of fresh whole fish are included in the ration, and it can be prevented by adding large amounts of thiamine. Necropsy reveals severe damage to the liver. The brain lesions are bilat symmetrical, and occur in the grey matter, especially in ventricular region.

Nova et Vetera

MICE IN PLAGUE PICTURES

The identity of the pestilence that destroyed upwards of 50,000 of the Philistines (I Samuel, v) has long been the subject of speculation. It was characterized by the presence of visible swellings in the body, which the translators of the Authorized Version called "emerods"—an archaic word for haemorrhoids. Clearly these scholars did not identify the epidemic as bubonic plague, else instead of the curious word "emerod" they would have used "botch" or "bubo," familiar words in their day. Most interesting, however, is the conjunction of pestilence and emerods with "mice that mar the land"; these malevolent rodents may equally well have been rats.

In a recent paper Otto Neustatter[1] recounts his study of early illustrated scriptural texts, undertaken to determine if in Europe there was any appreciation of the aetiological role of rodents in plague. From a series of such texts—beginning with a Paris MS. of 1250, and including the famous Lübeck Bible—he reproduces representations of the plague of the Philistines in which rats or mice are shown. In all these illustrations, however, the rodents are depicted as scampering round in fine fettle or preying contentedly on the corpses, and there is no indication of any mortality or sickness among them. The Biblical narrative mentions rodents, and in faithful adherence to this the artists introduced them into their pictures without any realization of their special significance. Neustatter seems to doubt the identification of this pestilence as bubonic plague. To my mind there can be no question. Bubonic plague is the only killing epidemic disease characterized by visible swellings—call them emerods or what you will.

It is interesting to consider what was known in this country of the aetiology of plague while the disease prevailed. A mortality among animals was long known to presage and accompany plague in man, but the only association believed to exist between the epizootic and the epidemic was their origin from one source common to both—namely, a plague poison fermenting in the ground. Rats are not stressed, and indeed they are often omitted from the lists of animals affected by plague. Gilbert Skene considered it very ominous when the "Moudewarp [mole] and Serpent leavis the Eird [earth] beand [being] molestit be the vapore contenit within the bowells of the samin [same]." "Serpent" in his day might mean almost any creatures that crawl, from crocodiles to bees. Bacot, who succeeded in infecting hen-fleas with plague, suggested that the occurrence of the disease in these birds would involve grave risk to man. What Bacot suggested Skene appears to have observed 400 years earlier, for he points out that this "infectioun bringis baith man and beast to death . . . and speciallie quhan [when] the Domesticall foulis becummis pestilentiale it is ane sign of maist dangerous pest to follow."

The only animal regarded in England as an active vector of plague to man was the dog, not by contracting the disease but by harbouring infection in the hair. This animal is resistant to plague, and the dog-flea, though a potential vector, in my experience does not bite man readily. On a number of occasions, however, when fleaing dogs, I have recovered from a single animal several dozen fleas not native to the dog, and effective carriers of plague. Dogs, therefore, may readily have picked up and brought home vagrant infected fleas which had abandoned their dead rat-hosts; the exertions of dog-killers in London plagues may not have been altogether misdirected.

The theory of the ferment origin of plague retained official recognition while the disease continued in England, but during the last epidemic in London in 1665 a considerable minority rejected this assumption and contended that the disease is caused by some "animated Matter" which invades the body and produces a poison there. Nathaniel Hodges set himself to investigate this new theory. In one instance only, he reported, was the presence of "animated Matter" demonstrated in a victim of plague. This patient "in vomiting threw up a strange figured Insect; which appeared very fierce, and even assaulted such as were busie to observe it, whereupon it was crushed by a rude Hand, so that its shape is not very discernible." And here ended for a long space the theory of "animated Matter" as the cause of infective disease.

W. P. MacArthur.

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[1] *Journal of the Walters Art Gallery*, 1941 4.

Reports of Societies

CHEMOTHERAPY OF INTESTINAL INFECTIONS

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on June 9, Dr. R. D. Lawrence presiding, Dr. Robert Cruickshank opened a discussion on "The Chemotherapy of Intestinal Infections."

Dr. Cruickshank said that in this field the bacteriological cure was as important for the community as the clinical cure for the individual. Until a year ago the treatment of intestinal infections with drugs had been a complete failure. Typhoid fever was a disappearing disease, but paratyphoid had become a mild prevalent infection. Flexner dysentery was still common in certain institutions. Gastro-enteritis was still a major problem in paediatrics. The sulphonamides had raised hopes, but there were two main objections to these and other drugs: it was impossible to get much practical clue to the value of a drug from test-tube or animal experiments, and the ordinary sulphonamides were readily absorbed from the gut and did not stay to attack the organism in the bowel itself.

The great advance in this field came when Marshall and his colleagues at Baltimore discovered a drug which, while active in the test-tube, yet was not absorbed to any extent from the intestinal tract. The toxic effects of this drug, sulphaguanidine, were minimal. The standard dose with sulphaguanidine was 3 g. three times a day for three days, followed by 3 g. twice a day for a further four days, the week's course thus giving a total of 51 g. In dysentery infections more particularly it was important to give the drug in large doses at infrequent intervals. There was no evidence that sulphaguanidine was of any benefit clinically or bacteriologically in enteric fever, or that any of the sulphonamides were of value in the treatment of the chronic typhoid carrier. Another substance used in the treatment of the chronic carrier—namely, iodophthalein—had a definite bactericidal effect on the coli-typhoid group, and occasional cases of cure had been reported. Sulphaguanidine could cure the convalescent Flexner dysentery carrier and was of great value in the clinical cure of dysentery. In the milder Sonne dysentery the effects were not quite so striking. The Sonne bacillus was a much more hardy organism. In gastro-enteritis sulphaguanidine had given no response. As to ulcerative colitis, he had collected records of 10 cases treated with this drug: 2 showed complete remission after a course, 1 showed improvement, and 7 were unaffected. In dysentery the drug of choice was not emetine, but bismuth iodide and quinoxyl, and for giardiasis there was atebrin.

Sir Philip Manson-Bahr said that there were about as many remedies advanced for ulcerative colitis as there were causes suggested for its aetiology. He had tried sulphaguanidine in 10 severe cases of ulcerative colitis. Given by the mouth it seemed to be no good at all, but if there was a regional ulcerative colitis which could be seen by the sigmoidoscope or radioscopy to be confined to the lower part of the sigmoid or rectum, and the drug was introduced directly on to the mucous membrane, the result might be quite favourable. The best improvement in the cases he had seen was shown in those which contained streptococci in the stools. The drug must be introduced by enema retention and in large doses (7 to 10 g. dissolved in 7 oz. of water and suspended with mucilage or gum of acacia). First of all he gave some emollient sedative like bismuth subgallate in olive oil to soothe the mucous membrane, and then gave the sulphaguanidine by rectal enema, preceded by luminal or small doses of morphine. He could record 4 cases in which there had been remissions up to date for 6 months The drug was altogether retained, not voided. One woman had been ill for 5 years and had had blood transfusion in several London hospitals. Since treatment the stools had become normal. Her haemoglobin had gone up from 50 to 80%, and she was looking and feeling well. Of all the substances he had tried, this had given him by far the best satisfaction.

Speaking of amoebic dysentery, he said that emetine was probably the most wonderful specific in the *Pharmacopoeia*, but it had been badly abused. It had been too often assumed that, because the parasite was knocked out, the disease was knocked out also. Formerly emetine bismuth iodide was given in far too big doses. He now gave 18 to 20 gr. in total—2 gr. at night for 10 nights—and even that was too much. The patient should be given a liberal lunch but no other food for 3½ hours before the drug was given. The giving of the drug should be preceded by luminal in two doses—1 gr. an hour before administration and 1/2 gr. half an hour before. The emetine bismuth iodide should be given in hard gelatin capsules. It had become the popular thing in the Tropics—for example, Kenya—to put everything down to amoebic dysentery and to give periodic minimal injections of emetine. If this were done, even if the case was one of amoebic dysentery, there was a danger of getting an emetine-fast organism. He concluded with a word about giardiasis. The giardia was a mildly pathogenic parasite. If it occurred in enormous numbers in the small intestine it gave rise to a mucoid diarrhoea, and if there was a massive infection a steatorrhoea made its appearance. With the drug atebrin (mepacrine hydrochloride) the specific nature of the treatment could be estimated from the fat content and appearance of the stools.

Dr. HELEN MACKAY said that in her experience of sulphaguanidine it appeared to have no effect in dealing with the severe type of enteritis, but she pointed out the value of chemotherapy in infections associated with enteritis. Until these new drugs came forward, cases of enteritis which had an associated infection, such as pneumonia, were regarded as invariably fatal, but that was no longer true.

In reply to a question Dr. CRUICKSHANK said that he believed sulphaguanidine was marketed by two drug houses in this country and that supplies were available beyond what was required for the Forces.

ULCERATIVE COLITIS

At a meeting of the Manchester Medical Society on May 6 Mr. PETER G. MCEVEDY opened a discussion on ulcerative colitis. There was, he said, much that was not known about this condition, the diagnosis being often incomplete and the death rate high. Basing his remarks on 71 cases that had been under his care in the last 5 years, he showed that, with a more complete anatomical and pathological diagnosis and more active treatment, the mortality could be greatly reduced and the number of complete cures increased. Anatomically, the disease started in the rectum, and commonly spread to involve the whole colon, but rarely the lower end of the ileum. It was an inflammation starting in the mucosa and might spread to all coats of the colon. His cases could be divided into the four groups: (1) those in which there was proctitis; (2) those in which the left half of the colon was involved; (3) those with involvement of the whole colon; (4) segmental colitis. The bowel symptoms in each group were what one would expect, and the general symptoms the results of toxaemia, loss of blood, disturbed digestion, and lack of sleep. The diagnosis must be confirmed by the proctoscope, the sigmoidoscope, and *x*-ray and bacteriological examinations. Proctoscopic examination confirmed the diagnosis in all but the segmental cases, in which radiography was essential. In the seriously ill patients bismuth enemata might be harmful and sigmoidoscopy dangerous.

The first and most important step in treatment was to confine the patient to bed, preferably on an open-air balcony. The diet should be the most nourishing that could be taken with the minimum of residue, and added vitamins. As regards operative treatment, ileostomy certainly rested the colon and the inflamed part could be removed by colectomy. Theoretically it was the ideal treatment; but mortality was high and the patient with a permanent ileostomy was not in a happy state. The operation should be reserved for complications, such as strictures and polyposis, and for cases that were obviously failing to answer to less drastic forms of treatment. In Mr. McEvedy's experience caecostomy was a definite help in curing an attack, but when the caecostomy was closed the disease returned with greater severity. This operation should be abandoned. The same applied to colostomy. Appendicostomy allowed the colon to be washed out in the most satisfactory way with the least discomfort to the patient, and permitted local application to the colon. This operation had not found the favour it deserved because surgeons generally had neglected its finer points, the after-treatment had not been thorough, the relapses had not been treated promptly, and too often the opening had been allowed to close.

Mr. McEvedy said that in his cases with proctitis he gave half a pint of saline with a teaspoonful of sulphanilamide per rectum each evening. This was generally retained. Relapses were treated promptly and the results had been most encouraging. In other cases an appendicostomy was performed as early as possible. Each evening the colon was washed out with saline followed by a pint of saline with a teaspoonful of sulphanilamide powder. Sulphanilamide and sulphaguanidine by the mouth had been disappointing. In only 5 out of 42 cases in the last five years in which appendicostomy was part of the treatment had the patients died.

MENTAL HEALTH IN WAR INDUSTRIES

At a meeting of the Section of Psychiatry of the Royal Society of Medicine on June 9, with Lieut.-Col. A. A. W. PETRIE in the chair, the effect of wartime industrial conditions on mental health was discussed.

Dr. W. BLOOD said that he was medical officer to an industrial concern engaged in food manufacture, employing several thousands of people on a working week of 48 hours, with overtime as required. In 1940 2.7% and in 1941 2.1% of all sick leave was due to psychological illness. Probably a certain number of cases masqueraded under "gastritis" or "rheumatism," so that the lost time was somewhat understated. The high figure for gastritis in 1940 (9.5%) might have some psychological significance on account of the conditions in that year (Dunkirk, air raids, etc.). A fair proportion of absenteeism otherwise unexplained was due to mental ill-health in its widest sense, or to fatigue. The increase in accident incidence he attributed to the entry of older and less experienced workers. It would be useful to have a medical psychologist attached to every accident clinic so that patients could be observed and put under treatment immediately any signs of depression after recovery from accident were noted. As it was, patients sometimes got steadily worse, and nobody troubled because it was nobody's business once the injury itself had been treated. Most foremen and managers said that workers were more "touchy" than before the war; this might be due to the fact that many were dissatisfied with their work but were unable to leave owing to the Essential Works Order. The doctor as well as the manager or foreman should be prepared to listen to troubles real or imaginary; if they were imaginary, mere patient listening often worked the cure, but sometimes the cause of the trouble, or of an aggravation of it, was found in the factory and could be dealt with by the management. Wages, hours of work, security, and conditions generally being satisfactory, he attached most importance to harmonious relations within the works, with full recognition of the worker as an individual, and to the development of social groups within departments. A well-run welfare department and sports clubs were useful preventive measures.

Women in Industry

Dr. JOAN HARWOOD said that she had been interested in a factory in an area not purely industrial, where many of the younger workers had left to be replaced by older people. The war effort had provided large numbers of bored persons with interests, and lonely persons with companionship, and had relieved the economic anxiety of some, while adding to that of others. Workers of the older generation had been given a heightened sense of their value, and absorption in work afforded relief of tension and depression following family separation. At the beginning of the war factories were badly blacked out and gloomy, so that it was necessary to work by artificial light, which was a frequent cause of depression; but with improvement in lighting and ventilation this was removed. Dingy canteens and poor cloakroom arrangements depressed the women, as did unsightly protective clothing. Long working hours, lack of sleep, and spells of night work were detrimental, especially to married women or women who had home responsibilities for dependants. Bad transport was another exasperating factor. Careful selection and placing of workers from the medical as well as the psychological point of view would cut down fatigue. Rhythmic exercises before a heavy meal were beneficial. The executive man or woman—especially the older woman—was a problem. The woman often received less toleration than she should at a time when she was feeling her age, but the average woman responded well to encouragement. The fear of losing her job was present to the older woman, though not in the same degree to the younger, especially if she was one of a group. Illness was often a synonym for homesickness. Higher pay for dangerous work had a good effect; people were more willing to fall in with safety precautions if there was a financial incentive.

Experience in the Last War

A paper by Dr. H. M. **Vernon** mentioned his experience during the last war, when this question was approached more from the medical than the psychological angle. Mr. Lloyd George at that time appointed a Health of Munition Workers Committee because of the sickness which was being experienced. At that time, of 1,300 women examined 35% showed some signs—and a further 7% pronounced signs—of fatigue or ill-health. A large proportion of the defects, including those put down to "indigestion" or to menstrual and other disorders, were of mental origin. It was found that on a 12-hour day accidents were three times greater than on a 10-hour day. Men appeared to be much less affected by long hours of work than women. The principles of industrial medicine established during the last war had been too much neglected. A considerable proportion of both male and female workers were engaged for excessively long hours—ten or more a day—and it was only too likely that these and other unsatisfactory wartime conditions were adversely affecting the physical and mental health.

The **President** said that there was a limit of hours—about 56 a week for women—above which the worker could not go satisfactorily. Many women were trying to do a double job, and it was marvellous how they did it. More emphasis should be placed on reasonable shopping facilities and an easement of transport difficulties.

Dr. **Millais Culpin** said that a medical staff which could handle difficulties would keep down the sickness rate in a factory. There was a wide difference in peacetime in sickness rates in different factories; it varied from 3 or 4 days per head per annum to 18 or 19 days. It was an advantage to interview the workers and encourage them to talk. Rest pauses were most necessary in concentrated work, and research was needed as to how long those pauses should be in work of different types. A good deal of the investigation carried out in the last war had been overlooked, particularly with regard to long hours of work. In many cases the 10-hour day produced a better output than the 12-hour. In questioning workers he had found a correlation between sickness rate and dissatisfaction with the job.

In some further discussion Dr. T. O. **Garland** suggested that it was not good to separate illnesses predominantly psychological from those predominantly physical; the problem should be viewed as a whole. He said that few doctors could be spared for industry, and it was an immediate task to instruct shop stewards, union officials, and the like in matters of simple health, psychology, and accident prevention. Dr. S. L. **Simpson** commented on the absence from the discussion of any reference to nutrition. There was some vitamin C deficiency; scurvy was only one expression of it, and there were substates of which fatigue and irritability might be manifestations. The discussion had concentrated on the mental health of the workers, but the mental health of managing directors and others occupying important posts must not be overlooked. This called for special consideration by all interested in industrial psychology because of the effect throughout the organization.

Dr. **Skottowe** suggested that an attempt should be made to separate mental illness of endogenous origin from upsets which were superficial and obviously connected with the environment. Major **Dicks** thought that forms of labour transfer as used in the Army might be employed by the Ministry of Labour so that workers could be placed in the job for which they were most fitted, and Major **Wilson** asked if there were some elementary intelligence tests which might be applied by welfare workers and would prevent the dull and backward from being misjudged and misdirected.

POSTURE IN INDUSTRY

At a meeting of the Association of Industrial Medical Officers, held at the London School of Hygiene and Tropical Medicine, Prof. H. A. **Harris**, Cambridge, spoke on posture in industry. There were, he said, four elements in the maintenance of posture: (1) proprioceptive impulses from muscles, tendons, and joints; (2) semicircular canal impulses; (3) evidence of the visual fields; (4) tactile sensations, especially from the soles of the feet. The sum total of these four gave the information to the brain which was necessary for the determination of posture. In fact, posture might be described as the "neuromuscular mechanism by which man keeps himself right side up with the world, so that the world would appear right side up to him." If the influence of any of the above factors was absent, then steadiness or maintenance of position would be upset. As an example, he referred to the importance of the feet being warm and of wearing footwear to which one was accustomed when in such a position that the tactile sense of the feet helped to maintain position.

There were certain critical movements, the integrity of which was important if the body was to function properly as a satisfactory machine: (1) Rotation of the head, which was controlled by muscles supplied by the cervical nerves and by the spinal accessory nerve. (2) Abduction of the eye-ball; here the muscles responsible were the lateral recti (the sixth cranial nerve). (3) Abduction of the vocal cords for phonation, activated by the laryngeal branch of the vagus. (4) Supination of the forearm; this was controlled from branches of the musculocutaneous nerve, the fibres being derived from the sixth and seventh cervical segments. (5) Abduction and adduction of the fingers, controlled by the deep branch of the ulnar (C_8 T_1). (6) Opposition of the thumb, activated by the median nerve, which contained fibres from the sixth, seventh, and eighth cervical segments. (7) Eversion of the foot. This movement, which was among the last acquired during the process of a child's development, depended on the integrity of the external popliteal nerve; the grave disability which followed Pott's fracture was the result of inability to perform this movement freely. (8) The action of the gluteal muscles was important in that these muscles controlled movement of the body forwards from the standing-still position, from sitting to walking, and in speeding up of pace, carrying, etc. They were enervated by the gluteal nerves, which contained fibres from the fourth and fifth lumbar and the first sacral segments. It was noticeable that when any of these critical movements were interfered with, one of three nerves was usually affected. The sixth cranial nerve, the ulnar nerve, and the superior gluteal nerve appeared to be most vulnerable to attack by injury or disease. The gluteal nerve, which consisted of fibres from the fourth lumbar segment, followed a very complicated course; this might be, in part, responsible for its vulnerability.

Prof. Harris then referred to the importance of remembering the ages at which certain epiphyses joined up, so that the strain of heavy lifting might be avoided at an early age where this would be dangerous. He cited the coracoid process, to which the biceps muscle was attached, and the ossification of the pelvis at puberty. The epiphysis of the coracoid process joined up at the age of 15; for this reason heavy lifting by young boys should be avoided. The centre of the os innominatum did not attain full bony maturity until the age of 18; before that age girls should not be called upon to stand for long periods. Many accidents were due to the fact that cramped posture did not allow muscles to respond rapidly when they were needed to do so. In conclusion, Prof. Harris said he was often asked whether factory work might not have a deleterious effect on women's health. Provided there was intelligent awareness of certain elementary medical and physiological facts, there was no reason why this should be so. A brief discussion followed.

Correspondence

Social Medicine

SIR,—I should like to thank both Sir Robert McCarrison and Prof. Charles McNeil (July 11, p. 51) for their endeavours to amend my definitions of social medicine. The term is so broad and comprehensive that it was perhaps unwise to attempt a definition at all, and yet I felt that the importance and interest of the subject required a clarification of its meaning. Sir Robert, suggesting the omission of the word "clinical" from my first definition, rightly asks—"For is it not largely because doctors have confined themselves to clinical (or bedside) medicine that the ultimate causes of disease have been neglected and the progress of medicine delayed?" But we could as justly ask in return—"Is it not because the study of aetiology has fallen so largely into the hands of the laboratory worker, who concerns himself with the intimate causes of disease, that the ultimate causes have been neglected?" Neither the clinician nor the laboratory worker has sufficiently studied his problems "in the field."

The good clinician concerns himself actively with all the human aspects of his problem—personal, genetic, and environmental—and has at least some of the opportunities and training of the "field worker." He has not hitherto been able to secure the opportunity of extending his activities to include the fuller study of environment, or taken it upon himself to recommend many changes in environmental conditions which he knows he could (given the opportunity) prove to be detrimental to human health. The training and office of the medical officer of health, on the other hand, although they may some day do so, do not at present secure for him the clinical opportunity to fit him for the new and larger tasks of social medicine as we begin to visualize them. It was for reasons of this kind that I included the word "clinical" (employing it in its widest sense) in order to emphasize the importance of this intimate human relationship, of the study of man *in* his environment, for without this no student of social medicine will ever fully justify his tasks.

While agreeing with Prof. McNeil's desire to lay stress on the preservation and advancement of health as opposed to the prevention and cure of disease, I do not think that "applied physiology" would be as apt a definition of all that social medicine intends as my abbreviation "applied aetiology." Physiology is concerned with the study of nature or function and so can help to establish standards of healthy function. Aetiology is concerned with the discovery of the causes of ill-health and so of the conditions necessary for good health. Social medicine is concerned with the practical applications of such discovery.—I am, etc.,

Guy's Hospital, London, S.E.1. JOHN A. RYLE.

SIR,—Prof. John A. Ryle's letter (June 27, p. 801) is balm to the worker in public health. May I be allowed to welcome it as the first sign I have yet seen from the hierarchy of the profession that their view of disease is, by contract of their calling, 'grossly and unscientifically limited by the walls of hospital and consulting room? One may even go further, and suggest that the "ultimate causes" are of equal status with the "intimate causes"—the specific factors, "bacillus, chemical poison, or vitamin deficiency"—to which, as Prof. Ryle says, the teaching and indeed the whole theory of medicine have been generally confined. The teaching of medicine needs be now radically reformed in the light of the generally accepted view of its object as "positive health and the prevention and cure of disease." Positive health requires the extension of physiology beyond the normal functioning of the body in normal surroundings to the limits of capacity and endurance of each organ and function; to the defence of the body against physical or biological attack; and to the application of physiology in the mass to the living conditions of the community. This surely is the only proper scientific introduction of the student to the medical profession in the new and wider light of its objects; it should be the basis of teaching for the specialty of public health. Is this not then the "Social Medicine" advocated so well by Prof. Ryle?—I am, etc.,

Hatfield, Herts. FRANCIS FREMANTLE.

Practical Results of Diphtheria Immunization

SIR,—What immunization can accomplish in combating diphtheria is shown by the remarkable drop in its incidence in Brisbane. The local authority of Brisbane has an area of 375 square miles and a population of 341,000. In January, 1938, I decided to make every effort to speed up the council's free immunization service. I used every available means to impress upon parents the importance of having their children—*especially their children of pre-school age*—immunized. The response exceeded my most sanguine expectations.

In the 4 years and 3 months period—namely, from January, 1938, to April 30, 1942—I have fully immunized 27,217 children. This rate of immunization in Brisbane, which is averaging approximately 6,400 per annum, is, in the period under review, considerably in excess of the birth rate. To this must be added an unknown but considerable number of children immunized by private practitioners in Brisbane, and I am pleased to be able to state that as I write the response of children is still being maintained. Records disclose that at least 75% of this total are children of pre-school age. By educative methods the stage has now been reached in Brisbane when the vast majority of parents realize that they owe this simple duty to their children.

The maximum incidence of the disease occurs during the second, third, and fourth years of life, and as large numbers of immunized children of this age group are appearing every day in increasing numbers in Brisbane the incidence of the disease now shows the anticipated spectacular fall. The following are the figures for this period:

	1938	1939	1940	1941	1942 (3 months)
Population ..	325,890	326,000	333,560	335,520	341,000
Diphtheria cases	459	505	231	202	22

Brisbane now has at least 80% of its susceptible child population immunized; the occurrence of only 22 cases for the 3 months of 1942 is a phenomenally low incidence in a population of 341,000 people, and the objective of a diphtheria-free Brisbane for which I am striving is, on these figures, soon to be attained.—I am, etc.,

RALPH WEAVER,
Medical Officer of Health.

Brisbane.

District Nursing Service

SIR,—Evidence accumulates that much too little use is made by doctors with panel practices of the facilities afforded by the district nursing service. In far too many cases the doctor is insufficiently aware of the benefits which that service can render to his patients, and some doctors seem almost wholly unaware even of the existence of the service. The insistence now placed by the Ministries of Health and Labour on the advisability of close liaison between the factory medical officer, nurse, or welfare officer with the local district nurse and with the panel doctor makes it all the more important that the panel doctor should make more use of the district nursing service, though the benefits to be derived from it are applicable not only to active workers but to every class of panel patient. A recent illustration to which my attention has been drawn is that of an employee at a large aeronautical factory who was absent from work for a fortnight owing to cellulitis. Her panel doctor advised her to rest, but also to attend daily at his surgery, to which she had to walk some distance. Although this patient was actually a contributor to the district nursing service, the doctor never thought about putting her in touch with the district nurse, which she had not the initiative to do for herself.

I cannot too strongly urge, particularly in these times when doctors and hospitals are much overworked, that panel doctors, as well as the welfare organizations of factories, should bear strongly in mind the relief which can so often be given, both to their patients' ailments and to their own time, by the use of the district nursing service which is almost universally available.—I am, etc.,

HORDER,
Chairman of Council, Greater London Provident Scheme for District Nursing.

Mass Examination of Sputum

SIR,—In view of the proposed employment of wholesale *x*-ray screen photography for the detection of so-called symptomless pulmonary tuberculosis would it not be as well first of all to concentrate more fully upon detecting those numerous cases which do show one of the most obvious and characteristic symptoms—i.e., the presence of sputum? We know only too well how many patients presenting themselves to busy practitioners, complaining chiefly of cough and sputum, are regarded as "colds," catarrhs, winter coughs, influenza, bronchitis, asthma, etc., and in how few cases the sputum is examined as a routine measure. It is this routine "mass" examination of sputum which should be made possible, and almost compulsory, for every practitioner to obtain by the extension and amplification of laboratory facilities throughout the country, with provision for concentrated and specialized examination. Unlimited sputum-sample outfits should be supplied to all G.P.s, and a nation-wide campaign instituted on the importance of this routine procedure in every case where sputum is likely to exist.

It would naturally be understood that a finding of "Negative for tubercle" in such an examination might have no significance whatever, and the referring of suspected cases for further investigation should in no way be affected, even intensified. Thus no sense of false security would be engendered by obtaining negative results, and numerous cases of early and active infectious disease and chronic "carriers"—i.e., the true danger to the community—would be brought to light. If such a procedure were universally adopted, I am sure that every patient would very quickly come to expect that a sample of his sputum, whenever present, would always be required for examination as a matter of ordinary routine.—I am, etc.,

Leonard Hearn,
Senior Tuberculosis Officer
Nottingham.

Passive Movements for Joints in Paralysed Limbs

Sir,—There has been no time in our surgical history when there was more lively interest in the treatment of fractures and injuries in general. The physical treatment of these conditions is now well understood, and there is general and well-deserved condemnation of passive movements. But our good intentions may sometimes carry us too far, and passive movement has become such a bogy that we forget it may have its uses. After nerve injuries and other paralytic conditions such as poliomyelitis, active movements cannot always be performed for the very simple reason that there are no muscles to carry them out. In such a case serious stiffness may result and in joints that are anatomically normal.

We have been called upon to deal with many rather tragic cases in which the joint stiffness was so severe that the disability resulting from it far outweighed that from the nerve injury. Several of my colleagues working elsewhere, in discussing this problem, have said: "But does it really matter? You can always get rid of the stiffness if the joints are normal." In some cases, I agree, you can, and it takes many weeks of very hard work, so causing quite unnecessary delay in the repair of the nerve lesion. In a few cases, especially in the shoulder and hand, the stiffness is permanent and sometimes quite disabling.

Just what is the objection to moving a normal joint passively? I can see none, so far as the joint itself is concerned. It stretches the paralysed muscles, but is this harmful? There is not one shred of evidence to show it. Prolonged stretching may do harm; occasional gentle stretching within a normal range is almost certainly innocuous. The trouble is that we think of splints for nerve injuries as we do for fractures—in terms of immobilization. A paralysed limb should not be immobilized; it should be splinted so that the affected muscles are relaxed, and if movement can be allowed within the range of relaxation so much the better. This principle underlies the design of the splints for nerve injuries worked out at this hospital by W. B. Highet (*Lancet*, May 9, 1942, p. 555), but even these appliances cannot be used to the best advantage if passive movements are neglected. If a patient is not instructed in the daily movement of a paralysed limb it is better not to splint him at all, for the worst stiffness comes not from simple neglect, though that may be bad enough, but from uninterrupted splinting; it is particularly pernicious when a faulty appliance is used, such as the "fish-server" cock-up splint that disgraced the E.M.S. equipment at the beginning of the war.—I am, etc.,

Wingfield-Morris Orthopaedic Hospital, Oxford H. J. Seddon.

Sacro-iliac Strain and Subluxation

Sir,—I was interested in the letter by Mr. C. Jennings Marshall (Jan. 3, p. 22) dealing with sacro-iliac strain and subluxation. I agree that an appreciable number of sufferers from chronic backache are allowed to go on suffering owing to the fact that the real cause is unrecognized. It would be pleasant to think that chronic backache due to a sacro-iliac lesion will be as rare as the wrist-strap, once a familiar token of the unrecognized fractured navicular bone.

X-ray films will not show any evidence of the condition known to surgeons as sacro-iliac strain. Mr. Jennings Marshall describes a method by means of which it is claimed that subluxation can be recognized. This method is commonly used by surgeons, and it consists of drawing a line across the film joining the tips of the fifth lumbar vertebral transverse processes, and then drawing another line across the film through the pubic crest; it is claimed that "rotation" can thus be shown. Others draw the first line across the film as above, and a second line joining the iliac crests; if these lines are not parallel, it is claimed that there is sacro-iliac subluxation.

It appears to me that a good deal more faith is placed in the immutability of the bony points of the pelvis than is warranted. The lumbar transverse processes are notoriously irregular. I drew these lines on a number of films of normal pelves, joining a number of different points, and I found that they varied considerably. The pelvic girdle is not necessarily a symmetrical structure. The only absolutely valuable sign of sacro-iliac subluxation which is recognizable at once is that the ilium on one side is superimposed over the sacrum to a greater extent than on the other. I do not think that subluxation should be diagnosed in the absence of this sign. Manipulation can give excellent results, and I have seen dramatic cures effected, but I do feel that these lines are inaccurate, and may make the diagnosis something of a fetish.

The sacro-iliac joint is often badly radiographed. The patient should be placed on the couch absolutely straight, which is not always easy; for a difficult case I can recommend that a fluid level be placed across the two anterior superior iliac spines. The whole pelvis should be included on the film. It is best to tilt the tube about 20 degrees towards the head, centring just above the symphysis pubis. Postero-anterior and oblique views are sometimes useful, but in every doubtful case stereoscopic films should be taken.—I am, etc.,

John A. Ross,
Major, R.A.M.C.

Complacency in Anaesthetics?

Sir,—Interesting as have been the letters under the heading "Complacency in Anaesthetics?" it seems to me that some essential points have not been made, and as one who has been an active specialist from a "rag-and-bottle" studentship until now I may claim some authority to speak.

The real complacency is not "modern"; it dates back to "rag-and-bottle" days and consists in essence in the fatuous assumption that anyone who has taken a qualifying diploma is thereby fitted to give anaesthetics. No one in his senses would allow the latest-joined house-physician, or assistant in general practice, or other junior who happened to be "odd man" at the moment, to remove an appendix without proper supervision; yet such are habitually allowed (or perhaps compelled) to give anaesthetics, although the life-and-death responsibility lies more heavily in the great majority of cases on the anaesthetist than on the surgeon. This state of affairs was deplorable enough when there were at most two or three anaesthetic drugs in general use, but it is exaggerated to the point of a public menace now on account of the multiplicity and complexity of anaesthetic agents and procedures.

The minimal requirements in anaesthetics for qualifying diplomas are so ridiculously inadequate for practical work that no one who has not done a postgraduate course of the most exhaustive kind should be permitted to administer without expert supervision. (Even the D.A. is no real protection against the theorist devoid of the necessary judgment.) Yet it is almost impossible to get medical men to attend such courses. Although the expenditure of time and money would be very slight, the horrid figure of complacency or *amour propre* stands in the way, and the usual attitude is that every qualified medical man "knows all the answers" and that anaesthetics need no special study. That there are other and less creditable motives than mere complacency for not employing specialists we all know, and I refrain from labouring the point.

If there has been any deterioration in anaesthetic mortality figures, which has not been shown to date, there are many factors which would easily account for it, such as: (1) The constant introduction of new anaesthetic agents used only too often by persons without the necessary anaesthetic, therapeutic, or physiological knowledge, and the unavoidable element of experimentalism thereby involved. (2) The fact that so many of these agents are intravenous, making the amount of judgment required much greater. Drugs once put into the bloodstream cannot quickly be got out, and damage is irreparable before it is obvious. (3) The enormous amount of operating now done relative to the supply of anaesthetic specialists. (4) Surgeons have come to rely on the safety of the expert anaesthetists and credit all administrators with the same skill. They are, therefore, getting slower and slower in surgical procedure. In the "old days" time was recognized as a serious consideration (who has not tired at the constantly repeated "Is he all right, doctor?" from over-anxious surgeons?). Whereas now, new and more tedious, if neater, methods of suture, elaborate skin-towelling, multiple operations under the same anaesthetic, application of plaster splints, *x*-ray control, and the infinitely greater scope of surgical intervention have put considerations of time far into the background, and placed a far greater tax on the resources of patient and anaesthetist.

Although I am certain that publication of more figures will dispel any tendency to alarm, the one way to improvement and non-complacency is surely to employ only specially experienced anaesthetists, and to increase the supply of them until no one need undergo any operation, in any but uncivilized parts, without such assistance. In so far as apparatus is more complicated and drugs more numerous, it is merely retrograde to deny to patients the benefits obtained from these advances, both during and after the operation, and to return to the crudities of "open" administration, merely because the latter is perhaps easier to teach to students and (save the mark!) nurse "anaesthetists." We do not limit surgery to the abilities of the latest-joined house-surgeon; let us insist on applying the same standards to anaesthetics as to surgery.—I am, etc.,

Stanmore. REGINALD KARN.

Urethral Instrumentation

SIR,—How unhappy to-day is the lot of the medical practitioner! Slowly but surely he is being stripped of his competence to perform all those simple procedures he learned in his student days and believed, and was taught to believe, that he would employ for the benefit of his patients and for the sake of his living in postgraduate life.

Ante-natal treatment, midwifery, child welfare, anaesthetics, immunizations, and minor surgery are all being filched from him by the public health experts (canvassing by advertisement) and by ever-increasing numbers of specialists. In fact, I have heard it said that nowadays all a practitioner needs to run a practice in a densely populated area is a pen, paper, stethoscope, thermometer, and catheter. And now my old friend Mr. Gordon Bohn writes to say that the general practitioner must discard the catheter and replace this valuable instrument of general practice by the telephone. He writes to challenge Mr. Clifford Morson's statement that a "general practitioner will benefit his patient by passing a catheter" in a case of acute retention, and even suggests that senior students be taught when not to pass a catheter, with acute retention due to an enlarged prostate heading the list of their restrictions. He honours us by assuming that we may avoid making a false passage and that our aseptic technique is beyond reproach, but he fears that in the excitement of the moment we may let off all the urine and kill the patient by anuria and bleeding from the kidneys. In spite of granting us asepsis and faultless technique he dubs our efforts as "interference by the practitioner," which of all his implications I find the hardest to receive.

Mr. Bohn believes that we should send all our cases of acute retention immediately to hospital or nursing home before the retention is relieved. In ideal surroundings Mr. Bohn is making a scientifically sound statement, and given a willing patient in little pain, a fast ambulance, a smooth road, and a good urologist in waiting, I can imagine no circumstances more propitious for avoiding the horrible catastrophes he mentions.

Personally, I am never more conscious of my halo than when I have turned out at night to catheterize some poor old man who has been in agony all day trying to pass his water, and, due to my interference with a rubber catheter, experiences that glorious relief a taste of which may be experienced by the ordinary man who has to hold his water a couple of hours longer than he likes. Perhaps unduly biased by the patient's gratitude, it is difficult to believe that in catheterizing him one has sinned against the laws of urology, instead of performing an act of mercy if not of competence. I have examined my surgical textbooks and the *B.M.J.* back to 1938 for another authoritative opinion, as I consider the matter of great importance. The last article in the latter was by Mr. R. Ogier Ward (Jan. 21, 1939, p. 121), and although only three years past, it seems to uphold my conception of procedure. As I understand it, one's duty is to take a history, examine the patient thoroughly, order a hot bath, give an injection of morphine, and if this fails proceed to catheterization. A soft rubber catheter of average size passed with full aseptic technique is often successful, and, as Mr. Ward points out, is a diagnostic as well as a therapeutic measure. If this fails, a soft silk-web coudé catheter, correctly sterilized, may be introduced. If the bladder is not distended above a third of the way to the umbilicus it is presumably safe to run off most of its contents forthwith. If, on the other hand, there is a history of chronic retention, greater distension, and any uraemic signs, gradual decompression can be carried out with a drip-saline bulb attached to the catheter, and hospital treatment discussed with the patient when he is more comfortable. In any case of difficult catheterization the patient should be sent to hospital before trauma results.

As acute retention occurs in those generally well advanced in years, I think it is necessary not to be too precipitate in pushing the patient into hospital. Hospitals and operations are not always as acceptable to the old as to the young, and personally I never use the urgency of the patient's disease as a lever to get him into hospital unless forced to do so. Often the acute retention patient is debilitated from other causes, and there can be very little object in forcing into hospital an old person whose days are already numbered, if by so doing he may live a little longer, but in discomfort from investigation and procedure for which he has but little stomach. Mr. Bohn's procedure is to be recommended in his own district, where all the facilities abound, but in a district like this primary catheterization by the practitioner at home should be justifiable for diagnosis and treatment. It has also the virtue of retaining the patient's regard for the practitioner, which is apt to dwindle if relief is withheld on technical grounds.

In conclusion, may I ask Mr. Bohn to elaborate his advice and describe what happens to the patient when admitted to hospital in his district. I should like to add that in spite of the increased sale of penile clips following perurethral resection, I consider that method to be the one of choice for dealing with enlarged prostate, and I should be loath to disqualify my patient for this operation by performing a single careful catheterization. I cannot, however, believe that I should.—I am, etc.,

St. Ives, Cornwall E. C. ATKINSON.

SIR,—With reference to Mr. Clifford Morson's letter (June 20, p. 771) I, and I am sure many of the older general practitioners, would owe a debt to Mr. Morson if he could spare the time to let us know the present-day teaching of how to pass a silver-plated old-style catheter on the living adult subject whose urethra is not diseased or deformed. We were taught to do this in the long past on the dead subject in the dissecting room, but, though this was simple, in practice on the living patient it was far from simple. Matters have of course moved on since our student days. The subject is a most important one. —I am, etc.,

Clogher, Co. Tyrone. HENRY SMITH, M.D.

Post-vaccinial Encephalitis

SIR,—Flight Lieut. G. D. S. Briggs's description (June 27, p. 791) of three cases of post-vaccinial encephalitis is of special interest to medical men in Scotland, where at the present there is a marked increase in primary vaccinations among the higher age groups. Dr. Briggs's cases appear to have been of the hyperkinetic type of encephalitis, and I herewith give a short report on a case in which the main picture was that of somnolence, altered sleep rhythm, and spastic paralysis.

The patient, a member of the W.A.A.F. aged 20, was admitted to hospital suspected of suffering from cerebrospinal meningitis. Vaccination had been carried out for the first time 10 days before, and on the day before admission she complained of headache, dry throat, pains in the limbs and back. She had also fainted. On admission a well-marked pustule was noted on the left arm with a fairly severe reaction spreading almost from shoulder to elbow. The patient was drowsy, but would answer questions on being roused. Photophobia, slight general rigidity, positive Kernig's sign, and exaggerated knee-jerks were all present. Babinski's reflex was indefinite, pupils were equal but reacted normally, but there was a marked spastic paralysis of the right arm. Lumbar puncture revealed a normal fluid not under pressure.

During the next five days the patient's condition altered little. On the sixth day the temperaure, which had remained between 100° and 101° F., became normal, but the patient remained drowsy during the daytime and suffered from sleeplessness during the night. Spasticity of the right arm was still present. On the thirteenth day of illness she was allowed up, but on the following day she complained of pain in the left lumbar region between the lower costal margin and the iliac crest; slight redness of the area being here noted, she was returned to bed. Eventually there developed in this region a patch of herpes about three inches in circumference. On the twenty-eighth day she was again allowed up, still slightly drowsy during the day and not sleeping well at night. Her general condition was poor. She was discharged on the forty-second day of illness greatly improved but still suffering from insomnia, which was clearing up.

The case was of interest, apart from the altered sleep rhythm, on account of the localized spastic paralysis of the right arm, a similar type of paralysis being noted about the same time in a child of 4 years who was suffering from early cerebrospinal meningitis, but in the latter case it progressed to involve the leg and the face on the same side.

It may be that, on account of the youth of most of the subjects of primary vaccination, the true incidence of mild post-vaccinial encephalitis is underestimated, a drowsy child during the daytime being accepted by the parent as a normal state of affairs, and a fretful child at night as being the result of the vaccination trauma.—I am, etc.,

J. Landess Horne,
Medical Superintendent.

County Infectious Diseases Hospital,
Strathpeffer

Serving Officers and Medical Planning

Sir,—There is one group—namely, medical men in the Services—which watches the discussions regarding post-war medical planning with anxious interest. The anxiety is due to the fact that many of us, with family responsibilities and faced with the prospect of making a new start after demobilization, feel that we are at a disadvantage. Although most vitally concerned, the very fact that we are under Service discipline makes us the most inarticulate section of the profession.

As a profession medical men claim to show disinterestedness in matters concerning the public weal. Nevertheless, although sincere, the fact remains that the judgment of most of us is liable to be affected by circumstances involving the fundamentals of our economic life. This is made clear when, as I have found during conversations, most Army medical men seem to favour some sort of national medical service, while those in well-established private practice are mostly "doubtful," to say the least. The object of this letter is to make a plea that the disadvantageous position of Service men should not be overlooked by those who decide the issues. The very fact of having been asked to make sacrifices should give them some claim for consideration.—I am, etc.,

"M.O."

The Planning Commission's Report

Sir,—The draft interim report resembles in many respects a pamphlet on the question of the minimum requirements for children.[1] We are now presented with the minimum requirements of the medical profession. It is hardly likely that it will meet with quite as favourable a reception as did the admirable report on the children.

No matter how excellent the plan may become in its final draft there can be little doubt that it will have to be hawked round the various political parties for support. It will ultimately be put into operation by the Government of the day, which may or may not be in sympathy with the views of the Commission. In this process the plan will be altered to suit this or that political expedient.

Would it not be better, as a preliminary step, if the Commission determined the patients' minimum requirements? They could find out, say, the 50 most common ailments met with in general practice as shown by a research of the National Health Insurance records. It could then lay down the minimum investigation and treatment required. It is doubtful whether the beds, medical, nursing, and technical staff, or the equipment are available, even in peacetime. Consideration of the financial aspect would but add to the general deficiency. Let the Commission consider these minimum requirements and tell the patients—i.e., the electorate—what is wanted. It will then be incumbent on the patients to demand these requirements if they wish them.

The profession would do well to by-pass the direct political approach, but to be ready with the prepared plan at the appropriate time should the pressure exercised by the patients prove sufficient.—I am, etc.,

Finsbury Health Centre, E C 1. A. B. Stewart.

Sir,—To a country practitioner the draft report is a disappointing, patchy, and urban production, which illustrates McDougall's point that the effort of a band of men is generally unworthy of any one of them individually. They have left out two-thirds of England, for para. 70 leaves us very much as we are now, and few even of the market towns have six doctors, the suggested minimum for a health centre; and of the difficulties of transport, which must carry the colds, chilblains, and colics—nine-tenths of a doctor's surgery—not a word. Truly a metropolitan myopia.

From the very start, from reading the objects of medical service and the first of the questions, so reminiscent of the League of Nations Union's "Do you prefer peace?" or the temperance reformers' "Do you deprecate drunkenness?"—pious blurbs embalmed in words, shop-window stuff—I became suspicious. Since when has it not been our aim to do our best for our patients? "Positive health" made me squirm. To my mind this nebulous phrase suggests leading a hygienic camp life with good food and keeping as far away from doctors as possible. Do these 73 elderly city fathers know anything about it? Did they deliberate in shorts and no collars in the open air, do they exercise every muscle every day, do they obey the seven rules of health, grasp the gifts of sun and air, defaecate at a squat? Have they taught the students these things or have they left it to the *Daily Mail* and the Boy Scouts? In fact, wasn't "positive health" coming from them rather nonsense?

The question of freedom of choice with us is academic. Two things compel a man to go to a certain doctor—geography and custom. He who lives at Little Snoring or Snoring Green will go to the Great Snoring doctor because he would have to go 7 miles to another, and even he at Snoring Virginibus, 6 miles away and so much nearer the Lower Sighing doctor, will gladly make the distance because his father did.

Of course there are many suggestions that will meet with almost universal approval, and although, personally, I should prefer to build on to or alter the house where Sydenham lived, where Hunter worked, which Osler has not long left, I can quite understand that young men want something more drastic done. For don't let the commissioners imagine for one moment that they have exhausted half the possibilities. A whole-hog scheme, for instance, with a great central health and hygiene house, with forty million dossiers recording the physical history, illnesses, work, holidays of everyone in these islands (a genetic map could be added probably towards the end of the century) from the time when he or she was a mere movement in foetal life or before, till they come to the necropsy table, a scheme which will try to prolong in happiness and usefulness the interval between these events, a scheme of which the patient is really the centre and the doctor merely serves to that end, has at least the merit of being logical.

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[1] Issued by the Children's Minimum Council, 72, Horseferry Road, S W.1.

At any rate there is no hurry. The Ministry of Health has told us that the health of the country has never been better, and, personally, I have been looking round in vain for the patients who would have benefited had any of these schemes been in operation years ago. Significantly and monitorially the one exception is tuberculosis, a disease that has been a Government responsibility for years, employing an army that has always seemed to me to have a positively "Whitehallian" lack of punch. How rarely one hears of a keen, cavity-squashing, sputum-blitzing T.O.! My experience is of quite charming, unworried roundsmen. Who ever heard of a T.O. being appointed because of his aggressiveness against T.B.s? Probably if he were he would soon run up against the county M.O.H., who is also chief T.O., although he may know little about it. Anyway it is a relief to see the proposal (para. 14) that the appointments should no longer be made by the butcher and baker.

Truly this report is meat for discussion, but where are the vultures? I resent the note of hurry, not so much in the report itself as in the last paragraph of the leading article that accompanied it. Shall Libyan sands re-echo to debate and ward-rooms thunder? For in like places are the best of us. Never was time nor temper nor space for script less suited for discussion. Let us beware of the fate of the extinct Iwash Indians, of whom it is recorded that when in time of war the young men were away, the old men violated their wives, so that when the warriors returned they slew (1) the old men, (2) the unfaithful wives, (3) the young bastards.—I am, etc.,

C. G. LEAROYD.

Diphtheria in an Infant

SIR,—I should like to report that I have recently had a case of diphtheria in a baby 12 days old, born in the maternity ward of Honiton Infirmary. It was healthy at birth, and on the twelfth day was found to be snuffling; the following day the throat looked suspicious and swabs were taken. The Devon County bacteriologist reported as follows: "Cultures made from swabs of throat and nose were found to be positive for diphtheria. A virulence test on guinea-pigs was made from both cultures, and in both instances the test guinea-pig died within 48 hours of inoculation, and showed their typical post-mortem signs of death from diphtheria."

The baby's mother had no evidence of any infection of nose, throat, or vagina either before or after confinement. Swabs have been taken from everyone who came in contact with the child, with negative results.—I am, etc.,

Sidmouth. C. M. B. CASE.

The Rheumatic Lung

SIR,—Dr. James Burnet stated (June 27, p. 804) that he was probably the first to call attention to this condition. However, A. E. Garrod, in his *Treatise on Rheumatism and Rheumatoid Arthritis*, London, 1890, pages 106-9, gave a good account of the rheumatic lung, and the possibility of the "rheumatic poison" causing pneumonia was considered. And Garrod was probably not the first.—I am, etc.,

London, S.E 10 ELI DAVIS, M.D., M.R.C.P.

China's Medical Needs: An Appeal

SIR,—The China Medical Aid Committee appeals again to your readers to assist the National Red Cross Society of China. In the past these appeals have been generously answered, and now that China is our ally in name as well as in deed we put forward our appeal with even more confidence.

Three years ago 19 medical men, who had been rescued from concentration camps in the South of France at the end of the Spanish War, were sent to help the Chinese Red Cross, who had asked urgently for trained medical men as well as supplies. This committee, in co-operation with a Norwegian committee, financed and equipped these men and provided their maintenance so that the slender resources of the Chinese Red Cross should not be drawn upon. The help of the Norwegian committee ceased in 1940, and we are the only body to which these doctors can look for support.

The doctors are working on various sectors of China's immense war front, and two have been in the thick of the Changsha battles. All of them are doing invaluable medical and surgical work, and, in addition, organize first-aid training and teach hygiene to soldiers and civilians. They lead the simplest and hardest of lives. The following report, written by a young English doctor, is typical of work in South and Central China.

> "Our unit had charge of 100 beds in the hospital, which was otherwise run by the military. But the latter had neither the equipment nor the personnel to cope with the more serious cases, and these all came to us. Most of the cases we had were very severe compound fractures and chest wounds that had survived the first week or so. The abdominal and brain cases we saw little of; they had died before they could be brought to us. But the fractures were bad enough. They had come in carried on make-shift stretchers. Exhausted with pain, their wounds covered with pus-soaked and dirt-stained dressings, and with appalling deformities through lack of adequate splinting, they presented a sorry picture indeed."

The Chinese Red Cross has a task to carry out so enormous that the aid we give seems ridiculously small, but it is an earnest of our appreciation of the heroic resistance maintained by China, and we appeal to you to continue that help for another year. All donations should be sent to the treasurer, Dr. E. R. C. Hambly, Treharrock, Long Grove, Seer Green, Bucks.—I am, etc.,

MILLAIS CULPIN,
Chairman, China Medical Aid Committee

Obituary

WILLIAM MARTIN, M.B., Ch.B.

Dr. William Martin, who died suddenly on July 7, was appointed medical superintendent of Stobhill Hospital, Glasgow, in 1927, from Birmingham, where he had been medical superintendent of Selly Oak Hospital for about seven years. He was a graduate in medicine of Glasgow University, qualifying in 1914. He joined the Army in 1915 during the last war and served in France with the rank of major. On his return to this country in 1917 he was appointed to Dudley Road Military Hospital, Birmingham. Dr. Martin was unmarried, and is survived by two sisters.

Sir Alexander Macgregor writes: The death of Dr. William Martin closes the career of a distinguished and successful hospital administrator. He not only gave outstanding service to his own large hospital at Stobhill but also to the other general hospitals of the Corporation. After the passing of the Local Government (Scotland) Act, 1929, the Corporation took advantage of his experience by appointing him as deputy medical officer (general hospitals) in the Public Health Department. He came to this office with a high reputation for hospital administration. Under his regime great improvements were effected in Stobhill Hospital, such as, among others, the erection of a large *x*-ray and electrical department, an enlarged maternity unit, a receiving department, and a biochemical laboratory. Plans had been prepared for a new block for sick children and a new nurses' home. He took a prominent share in developing teaching facilities in the hospital, and the following extract from a letter to me from Sir Hector Hetherington, the Principal of Glasgow University may be quoted: "All of us here found in Dr. Martin a most able and friendly collaborator in developing the co-operation of the University and city in medical teaching and research, and we are much moved by his loss."

Dr. Martin was content with nothing but the best, and maintained a high standard of efficiency along with a clear and practical conception of modern hospital practice and development. On the personal side he was a most agreeable and attractive colleague; he was never ruffled by difficulties, and his happy and cheerful disposition was one of his finest assets, attracting the warm friendship and regard of the medical and nursing staffs and of all who served in the hospital in whatever capacity.

We regret to announce the death of Dr. RONALD LESLIE FERGUSON, honorary physician for children at the Manchester Northern Hospital. He was born in 1882 and studied medicine in Manchester and Dublin, graduating M.B., Ch.B. at the Victoria University in 1905 and proceeding to the M.D. four years later with commendation for his original studies on the digestion of fats, upon which he had worked in close co-operation with Prof. Craven Moore. He had been a member of the B.M.A. since 1908. Two colleagues (P. M. and G. W.) write: Ronald L. Ferguson held many resident appointments at Crumpsall Hospital, Ancoats Hospital, and the Royal Infirmary, Manchester. He also found time to go to the Far East. Later he started in practice in Manchester and pursued a busy and helpful life for 30 years, broken only by three years' active service in Mesopotamia. We realize that few really knew him because of his modesty and shyness, but once these were penetrated, how easily one could appreciate the goodness of the man and the genuineness of his purpose in all things! He was a good sportsman, an excellent bowler, and a capable batsman, and well merited his place in the University team for many years. He was an ardent follower of cricket at Old Trafford. His great sense of responsibility towards his patients caused him to work recently although he knew he was unfit to do so. His passing leaves many happy memories—to patients and friends alike—of a man whose honesty endeared him to those of us who were privileged to know him well.

Dr. **GODFREY BATEMAN**, who died on June 8, was a past-chairman and a past-secretary of the North-East Ulster Division. Son of the late Godfrey Bateman, LL.D., senior inspector of schools, Dublin, he was educated at Galway and Portora Schools and studied medicine at Trinity College, Dublin, graduating M.B., B.Ch., B.A.O. in 1915, and M.D. three years later. He obtained the D.P.H. of the Irish Royal Colleges in 1919 after serving in the last war as captain R.A.M.C. On returning to civil life Dr. Bateman began practice in Coleraine, and in 1930 was appointed tuberculosis officer for County Derry, a position he held up to the time of his death at the age of 49, after a long period of indifferent health. During his service in Coleraine, Portstewart, and Portrush, Dr. Bateman won the regard of all sections of the community, and in particular concerned himself with the welfare of ex-Service men, for whom he did good work as chairman of the local branch of the British Legion.

Dr. **WALTER ROSS JORDAN**, who died at Edgbaston on June 13 at the age of 78, was a nephew of Thomas Furneaux Jordan, the famous Birmingham surgeon, and his father also was a doctor. He was educated at King Edward's School, Birmingham, of which he was a Governor from 1917 till his death, and Bailiff of the Governors on two occasions; he was also one of the founders of the Old Edwardians Association and for some time chairman of its committee. He studied medicine at Mason College and the Queen's Hospital, and graduated M.B.Lond. (with honours in medicine) in 1887, proceeding M.D. five years later. After serving as resident physician at Queen's Hospital he was appointed visiting physician at Dudley Road Infirmary and physician to the Children's Hospital, Birmingham; for many years he practised as a consultant in Cornwall Street. Dr. Jordan published a number of papers on paediatric subjects and was a past-president of the Birmingham Branch of the British Child-Study Society. He had been a member of the B.M.A. for 50 years, was vice-president of the Section of Diseases of Children in 1911, and president of the Birmingham Branch 1915-19, in which year he gave the Ingleby Lecture at the University.

News has reached this country from India of the death of Dr. **SURENDA KUMAR DATTA**, Principal of the Forman Christian College, Lahore. Born in 1878, he was educated at Lahore Medical College and at the University at Edinburgh, where he graduated M.B., Ch.B. in 1906. He returned to Lahore as lecturer on biology at the Forman College, and was a member of the senate of the Punjab University in 1908-14 and again in 1934-42. During the last war Dr. Datta served as welfare officer with the Indian troops in France and was twice mentioned in dispatches. For a considerable time he was National Secretary of Y.M.C.A.s in India, Burma, and Ceylon, and he served three terms as chairman of the All-India Conference of Indian Christians, whose community he represented for three years in the Central Legislative Assembly. He was a member of Lord Lytton's Committee on Indian Students in the United Kingdom, and a delegate to the Indian round-table conference in London.

The following well-known medical men have died abroad: Dr. **EDGARD FILGUEIRAS**, a prominent paediatrist of Rio de Janeiro; and Dr. **ALVARA LEMOS TORRES**, professor of clinical medicine in the medical school of Sao Paulo, and Fellow of the Rockefeller Foundation, aged 58.

Universities and Colleges

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—A. B. Higginson, C. K. Sconce.

FINAL M.B., CH.B.—*Part III:* Anita M. Beck, S. Bradshaw, E. R. Carter, V. L. Cooper, H. V. Cross, Jean M. Frazer, G. W. Gibbs, Patricia F. M. B. Gould, T. C. Highton, M. Horwich, R. D. Hotston, H. P. Hughes, W. B. E. Jones, J. Littler, R. B. McConnell, Jane C. S. Maclachlan, L. Mandel, A. J. Marsden, R. H. Maudsley, P. D. Moss, J. C. V. Murphy, S. P. C. O'Reagain, G. J. Rees, Hilda M. Reeve, G. C. Roberts, C. D. Rosenwald, D. I. Rowlands, T. L. Schofield (distinction in surgery), Betty W. Steiner, R. V. Tracy-Forster, Amabel M. Turner, D. C. Watson, H. H. Watts, W. D. Wilson, Rosalind Zalin. *Passed in Separate Subjects:* J. J. Bligh and R. H. Martin (Medicine, Surgery); J. G. K. Dean, P. J. Devlin, Joan O. Grant, and F. A. H. Inman (Medicine, Obstetrics, and Gynaecology); F. E. D. Griffiths, C. Pownall, and G. A. Wetherell (Surgery, Obstetrics, and Gynaecology). *Part I.* Ethel J. Higgitt, Margaret Slater, Elspeth M. Whittaker.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

M.D.—*By thesis:* J. R. Wardley.

FINAL M.B., CH.B.—[5]Alice Akred, G. Ashe, A. N. Ashworth, Pauline Blockey, [3,4]H. Bolton, H. A. Boydell, [2]D. M. Brierley, [2]W. E. Broughton, P. Cliff, J. G. Coburn, D. G. Crawshaw, Betty J. Dakin, Sheila Egan, D. Eglin, [3]K. Heap, Dorothy Hey, Esther Jackson, W. H. Lonsdale, R. L. Lunt, J. K. McMyn, C. W. Marsden, R. W. T. Mason, Ethel J. Samuel, H. F. Smith, [1,3,4,5,6,7]S. W. Stanbury, O. C. Sugden, D. Sutton, M. Swerdlow, [4]R. H. Townshend, Margaret Wade, [2]A. E. Wall, H. C. Warrington, J. K. Wright. Part I (*Forensic Medicine and Hygiene and Preventive Medicine*): O. E. Adeniyi-Jones, D. J. Atherton, Margaret A. Barber, J. S. Battersby, D. C. A. Bevis, D. H. Blakey, H. M. Blaquière, D. L. Boardman, Alice I. Burke, Margaret R. Burke, J. L. Clarkson, W. Clegg, O. O. Cowpe, Frances G. Danson, H. Davies, C. J. Dewhurst, P. R. Duncan, B. I. Einhorn, L. Erin, F. Fletcher, J. W. Fletcher, Margaret Garnett, J. Grayson, E. J. Guest, G. Hargreaves, C. L. Holden, J. C. Howarth, E. Isherwood, F. Jackson, G. W. H. James, F. W. Johnson, F. Kratter, R. McK. Laslett, Marjorie T. Lee, Mary P. McGlade, R. I. Mackay, A. Marsland, E. B. N. Merchant, Doreen Mitchell, T. Moss, J. G. Oddy, S. Portnoy, P. T. Quinlan, A. Ramsden, F. C. Reidy, P. H. Renton, A. F. Robinson, M. M. Rose, B. Samuels, R. H. Sewell, J. H. Shelswell, Sylvia M. Slee, K. H. Smith, H. Sosnowick, J. L. Taylor, R. Tepper, Lois E. N. Turner, P. Vulfsons, E. G. Wade, Margaret Wardle, Ruth J. Whitley, T. A. Yates.

[1] First-class honours. [2] Second-class honours. [3] Distinction in medicine. [4] Distinction in surgery. [5] Distinction in forensic medicine. [6] Distinction in hygiene. [7] Distinction in preventive medicine.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on July 9 the following medical degrees and diplomas were conferred:

M.D.—A. H. Cruickshank (awarded highest honours for thesis (*in absentia*)), D. A. Hunter (awarded commendation for thesis).

M.B., CH.B.—A. L. Stalker (with first-class honours, passed final examination with distinction), J. Mowat (with second-class honours), A. Adam, Mary R. Alexander, R. M. Allan, E. Anderson, R. M. L. Anderson, H. I. C. Bowie, Inez M. Brebner, D. D. Brown, I. MacD. Brown, A. P. Buchan, I. J. Buchan, Mary S. Buchan, N. Budge, J. Cantlie, T. L. Carr, J. R. W. Catto, Isabel M. S. Chalmers, I. G. L. Craig, J. L. T. Dickie, Margaret S. Duguid, D. M. Dunbar, Lorna L. Duncan, Eileen M. Duthie, G. W. Forbes, Helen S. Fraser, Leslie W. Fraser, W. G. French, R. Gibb, Isobel R. Grattidge, J. Gray, A. M. Gwynn, Muriel O. Henderson, G. L. Herbert, Eilean A. Hunter, J. G. Hunter, T. O'N. F. Kelly, Margaret C. Kemp, W. Y. Laidlaw, Agnes K. Leslie, J. C. Lightbody, R. K. MacCuish, J. C. M. MacDonald, W. H. McGillivray, W. B. McGowan, Dorothy J. Mackay, J. M. McKay, A. A. Mackie, A. H. McLaren, Mary E. C. Maclean, Muriel M. McLean, A. Mair, V. D. R. Martin, Elza H. Meadows, D. G. Milne, J. G. Murray, Cecilia M. Park, G. M. Reid, Alma C. Ritchie, Mary B. Robb, A. F. Ross, G. I. MacD. Ross, K. A. Ross, I. L. Roy, L. S. Rusack, J. K. Russell, A. G. Scott, G. M. Sinclair, Emily S. Smith, E. B. Smith, J. A. E. Stewart, A. B. Strachan, Cecilia V. Urquhart, A. Walker, S. J. M. Walker, W. A. Walker, W. Watt, Dorothy M. A. White, G. A. Wilson, J. H. Wood.

D.P.H.—Mary Anderson, C. T. Baynes, Enid M. Clow, Vera D. Davidson.

UNIVERSITY OF GLASGOW

At a graduation ceremony on June 26 the following medical degrees were conferred:

M.D.—A. G. Fergusson (with commendation), A. R. Hunter, B. T. Mann (*in absentia*).

UNIVERSITY OF ST. ANDREWS

The following medical degrees were conferred on June 27:

M.D.—J. Brodie (with honours for thesis and Rutherford gold medal), W. A. Davidson (with commendation for thesis and a silver medal), W. M. Jamieson, C. B. Macdonald.

M.B., CH.B.—*D. R. K. Reid, †G. Smith, †A. J. M. Mathieson, †J. D. B. MacDougall, †J. R. Anderson, †J. W. Smith, †Elizabeth M. McCracken, †Kamala P. Roe, †Jadwiga Mickiewicz, †A. Inglis, †Elsa R. Cooper, †W. M. C. Brown, †D. K. Stevenson, W. G. Birrell, W. W. Black, Mary Cammock, C. N. D. Cruickshank, T. D. G. Fairbairn, Isobel M. L. Fernback, S. Fuller, J. Gemmell, Muriel E. Gibb, D. M. Graham-Service, D. D. Inch, H. E. Kelsick, J. Millar, Janet Mills, Dorothea B. Irving (or Montgomerie), J. A. Petrie, D. E. Robertson, W. D. G. Robson, R. K. W. Sharp, D. McQ. Sibbald, A. R. Smith, W. G. Tait, Edith A. C. Thomson, A. M. Watt, Elizabeth D. S. Wilson.

* With distinction. † With commendation.

UNIVERSITY OF LONDON

Sir Ernest Graham-Little, M.P., has been reappointed as a representative of the Senate upon the Court of London University for a further period of five years from October 1, 1942.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following medical degrees were conferred on July 1:

M.D.—C. G. Ambrose, J. E. C. Cherry, W. A. Gillespie, M. A. Majekodunni, Isabella M. Murphy (*née* Dorman), W. F. Rogers.

M.B., B.Ch., B.A.O.—J. M. T. Adamson, J. E. Adamson, P. St. G. Anderson, Violet K. St. G. Breakey, R. B. Brenan, Franziska G. Brill, D. M. Brooks, Helen U. Croasdaile, J. F. Dignan, J. B. FitzSimons, J. P. Hearne, W. J. C. Hill, E. K. Holland, A. M. Jacobson, H. H. B. Lamb, Dorothy W. M. Last, Margaret E. McClelland, J. McNutt, W. B. Martin, J. J. Musgrave, E. S. Odbert, S. Potgieter, A. W. Pringle, R. C. Rylance, H. Scheyer, K. M. Shaw, L. Shribman, S. B. Stein, F. S. Stewart, W. J. W. Wolfe.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examinations indicated:

M.D.—W. McK. Bonnar (with gold medal), W. Townsley (with high commendation), W. S. L. Gilchrist, S. A. C. Hunter, J. S. Matthews.

M.CH.—C. C. D. Martin.

M.B., B.CH., B.A.O.—*K. Aterman, *J. M. Beare, *K. Bew, *D. J. Crawford, *H. C. Dales, *W. S. Hanna, *T. J. Harrison, *R. M. Laird, *Elizabeth F. M'Keown, *H. Montgomery, *E. Morrison, *M. R. Neely, J. H. Adams, Annie W. S. Beck, H. G. Biggart, W. Blair, A. S. Boyd, E. Boyd, R. B. Boyd, J. M. Bradley, P. D. Bradley, J. F. Breach, M. J. Brosnan, J. M. Bunting, Margaret S. Burns, F. C. Calvert, Margaret G. Calwell, A. N. Campbell, A. A. G. Carson, W. Castles, Sarah I. Cochrane, G. H. Connor, P. U. Creighton, W. P. Crone, H. J. Cronhelm, B. J. Cullen, J. Dewar, R. J. Dinsmore, W. J. Driscoll, R. Dunlop, A. S. Effron, C. M. B. Field, Mary I. Fleming, P. A. H. McC. Foster, T. Freeman, Margaret F. Fry, L. Ganz, J. G. Gibson, R. Halliday, R. S. Hamilton, J. A. G. Hart, D. Hay, D. Henderson, Henrietta E. Hunter, R. A. Hyman, Angel M. Jones, D. McM. Kennedy, W. A. Kennedy, A. I. K. Kerr, H. Kerrigan, H. L. Kyle, H. Lantin, A. A. McG. McConnell, R. A. McIlwraith, Mary J. C. McIntosh, Kathleen G. McKee, W. C. McKerr, J. S. McMaster, J. McRobert, J. F. Mark, A. A. McC. Miller, B. P. L. Moore, C. Moore, S. P. Moore, Margaret F. Mulholland, R. S. Murray, Yvonne A. Murray, G. P. Murtagh, J. F. Nicholl, D. A. R. Orr, H. F. Reynolds, Mary E. Ross, S. A. Scott, D. G. Simpson, R. T. N. Simpson, A. Sloan, D. G. Sloan, W. A. W. Small, S. M. Smith, A. E. M. Stevenson, J. C. Stutt, H. A. H. Summers, B. E. Swain, A. E. P. Swinson, G. O. Thomas, J. D. Watson, E. L. White, R. J. Young.

D.P.H.—S. H. Carson, J. M. Fullerton, J. H. P. Giff, A. Harbinson, R. Hill, W. H. Hood, A. Hyland, D. P. Kearns, I. M. Librach, J. S. McCann, W. J. McLeod, T. A. Spence.

* Second-class honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of Council, held on July 9, Sir Alfred Webb-Johnson was re-elected President and Surgeon Rear-Admiral G. Gordon-Taylor and Mr. L. R. Braithwaite were re-elected Vice-Presidents for the ensuing year. Prof. G. Grey Turner and Sir Hugh Lett were readmitted and Brigadier Hugh Cairns was admitted to the Council.

The following professors, lecturers, and demonstrators were elected for the ensuing year:

Hunterian Professors.—Mr. W. H. Bowen, one lecture on a Study of the Aetiology of Acute Appendicitis; Mr. H. T. Roper-Hall, one lecture on Premaxillary Cysts; Mr. L. H. Savin, one lecture on the Surgery of Non-magnetic Intraocular Foreign Bodies; Mr. J. C. Ross, one lecture on Injuries of the Urinary Bladder; Dr. Raymond Greene, one lecture on Frostbite and Kindred Conditions; Mr. S. M. Cohen, one lecture on Traumatic Arterial Spasm; Mr. J. E. A. O'Connell, one lecture on the Vascular Factor in the Cerebrospinal Fluid Circulation and its Relationship to Intracranial Pathological Processes; Mr. O. S. Tubbs, one lecture on the Effect of Ligation on Infection of the Patent Ductus Arteriosus; Dr. A. G. McD. Weddell, two lectures on Cutaneous Innervation; Mr. W. B. Highet, two lectures on Injuries to Peripheral Nerves.

Arris and Gale Lectures.—Prof. H. A. Harris, lectures on (1) the Anatomy of Posture in Industry, (2) the Clinical Anatomy of the Veins, and (3) the Relation of the Lymphatic System to the Arterial and Venous Systems.

Erasmus Wilson Demonstrators.—Mr. L. E. C. Norbury, one demonstration on the pathological contents of the Museum; Mr. R. Davies-Colley, one demonstration; Mr. C. E. Shattock, two demonstrations; Surgeon Rear-Admiral C. P. G. Wakeley, two demonstrations on Injuries of the Skull and Brain.

Arnott Demonstrator.—Prof. A. J. E. Cave, six demonstrations on the contents of the Museum.

It was decided to recognize the posts of senior house-surgeon and first assistant house-surgeon at Essex County Hospital, Colchester, for the six-months surgical practice required of candidates for the Final Fellowship examination. It was also decided to renew the recognition of the post of house-surgeon at Walsall General Hospital for the six-months surgical practice required of candidates for the Final Fellowship examination, for the duration of the war.

Sir Frank Colyer was reappointed Honorary Curator of the Odontological Collection. The thirteenth Macloghlin Scholarship was awarded to John Alfred Gorton Holt of Bristol Grammar School. Miss H. B. Collard was reappointed a Leverhulme Scholar for a further year. A vote of thanks was given to Mrs. Rees-Mogg for presenting to the College a selection of 150 books from the library of her first husband, Dr. Edward Douty, F.R.C.S.

A Diploma of Fellowship was granted to R. S. Lawrie, M.B., M.R.C.P.

A Diploma of Membership was granted to J. A. Judson.

Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN PUBLIC HEALTH.—R. Bhaskar, P. R. T. Naidu, W. Dodd.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—J. F. Cooper, H. Fleming, G. Garmany, Margaret J. Garmany, J. H. Gould, S. Leviten, P. Morris, J. Slorach, P. C. C. Treisie.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—J. A. Harpman, C. McK. Johnston, E. Kaplan, E. C. Richardson, E. Rosenbaum.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At recent meetings of the President and Fellows the following have been admitted Fellows of the College: J. A. D. Deeny, M.D., A. Whelton, M.D., John Duffy, M.D.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Acting Surg. Lieut.-Cmdr. (D.) **ROBERT DOUGLAS JOHNSTON**, R.N., who was reported missing in the *Journal* of Jan. 10, is now posted as missing, presumed killed, in H.M.S. *Prince of Wales* in an Admiralty Casualty List published on July 10. He was educated at Edinburgh, where he studied for the dental profession, taking the diploma of L.D.S. in 1931. He also took the diplomas L.R.C.P.&S.Ed. and L.R.F.P.S.Glasg. in 1932. He was a member of the B.M.A.

Temp. Surg.-Lieut. **WILLIAM ANTHONY CAVANAGH**, R.N.V.R., is posted as missing, presumed killed, in H.M.S. *Repulse* in an Admiralty Casualty List published on July 13. He was born on June 27, 1908, and was educated at Dublin, taking the L.R.C.P.&S.I. in 1934. He had practised at Greencastle, Co. Donegal, since qualification, with the exception of a brief period in London in 1938, until the outbreak of war, when he immediately entered the R.N.V.R. as prob. temp. surg. lieut.

Prisoners of War.—Major D. C. Bowie, R.A.M.C., Capt. K. P. Brown, R.A.M.C., Major E. J. Curran, R.A.M.C., War Subs. Capt. R. L. Lancaster, R.A.M.C., Capt. J. A. G. M. Lynch, R.A.M.C., Major H. G. G. Robertson, R.A.M.C., Capt. J. E. C. Robinson, R.A.M.C., Lieut.-Col. C. O. Shackleton, R.A.M.C., Col. J. T. Simson, Major J. E. Swyer, R.A.M.C.

Missing.—Major C. A. Calder, R.A.M.C., Capt. E. T. M. Smith, R.A.M.C.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral **GILBERT FRANCIS SYMS**, R.N. (ret.), died on June 23. He was educated at Guy's Hospital and took the M.R.C.S., L.R.C.P. in 1908 and subsequently the F.R.C.S. in 1923. After serving as house-surgeon and clinical assistant and out-patient officer at Guy's he entered the Royal Navy, attained the ranks of surg. cmdr. in 1919, surg. capt. in 1931, and surg. rear-admiral in 1938, retiring early in 1942. He served during the war of 1914-18, receiving the medals. He was appointed Honorary Surgeon to the King last year. He had been professor of surgery at Haslar Hospital and in charge of the Royal Naval Hospital, Plymouth.

Col. **STEPHEN FRAZER CLARK**, late R.A.M.C., died at Mosman, New South Wales, in May, aged 77. He was born on July 17, 1864, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1885. In 1904 he took the D.P.H. of the Irish Royal Colleges. Entering the Army as surgeon in 1887, he became colonel in 1915, and retired in 1919. He served in the China war of 1900 (medals) and in the war of 1914-18, in command of a general hospital in France, and was mentioned in dispatches in 1914. He also received the Serbian Order of St. Sava (Third Class) and the Croix de Guerre in 1918. He had been a member of the B.M.A. for 35 years.

Lieut.-Col. **JAMES GIBSON MCNAUGHT**, R.A.M.C. (ret.), died at Penzance on April 25, aged 76. He was born in Glasgow on November 13, 1865, and was educated at the University of Glasgow, where he graduated M.A. in 1887 and M.B., C.M. in 1890, proceeding M.D. four years later. He took the certificate (with medal) in tropical medicine at the University of Edinburgh in 1894, and the D.P.H. of the London Colleges in 1903. Entering the Army as surg. lieut. in 1892, he became lieut.-col. in 1914, and retired in 1920. He served in the South African War in 1901-2, taking part in operations in the Transvaal, in Cape Colony, and the Orange River Colony, and received the Queen's medal with five clasps; and in the war of 1914-18 was mentioned in dispatches in 1914, and commanded the 13th Casualty Clearing Station during the Gallipoli campaign. He was a member of the Mediterranean Fever Commission of 1906 and was a frequent contributor on pathological and bacteriological subjects to the medical press. He had been a member of the B.M.A. since 1895.

Medical Notes in Parliament

Death Rates for Infectious Diseases

Mr. BROWN, replying to Mr. Leach on June 30, said that the death rates per 1,000,000 under 15 in England and Wales from the following diseases were, for 1939 and 1940:

	1939	1940
Diphtheria	227	265
Scarlet fever	15	12
Measles	34	95
Whooping-cough	140	78
Tuberculosis	240	264

The rates for 1940 were provisional. No rates were yet available for age groups in 1941.

On June 30 Mr. BROWN told Mr. Leach that the death rates per 1,000,000 persons living in 1938, 1939, 1940, and 1941 from small-pox, measles, scarlet fever, diphtheria, whooping-cough, enteric fever, cancer, and diabetes were as follows.

	1938	1939	1940+	1941+
Small-pox	0	—	—	—
Measles	40	7	21	28
Scarlet fever	9	4	4	3
Diphtheria	71	51	60	64
Whooping-cough	27	29	16	57
Enteric fever, including typhoid and paratyphoid	4	3	3	4
Cancer	1,665	1,620	1,662	1,670
Diabetes	173	124	129	117

The rates for 1940 and 1941 were provisional. They were calculated on the total population of England and Wales for 1939.

Children Employed on the Land

Mr. EDE, on June 23, in reply to a question on the need for adequate medical examination of school children exempted from attendance in order to engage in agricultural work in any case where there was danger of overstrain on account of a child's physical condition, gave the following information. The Defence Regulation required that "if the local authority by notice in writing served on the parent or guardian of any child so requires, the child shall not be employed in agricultural work, or, as the case may be, in agricultural work of any nature, unless he is certified by a registered medical practitioner to be physically fit to be so employed, and it shall be the duty of a child's parent or guardian to take all reasonable steps to see that he is not employed in contravention of this paragraph." In the instructions issued by his Department to local education authorities, Mr. Ede continued, the following was included: "If the authority, on information received from the school medical officer, teachers, or otherwise, has reason to doubt whether a child is physically fit to undertake the work, exemption must not be granted unless a satisfactory medical certificate, which should wherever possible be given by the school medical officer, is received."

Viscountess ASTOR asked if it was possible to give these children one hour's rest in the middle of the day. It would, she said, make a great difference to their health. Mr. EDE said that where a child was employed for the whole day there was a requirement that a sufficient period of rest should be allowed, and there was a general desire that the children should not be employed for more than half a day unless it was absolutely necessary. Mr. RHYS DAVIES said that if these children, aged 14 years and upwards, went to work in a factory they were all medically examined. Why was there this difference? Mr. EDE replied that there were not sufficient doctors available to examine all the children on the spot without such delay as would frustrate the object of obtaining the help of children on the land.

Colonial Services

Presenting the Colonial estimates on June 24, Mr. HAROLD MACMILLAN said few of the Colonies had or were likely to have for a long time so large a reservoir of qualified local candidates that the population could itself supply all the administrative, scientific, professional, and technical experts needed. A mobile force of experts in administration, medicine, agriculture, etc., was needed who would be at the disposal of the Secretary of State to be posted wherever in the Colonial Empire they were most required. Mobility was still hampered by variations in local regulations, in salary scales, and so on. Unification of the Colonial Service had been going on since 1930. Much progress had been made, but to get a fully unified and mobile service needed not only direction from the centre but financial provision to equalize conditions of employment in the poorer and the richer Colonies. The Colonial Office had Lord Hailey's gifts at its service. With the help of eminent scientists he would advise on the organization of research work over the whole field, and would have half a million pounds a year to do it with.

Dr. MORGAN said that in Jamaica conditions of treatment of venereal disease were unsatisfactory. Mr. SORENSEN said a more drastic development of Colonial Medical Services should be planned. It was appalling that not one coloured woman nurse trained in this country had secured a position as matron or sister in any of the medical establishments in West Africa.

Eyesight of Factory Workers.—Mr. MALCOLM MCCORQUODALE told Sir Francis Fremantle on June 10 that about 12,450 accidents causing eye injury were notified under the Factory Acts in 1941. There were no special arrangements of a comprehensive kind for the services of ophthalmic surgeons to be available for factory workers as such, but in a few cases factory managements had made arrangements to assist their workers in obtaining advice from such surgeons or from sight-testing opticians.

British Sick in Iraq and Persia.—On June 16 Sir THOMAS MOORE asked the Secretary of State for War what was being done with the British sick in Iran and Iraq and whether convalescents were being transferred to less trying climates. Sir JAMES GRIGG said that British general hospitals and combined British and Indian general hospitals had been established for British sick and wounded in Iraq and Persia. In addition hospital accommodation was available in the hills in India for patients recommended for a change of climate.

Lead Poisoning.—Cases of lead poisoning notified under the Factory Acts were—1,258 in 1899, 207 in 1919, and 109 in 1939.

Dental Man-power.—Mr. BROWN informed Professor Hill on July 2 that in carrying out their tasks of finding dentists for the Services the Central Dental War Committee took every care to ensure that a sufficient number of dentists were left in civil life to cope with civilian demands for dental treatment, including those arising under National Health Insurance and the School Dental Service.

Pneumonia.—During the ten years 1932 to 1941 inclusive the average number of cases of acute primary and acute influenzal pneumonia notified annually was 50,912, with a maximum figure of 65,009 cases in 1933 and a minimum of 42,312 in 1939. Mr. Brown said that chemotherapy in the treatment of pneumonia was introduced about six years ago and had come into general use since 1938.

Medical Schools.—On June 24 Sir Francis Fremantle, Capt. G. S. Elliston, Mr. Messer, and Mr. James Griffiths gave evidence before the Committee on the planning of future medical schools

Notes in Brief

The number of cases of non-pulmonary tuberculosis notified in England and Wales during the year 1941 was 13,720. The number considered to be of bovine origin is not available.

The Public Health (England) (Tb) Regulations, 1942, were presented to Parliament on June 3.

The National Milk Scheme does not affect any powers of medical officers of health in relation to the quality of milk.

Mr. R. A. Butler proposes to ask local education authorities to provide milk and school dinners during the summer holidays. A circular on this and other matters relating to the care of children during the holidays is in course of preparation.

Medical News

Mr. C. Bowdler Henry will deliver a lecture on "The Complications and Treatment of Impacted Wisdom Teeth" at the British Dental Association, 13, Hill Street, W., on July 28 at 3 p.m. All members of the British and Allied Services will be welcome.

The Council of Epsom College have available for orphan daughters of medical practitioners "St. Anne's" Scholarships and "Squire Sprigge" Scholarships. Candidates for the St. Anne's Scholarships must be fully nine years of age, and must be orphan daughters of medical *men* who have been in independent practice in England or Wales for not less than five years. No such restrictions are laid down for the Squire Sprigge scholars. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. Forms of application can be obtained from the Secretary's Office, Epsom College, Surrey.

The Ministry of Food announces that a category 1(h) has been added to the schedule of conditions qualifying for priority milk supplies. "Patients with malignant disease, or lymphadenoma, or leukaemia, who are undergoing radiotherapy, whether by means of *x* rays or radium, and who suffer from reactions to the therapy as shown by difficulty in swallowing or digestive disturbances such as anorexia or vomiting," will be entitled to a maximum of two pints daily on the production of the necessary medical certificate, which will be valid for one month, but renewable for two further consecutive periods of one month on the production of further certificates. If another course of treatment is required after an interval, then during this course priority milk will be available to the patient on the same conditions as before. Certificates for priority supplies of eggs or milk for expectant mothers will be valid for three months at a time and renewable for further periods of three months to cover the duration of pregnancy.

The Duchess of Abercorn was present at a crowded meeting, representative of all interests, held in the Whitla Medical Institute, Belfast, on July 3. The Rt. Hon. Sir Hugh O'Neill presided and the meeting was addressed by Dr. Doris Odlum of the Child Guidance Council of Great Britain. At the close it was unanimously and enthusiastically decided to establish a Child Guidance Council for Northern Ireland. The Queen recently allocated a sum of £2,000 from the Bundles for Britain Fund towards this object.

The Association of Scientific Workers, 73, High Holborn, W.C.1 (with the collaboration of the Federation of Ayrshire Scientific Film Societies) has arranged a conference on the scientific film, to be held in two sections: in Ayr on Saturday and Sunday, August 1 and 2, and in London on Sunday, August 16. The aims of this conference are, first, to discuss the need for scientific film societies run by A.Sc.W. branches to give science films the widest possible showing; and, secondly, to draw public attention to these activities and to the need for increased and co-ordinated production of science films.

In view of the shortage of medical specialists, particularly in ear, nose, and throat work, in the south-east of Scotland, the Edinburgh Royal Infirmary has entered into an agreement with the Chalmers Hospital, the Deaconess Hospital, and the Sick Children's Hospital that the out-patient departments of the three last-named hospitals shall be closed and all out-patients will now report to the Royal Infirmary.

The King has appointed Dr. Victor W. T. McGusty, O.B.E., to be a member of the Executive Council of the colony of Fiji for a further period.

EPIDEMIOLOGICAL NOTES

Discussion of Table

There was an increase in the incidence of the majority of infectious diseases in England and Wales during the week; the outstanding increases were 1,206 for measles and 91 for dysentery. The notifications of measles, whooping-cough, and dysentery are the largest weekly totals that have been recorded for 1, 1½, and 4½ years respectively.

Measles

The 7,581 cases of measles notified during the week in England and Wales represent an increase of almost 20% on the total of the preceding week. The largest increases were those in the counties of Yorks West Riding 239, Middlesex 166, Lancashire 152, Essex 149, Surrey 128, Northumberland 94, Hampshire 76, Durham 74, London 70. Decreases were recorded in Kent and Hertfordshire of 79 and 88. The incidence of measles varied considerably throughout the country; in 11 English counties with a low incidence there were only 46 cases, and only a total of 13 in 8 Welsh counties.

For the second consecutive week there was a big decline in the notifications of measles in Scotland, where 358 fewer cases were reported than in the preceding week. In Glasgow 114 cases were notified, a decline of 363.

In Eire 97 cases, an increase of 48, were reported, and in Northern Ireland 233 cases, a decrease of 31.

Dysentery

The largest increase in the notifications of dysentery in England and Wales was due mainly to the outbreak in Cumberland, Penrith U.D.; 100 cases were notified during the week in this outbreak, which started in the preceding week with 31 cases. The only new outbreak of any size occurred in Westmorland, North Westmorland R.D. 14 cases. The largest of the other county totals were those of London 22, Lancashire 16, Surrey 15, Yorks West Riding 15, Oxfordshire 10, and Gloucestershire 10.

Small-pox

The outbreak in Glasgow appears to be effectively checked; no new cases were reported during the 5 days July 11-16. The death of a 72-year-old man brings the death roll to 6. Over half a million persons have been vaccinated, and several of the vaccination centres have been closed. In Swindon several suspected cases have been reported; no deaths have occurred in this town. The medical officer of health has stated that the response to the vaccination offer has been "deplorable."

According to the daily press a mild case of small-pox has been removed to hospital from a ship at Liverpool. The medical officer of health has taken the necessary precautions for dealing with the situation.

Returns for the Week Ending July 11

The notifications of infectious diseases in England and Wales included: scarlet fever 1,279, whooping-cough 1,390, diphtheria 768, measles 7,361, acute pneumonia 625, cerebrospinal fever 87, dysentery 155, paratyphoid 8, typhoid 4.

No. 26

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	1942 (b)	1942 (c)	1942 (d)	1942 (e)	1941 (Corresponding Week) (a)	1941 (b)	1941 (c)	1941 (d)	1941 (e)
Cerebrospinal fever ..	105	4	36	3	7	192	18	54	2	3
Deaths ..		—	2				2	3		
Diphtheria ..	728	39	171	44	21	909	37	162	26	24
Deaths ..	17	2	5	3	1	18	—	4	—	2
Dysentery ..	242	22	46	—	—	78	10	30		—
Deaths ..		1	—	—	—			—	—	—
Encephalitis lethargica, acute ..	6	—	1	—	—	5	—	3	—	—
Deaths ..		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						111	—	29	1	—
Deaths ..						4	—	—	—	—
Erysipelas ..		—	41	7	2		—	41	4	2
Deaths ..		—	—				—	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths ..	30	2	12	5	4	26	2	4	9	3
Measles ..	7,581	815	249	97	233	8,820	284	74		1
Deaths ..	5	1	4	1	—	9	—	—	1	—
Ophthalmia neonatorum	83	3	5		—	82	4	16		—
Deaths ..										
Paratyphoid fever ..	14	—	2	2						
Deaths ..	—	—	—		—					
Pneumonia, influenzal*	734	35	5	3	8	664	31	3	3	1
Deaths (from influenza) ..	11	—	1	—	—	5	22	1	—	6
Pneumonia, primary ..			184	20				222	12	
Deaths ..		—		5	7		—		6	—
Polio-encephalitis, acute	2	—				—	—			
Deaths ..		—					—			
Poliomyelitis, acute ..	7	—	1	1	—	3	—	4	—	—
Deaths ..		—	—				—	—		
Puerperal fever ..	—	—	15	4	1	2	2	16	1	1
Deaths ..		1					—			
Puerperal pyrexia ..	161	9	17		2	119	4	24		1
Deaths ..										
Relapsing fever ..	—	—			—	—	—			—
Deaths ..										
Scarlet fever ..	1,396	84	229	74	29	840	34	120	30	20
Deaths ..	7	—	—	—	—	1	—	—	—	—
Small-pox ..	—	—	9		—	—	—	—		—
Deaths ..	—	—	1	—	—	—	—	—	—	
Typhoid fever ..	4	—	1	7	1					
Deaths ..	1	—	—	—	—					
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..				—	—			—	—	—
Whooping-cough ..	1,457	128	17	37	12	5,437	215	184		4
Deaths ..	7	—	—	1	—	22	2	8	1	—
Deaths (0-1 year) ..	282	31	51	18	20	305	18	60	28	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths) ..	3,726	527	562	165	106	4,172	503	576	181	156
Annual death rate (per 1,000 persons living)			12·6	11·0	†			12·5	12·0	†
Live births ..	6,083	709	921	390	283	4,577	315	883	434	176
Annual rate per 1,000 persons living ..			19·0	26·0	†			18·0	28·8	†
Stillbirths ..	227	20	19			194	13	34		
Rate per 1,000 total births (including stillborn) ..			20					37		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1.

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QUERIES AND ANSWERS

Adder Bite

Dr. C. W. **Walker** (Hereford) writes: Having a child under my care suffering from adder bite, I find on looking up the subject very little information as to prognosis. Four or five fatal cases (in this country) are vouched for, and about half a dozen case histories published (Sir T. Oliver's case and Dr. M. R. Taylor's series). I should be most grateful to any doctor who has had this rather rare accident (British adder bite) under his care in the past for information as to the duration of the severe symptoms, and of the subsequent swelling and disability of the bitten limb.

Incidence of Migraine

Dr. M. **Infeld** (London, N.W.6) writes: I am interested in data concerning the frequency of migraine in the United Kingdom. Are there statistics in this regard, official ones or from any out-patient departments?

An Unusual Accident

L. P. S. writes: A cyclist collided with a light horse-drawn vehicle The shaft, about the thickness of the wrist, transfixed the extreme upper part of his thigh and broke off. I was called in to operate 6 hours after the accident. The shaft was *in situ* and entered at the inner side, passed through the centre of the thigh, and the end caused a bulge on the skin on the outer side. An anaesthetic was given and the shaft was pulled out with some difficulty as it was firmly embedded, but there was no resultant haemorrhage. A generous counter-opening was made, the entrance wound was excised, the channel of the wound was cleaned so far as circumstances would permit, sulphanilamide powder was introduced throughout the whole length of the wound, and a through-and-through drainage tube was placed Sulphapyridine—2 tablets every 4 hours—was given subsequently. I was informed that all seemed to be going well until the fifth day, when the whole thigh swelled up from infection and the patient died of septicaemia on the sixth day. Suggestions would be welcomed as to what might be considered the correct treatment of such a case.

Income Tax

Variations in Earnings

P. B.'s earnings in the five years to April, 1942, were respectively £200, £100, £70, £250, and £510. He has *apparently* been assessed for the five years ending April, 1943, on the amounts of £200, £100, £250, £250, and £510. Is this correct?

⁂ It is not possible to say without knowing why the earnings dropped to £70 in 1939-40, but on the face of the figures P. B does not seem to have suffered an excess of tax over the whole period. (A cost-of-living bonus received in cash is liable to income tax.)

Free Quarters as an Officer of the Crown

F is a Civil Servant (prison M O.) with free quarters valued at £50 per annum and is assessed to include tax on that amount. Is this correct?

⁂ Yes. The liability arises under the special rules applicable to Crown property, and the facts accordingly lead to a result different from those where the "occupier" of the whole premises is a private individual, or hospital authority, etc

Diminution in Earned Income

J. M.'s earned income during the actual year ended March 30, 1942, was £750; he has been assessed on £1,250. Has he any remedy?

⁂ Yes. If the aggregate actual earned income is less than the amount as assessed by more than 20% the individual can claim an adjustment of the assessment to the "actual" amount.

LETTERS, NOTES, ETC.

Russian-English Technical Dictionary

Sir John **Russell**, F.R.S. (chairman, Anglo-Soviet Scientific Collaboration Subcommittee) writes: There is an urgent demand at the present time for an up-to-date Russian-English dictionary of scientific and technical terms. It is known that a number of Russian-English glossaries of specific terms have been compiled by various scientific institutions and individuals, and it is thought that it would be extremely helpful to scientists and technical translators if copies of these glossaries could be collected and placed in the Science Library in London, where one complete set could be consulted Will, therefore, any institution or individual who has compiled a glossary of Russian scientific or technical terms, whether printed or in MS., please send a copy to the Secretary of my subcommittee, the British Council, 3, Hanover Street, W.1, who will collect these for the Science Library. It is hoped at a later stage to compile a large dictionary, but the immediate aim is to collect the different glossaries in one place where they can be consulted. Each glossary will be known by the name of its compiler.

Herpes Zoster and Varicella

Dr. F. C. **Gladstone** (Cirencester) writes: Dr. S. L. Brimblecombe's letter (July 11, p. 60) on herpes zoster and varicella raises the interesting question, Should a case of herpes zoster be isolated? As medical officer to a large boys' school I have no hesitation in saying Yes. The following experience will support my contention. Some years ago the head master's children developed varicella, their nurse having had an attack of herpes zoster ten days previously. I had warned the head master what to expect, and as this happened in the holidays we congratulated ourselves that the school had been spared an epidemic of varicella, but this was not to be. One of the boys was allowed to return to school with a mild attack of herpes zoster; his parents had not reported the matter. Although this boy was isolated a few hours after his return, within three weeks the school was enjoying an epidemic of varicella.

Treatment of Scabies

Mr. C. **Klatzkin**, B.Pharm. (Enfield), writes: May I, as a pharmacist, comment on one paragraph of the article on the treatment of scabies by Dr. Kenneth Mellanby, Major C. G. Johnson, and Mr. W. C. Bartley (July 4, p. 1). The authors mention the use of a sulphur vanishing cream. Most vanishing creams are essentially soaps, prepared by the interaction of stearic acid and an alkali; one of the best of these is ammonium stearate. A soap lather and a vanishing cream do not appear to me to be very different For this reason I would not expect a higher percentage of cures in the treatment of scabies to result from the use of a sulphur vanishing cream than from the use of sulphur lather tablets prepared with soap. A formula suggesting this method of preparing sulphur lather tablets was published in the *Pharmaceutical Journal* of Jan. 31, 1942.

Lichen Urticatus

Dr. G. E. **Ellis** (Gillingham, Dorset) writes: About five years ago I wrote a letter to the *Journal* (Nov. 6, 1937, p. 948) to show the remarkable effect upon lichen urticatus of small doses of potassium citrate. No notice was taken of the letter at the time, nor have I seen any reference to the subject since. The seasonal increase of this troublesome condition has now begun, and I should therefore like to bring this simple remedy again to the notice of practitioners, and to urge them to give it a trial Five- to ten-grain doses 3 times a day will clear the greater majority of cases in 3 days

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MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for July 23, 1842:

"The object of the Colleges of Physicians and Surgeons has been defeated. For their own sakes we could have wished that they had been less precipitate—less anxious for their own interests and more ready to sacrifice personal considerations for public good and the benefit of the profession which they affect to represent. Their disappointment, however, may lead to useful results. Defeated in their attempt to obtain fresh powers from the Legislature at the close of the session, the colleges will perhaps be more inclined to listen to the suggestions which emanate from the *real* representatives of the profession; to act with the associations (for we never advocated the destruction of the medical corporations) for the benefit of all, instead of losing their legitimate share of power, by attempting to grasp too much; in a word, to place themselves frankly and openly at the head of the movement, instead of involving themselves in ruin by a useless attempt to divert or disperse a force which they cannot resist."

BRITISH MEDICAL JOURNAL

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THE RADICAL SURGERY OF CANCER OF THE LOWER END OF THE COMMON BILE DUCT AND ADJACENT PANCREAS*

BY

GORDON GORDON-TAYLOR, C.B., O.B.E., LL.D., F.R.C.S.

Temporary Surgeon Rear-Admiral

A recent Hunterian Lecture concerned itself, among other problems, with (*a*) the sphincter arrangements of the terminal portion of the bile duct, and (*b*) the radical surgery of cancer in that area. The name of Oddi is often associated with the sphincter mechanism in this region, but an Englishman, Francis Glisson, drew attention to the "ostium with the annular fibres" nearly 250 years before the Italian. The description given by either observer was not an accurate one, and there certainly appears to be no valid reason to attach the name of the physiologist from Perugia permanently to this area. To Glisson at least is due the credit of first directing attention to the ostium, and the name of Glisson's sphincter must at any rate appeal to the patriotic.

Cancer of the caruncula major, the head of the pancreas or its duct, or the peripapillary portion of the duodenum is usually loosely designated "ampullary" carcinoma when surgery is undertaken. Although many cases in the literature purport to be examples of primary carcinoma of the "ampulla," true ampullary cancer must be rare, since this anatomical abnormality is itself infrequent. However, Lieber, Stewart, and Lund (1939) describe an undoubted case: a patient died of obstructive jaundice due to a small polyp arising from the mucosa of a definite ampulla. The new growth infiltrated the surrounding pancreas and muscular wall of the duodenum, but did not implicate the surface epithelium of the intestinal mucous membrane or of the choledochus or pancreatic duct. The specimen was regarded by the Boston surgical authors as an undoubted example of primary cancer of the ampulla.

Lieber, Stewart, and Lund (1939) in their industrious survey of cancer of this area were able to collect only three definite cases of primary carcinoma of the duodenal mucosa covering the caruncula major; the cases had previously been reported by Borelius, Le Noir and Courcoux, and by Countryman. They collected three cases of primary carcinoma of the terminal portion of Wirsung's duct in the literature—those of Letulle and Verliac, of Carnot and Harvier, and of Hadfield.

A very large number of cases of so-called "ampullary" cancer belong to an indeterminate group in which all the epithelial structures of the "papilla" are involved. This early implication of adjacent tissues depends more on the proximity of anatomical structures than upon any special malignancy of the tumour. Such tumours are rarely larger than a hazel-nut, and are said to be limited to the "papilla" in 74% of the patients.

Surgical literature relating to cancer of this region always emphasizes the slow growth and low-grade malignancy of many of the tumours (Outerbridge, etc.). Even in cases in which clinical evidence exists that a carcinoma of the head of the pancreas implicating the bile duct has been present for some time and attained considerable magnitude, mobility of the tumour may still be retained and surgical removal be practicable. In one case of my own, for which three palliative operations (!) of diverse nature had already been performed at another institution during the previous fifteen months and in which the diameter of the tumour was nearly 3½ in., the affected portion of the head of the pancreas was found at necropsy still to retain mobility and showed no involvement of the portal vein or its parent tributaries, and there were no metastases. The hope had been entertained that despite the regrettable wastage of time a radical operation might yet prove possible, but the woman unfortunately succumbed from a mishap during a very minor preliminary operative procedure.

More recently, J. C. Dick (1939) has stressed the low malignancy and the slight tendency to early dissemination exhibited by *tumours of the lowermost end of the common bile duct;* in 11 out of 13 cases at necropsy he found no extension of the tumour beyond the wall of the choledochus, and no secondary growths were demonstrable in glands or other organs. Microscopically, these tumours of the lowermost end of the common duct are adenocarcinomata, composed of irregular acini with large well-formed columnar cells; the cells stain darkly and have well-formed nuclei. There is little evidence of anaplasia, and very few mitotic figures are discernible. The tumour may be a small round, firm, whitish growth of the size of a cherry-stone; it may assume the form of multiple soft vegetations, varying in size from a pea to a hazel-nut. At other times the growth is a diffuse stenosing type, perhaps 1 to 2 cm. long and extending into the head of the pancreas.

Two illustrious American surgeons were the first to perform a resection of the "ampulla." To Halsted (1899) belongs the credit of being the pioneer in 1898, although his patients lived for only nine months after operation; William Mayo (1909) performed the second successful removal of an ampullary cancer in 1900, his patient surviving two years.

The end-results of even minor radical surgery for cancer of the caruncula major are naturally more hopeful than those of palliative measures. Of 7 patients submitted to transduodenal resection at the Mayo Clinic 5 recovered, and the average postoperative survival was nearly 26 months, whereas prospective survival after palliative measures amounted to only 14 months. The numbers of radical operations of varying degree for cancer of this region have slowly and steadily increased, so that Whipple, Parsons, and Mullins (1935) were able to report 80 cases of resection, mostly of limited scope.

Nevertheless, even after limited transduodenal removal some remarkably prolonged survivals have been reported: thus Körte's patient was alive and well 22 years after a transduodenal resection of an ampullary carcinoma; and Schloffer's cases, reported by Clar of Prague, survived 15 years. Kelly's patient was well 9 years after operation, and Cabot's survived 8 years. Lewis had a case of 8½ years' survival, and Oehler had one of 6 years' good health; Lauwers had two successful cases, one surviving 4 years.

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* Part I of a Hunterian Lecture delivered at the Royal College of Surgeons of England, June 18, 1942.

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Involvement of the surrounding pancreas and adjacent tissues demands an increased range of operation if extirpation is to be effective for the more extensive and infiltrative lesions. The value of the two-stage operation in cases of prolonged jaundice has now been learned, and the pre-operative measures directed towards the improvement of liver function and the control of haemorrhage have emboldened surgical effort; experimental work has demonstrated that the external secretion of the pancreas is no longer to be reckoned as indispensable in the digestive economy. The pioneer work of Allen Whipple and his colleagues at the Presbyterian Hospital, New York, demonstrated incontrovertibly the possibility of a truly radical operation for cancer of the "ampullary" region, and the successful results of subsequent operations by these pioneers and by some few other surgeons on each side of the Atlantic have put the operation upon the surgical map. Although the first success to attend a "radical" removal of cancer of the pancreas occurred in 1935, Maingot (1941) states that up to December, 1941, there had been published only 15 radical two-stage resections, including the second part of the duodenum, a variable amount of the head of the pancreas, and even the neck of that organ. Five of these 15 patients died almost outright from the operation; in another promising case (Illingworth, 1939) death occurred from biliary peritonitis more than 6 weeks after operation; two patients died at later dates from the effects of contraction of the surgical stoma between the biliary tract and digestive tube, and three developed subsequent metastases. Thus of the 15 recorded cases collected by Maingot (1941) in only 4 instances were the patients alive at the time of publication of that author's paper.

This Hunterian Lecture affords me the opportunity of adding some personal cases in which at least immediate success has attended limited transduodenal and transcholedochal removal and the more radical extirpation performed according to the Whipple technique; some cases have enjoyed a more prolonged survival. I also include one or two published and some hitherto unpublished cases belonging to my surgical friends.

Transduodenal Resection (2 Personal Cases)

A few years ago, in a discussion at the Meeting of the Association of Surgeons of Great Britain and Ireland held in London, I made mention of two successful cases, in which very early in my surgical career I performed transduodenal resection of a small malignant tumour of the caruncula major. In the course of operations upon two jaundiced patients the tumour felt through the duodenal wall was erroneously thought to be an irremovably impacted calculus, and the duodenal segment of the bile duct was therefore approached through the gut. In each case the tumour was only crudely removed by means of a curved pair of scissors, and the anterior wall of the duodenum sutured; each of the tumours was reported as a short columnar-celled carcinoma.

In the *first case* of the two, the patient, a woman of about 50, operated upon as far back as 1909, died of jaundice and palpable liver metastases two and a half years later, leaving no doubt as to the accuracy of the pathological report.

The *second patient*, treated in a similar amateur fashion, operated upon in 1911, was alive at the beginning of the last war, in 1914, but she was then lost sight of; three years of freedom from recurrence had elapsed since her operation.

Transcholedochal Removal of Tumours of Lower End of Common Bile Duct

Case 3.—A lady aged 55 was operated upon for persistent painless jaundice in 1925. Exploration of a greatly distended common duct revealed several small papillomatous outgrowths within the duct and a larger more sessile tumour obstructing the lumen of the canal almost at its lowermost end. This terminal portion of the duct was exposed and opened by a retroduodenal approach; the tumours were removed locally, the patency of the ostium and permeability of the duct demonstrated, and both openings in the choledochus closed. An anastomosis was effected between gall-bladder and stomach; a drain was left in Morison's pouch. Despite a favourable histological report, signs of pyloric obstruction supervened some months later, necessitating a palliative gastro-jejunostomy. A mass was present in the head of the pancreas which left little doubt as to its nature. The patient died about a year after the primary intervention with all the evidences of malignancy in the abdomen.

Radical Excision of "Ampulla" with Part of Duodenum and Pancreas

Case 4 (Fig. 1): Man aged 60; Painless Jaundice 5 Weeks; Distended Gall-bladder; Ampullary Carcinoma; Death.—Cholecysto-gastrostomy; gastro-jejunostomy; division of first part of duodenum; radical removal with reimplantation of ducts. Most unwisely this operation was performed in one stage; oliguria and subsequently anuria developed, and death ensued in 5 days. The suture lines were in satisfactory condition.

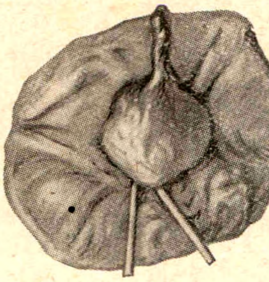

FIG. 1

Case 5: Man aged 58; 9 Weeks' Painless Jaundice; Distended Gall-bladder; Operation June, 1939; Ampullary Carcinoma.—*First operation:* Small bowel divided and united En-Y. Anastomosis between distended gall-bladder and short limb of Y-shaped jejunal junction. *Second operation:* Six weeks later a posterior gastro-jejunostomy was performed, care being taken that the apposed jejunal coil was distal to that segment of bowel with which the gall-bladder was connected, lest an anastomotic ulcer should result. The duodenum was divided and the gastric end inverted; the commencement of the third portion was similarly treated, and the descending duodenum and adjacent pancreas were removed, the common bile duct and pancreatic duct being each ligated with silk. The extraperitoneal bare area was drained. The patient recovered, but died in 6 months from hepatic metastases.

Case 6 (Fig. 2): Woman over 60; Painless Jaundice nearly 3 Months; Modern Pre-operative Therapy; Operation, 1940; Two-stage Intervention; Ampullary Carcinoma.—*First operation:* Cholecysto-gastrostomy. *Second operation:* Six weeks later, posterior gastro-jejunostomy. Removal of descending duodenum with adjacent head of pancreas. Common bile duct and pancreatic duct ligated with silk. Drainage of bare retroperitoneal space. Pancreatic juice leaked in small quantities for several weeks; ultimately ceased. Patient is well 1 year and 9 months later.

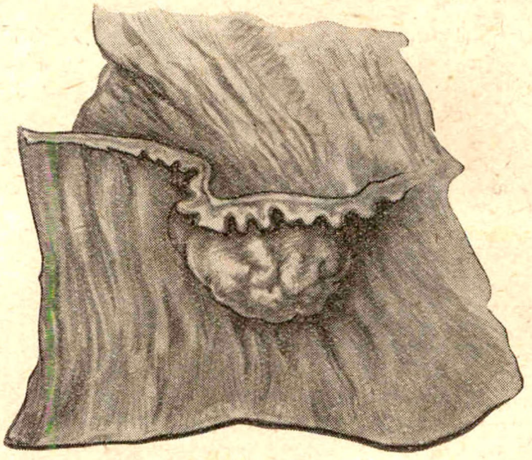

FIG. 2

Case 7: I have previously recorded a successful excision of a carcinoma of the *body of the pancreas* (Gordon-Taylor, 1934). At the operation, performed in July, 1927, a mass was removed one and a half times the size of the closed fist. The tumour was reported upon by Prof. S. Baker, now of Manchester University, as a columnar-celled carcinoma; an enlarged lymphatic gland attached to the mass was not infected with growth. The splenic artery required wide excision since it was implicated in the tumour mass; in addition to the removal of a length of the upper circumference of the expanded splenic vein, the left half of the commencement of the portal vein also required ablation. The operation was laborious, and at its termination only that part of the pancreas embraced by the concavity of the duodenum appeared to remain. No subsequent sequela referable to the spleen made me regret the decision to conserve that organ, despite the surgical interference with both its arterial and its venous blood supply. The patient continued in excellent health until the autumn of 1938—that is, 11 years—when the possibility of a recurrence suggested itself. *Just over 13 years after the removal of the tumour* he died from undoubted abdominal malignancy—probably a late metastasis of the original tumour.

Case 8 · A Calcified Mass embedded in the Pancreas and compressing the Common Bile Duct; Removal of Mass together with Portion of Head of Pancreas.—A stoker 49 years of age with jaundice of 4 months' duration; rather poor physique. Two-stage operation after modern pre-operative measures. *Cholecysto-gastrostomy*; at operation a firm mass was palpated in the head of the pancreas near the ampulla, and was regarded as confirmatory of the accuracy of the pre-operative diagnosis of ampullary cancer. *Second operation*, undertaken 6 weeks later: The second part of the duodenum was mobilized and the mass approached from behind. The tumour was found embedded in the substance of the head of the pancreas in intimate proximity to the retroduodenal and pancreatic portion of the common duct, and was removed from the pancreas with some of the gland tissue. On section the tumour was found to consist largely of calcareous material, possibly a mass of agminated calcified tuberculous glands. There was perhaps some justification for the mistake in diagnosis, but at least the patient is to be congratulated on the pathological nature of the compressing mechanism, which before this experience I might have seriously doubted.

Prof. C. F. W. Illingworth has had two admirable unpublished cases in which a successful radical two-stage operation for cancer of the pancreatic head was performed, and which I had the good fortune to see in Glasgow some months ago. My friend Victor Hurley of Melbourne told me that he had successfully removed a malignant tumour from the head of the pancreas by a retroduodenal approach, without removing the duodenum or bile duct. Rodney Maingot's (1941) excellent case is the first truly radical and successful case to be reported in Britain.

Some new growths of the ampullary region are apparently radiosensitive. Upcott (1935) performed a local excision of an ampullary growth and introduced radium on a probe down the common duct; the patient was well *15 years later.* Sampson Handley (quoted by Upcott, 1935), employing 6 mg. of radium for 5 days, was able to report 3 cases free from recurrences for 10 months, 2 years, and *14 years*, respectively. Sir James Walton (1939a) reported two successful cases of resection of the common bile duct for cancer in his Bradshaw Lecture of 1939, but amid the wealth of surgical experience and skill contained in this address these two cases deserve special mention lest they escape notice. Mr. C. E. Kindersley of Bath had also a successful case of resection of the junction of the cystic and common bile duct; this patient has survived several years.

Of *transduodenal resection of the duodenal end* of the common bile duct, my friend Mr. David Ligat of Hastings, operating at Middlesex Hospital in 1916 during the last war, had a successful case, the patient living *nearly five years* before ultimately dying of obvious malignant recurrence in the liver. This man had been jaundiced for 4 or 5 months, and the extrahepatic ducts were enormous.

These cases have been reported in the hope that the younger generation of surgeons may be encouraged to attempt to cure and not merely to palliate. The natural history of ampullary and pancreatic tumours justifies more vigorous surgical effort, and the end-results of the cancer surgery of this region should compensate the operator for his enterprise.

The concluding part of the Lecture will appear, with a list of references, in next week's issue.

The plan for fusion recommended by the Council of the Incorporated Association of Hospital Officers and of the Incorporated Association of Clerks and Stewards of Mental Hospitals has been adopted by extraordinary general meetings of both associations. Accordingly, from Oct. 1 next the two bodies will be amalgamated under the title of the Incorporated Association of Hospital Administrators, and membership will be open to all duly qualified lay hospital administrators.

DIPHTHERIA IMMUNIZATION OF ADULTS

BY

H. MASON LEETE, M.D., D.P.H.

Medical Superintendent, Hull City Hospital, Cottingham

The admirable paper by Fulton *et al.* (1942) has, with convincing proof, laid down a highly efficient routine for the immunization of children with alum-precipitated toxoid (A.P.T.). The dosage of 0.2 c.cm. followed by a second dose of 0.5 c.cm. at an interval of not less than 4 weeks has received the approval of the Chief Medical Officer to the Ministry of Health in his letter to all medical officers of health dated May 8, 1942. It is safe to assume that such a method will become routine and will at last lead to satisfactory immunization in this country. Provided we can rely on the antigen, the checking of which is the concern of the issuing and controlling laboratories, we now have an efficient and simplified diphtheria prophylaxis. Schick-testing can be dispensed with and records can be reduced to the insertion of a batch number and two dates upon a card. Whether this work be done in a consulting-room, a child welfare clinic, or a school will matter little. The aim now should be to get over 80% of children under 10 years of age treated in this manner.

At the same time the Chief Medical Officer to the Ministry, in another letter, advised that nurses in general hospitals who are Schick-positive should be immunized with toxoid-antitoxin floccules (T.A.F.), 3 doses of 1 c.cm. being injected at intervals of 3 weeks. The reason given for this recommendation is that T.A.F. tends to give rise to less reaction than does A.P.T.

Fulton *et al.* in their paper state that above the age of 18 years the number of subjects tested (20) was too small to enable them to obtain a reliable figure for the Schick-conversion rate. This encourages me to add as a small contribution the figures I have collected during the past 9 years in the course of immunizing the staff at the Hull City Hospital. Though not large they have been carefully compiled, and all testing, readings, and injections have been done personally. All persons in the group are more than 16 years of age, and the great majority between 18 and 20. Most are nursing and domestic staff at the hospital, but occasional visitors, medical and otherwise, have been included.

After various experiences with other antigens since 1922, including T.A.M. and F.T., I began to use T.A.F. in 1933, giving 3 injections at monthly intervals and Schick-retesting 4 weeks after the last dose. The Schick-conversion rate was not good, and largely for this reason I turned to A.P.T. in March, 1935, giving 0.3 c.cm., followed after 4 weeks or a little longer by 0.3 c.cm., with a Schick-retest one month later. Originally I had intended to give 0.25 c.cm. and 0.25 c.cm., but there was always enough in a 0.5-c.cm. ampoule to give two doses of 0.3 c.cm. to two subjects, so it seemed a pity to waste antigen. The Schick-conversion rate rose to 100%. I get no severe reactions, and the method, except for an increase to 0.5 c.cm. for both doses in 1940, has been in use since. In 1936 I began to give a single dose of 0.3 c.cm. of A.P.T. to Schick-negative reactors if they did not have a pseudo-reaction, and have continued that procedure, increasing the dose to 0.5 c.cm. in 1940. The results are summarized in Table I. The details given in this Table suggest that the T.A.F. used in 1933 was a weak antigen and that it was considerably improved in the following year. Despite this improvement, the T.A.F. results as a whole were poor (Schick-conversion rate 78%). The excellent results with A.P.T. were so soon apparent that there was no question of return to the older antigen. I would regard any such return as a regression.

Reactions

There were no severe reactions in any of the 388 adults immunized. I have notes of only 5 moderate local reactions —4 with A.P.T. and 1 with T.A.F. One of the 4 A.P.T. reactors was a pseudo-negative who was given 0.1 c.cm. of A.P.T. as a detector dose. Some local reactions have doubtless

TABLE I.—*Diphtheria Immunization of Adults at Hull City Hospital, Cottingham*

Year	Schick		No. Immunized and Retested	Antigen	Schick Retests		No. originally Schick-neg. given 1 dose A.P.T.
	Neg.	Pos.			Neg.	Pos.	
1933	44	47	32	1 c.cm. T.A.F. 4 weeks	19	13	
1934	59	36	27	1 c.cm. T.A.F 4 weeks	26	1	
1935	32	29	4	1 c cm. T.A.F.	4	0	
			20		20	0	
1936	25	20	17		17	0	5 (0·3 c.cm.)
1937	37	41	36	0 3 c.cm. A.P.T. 4 weeks	36	0	24 „
1938	60	23	18	0.3 c.cm. A P.T.	18	0	43 „
1939	44	26	25		25	0	36 „
1940	51	24	15		15	0	27 „
			5	0.5 c.cm. A.P.T. 4 weeks	5	0	18 (0.5 c.cm.)
1941	35	15	11	0.5 c.cm. A.P.T.	11	0	25 „
	387	261	210	T.A.F.: 63 A.P.T.: 147	49 147	14 0	— 178

occurred and not been reported; anything severe would have been. No time off duty has been lost owing to reaction and nothing has required treatment.

In this connexion it might be as well to add that the skin was cleansed with ether on a small swab, both injections were made into the triceps of the left arm, the syringes were all-glass 1 c.cm. dry (hot-air) sterilized, and the stainless-steel needles for injection were of the same small type as that used for the Schick test. The needles were also hot-air-sterilized. Each dose was given from a sealed glass ampoule opened at the time. The syringes are kept for the one purpose sterile in Petri dishes. All antigens employed were "Wellcome" products as ordinarily issued.

When persons are immunized with T.A.F. they are rendered serum-sensitive in consequence of the antitoxin fraction in the antigen. It is difficult to assess the degree of such sensitization, but I have noted in 2 cases that nurses who had received T.A.F. had greatly accentuated serum sickness, amounting almost to anaphylactic phenomena, when given therapeutic sera months after their immunization. Since the introduction of refined (protein-digest) therapeutic sera almost the only cases of serum sickness I see in hospital are in children who have been immunized with T.A.F. Is not the presence of an antitoxin fraction in any material for active immunization an anomaly? With the remarkable results now obtained with A.P.T. surely we may say that the weaker antitoxin-containing antigens are becoming obsolete.

Subjects who are most likely to have severe reactions are those who give pseudo-negative reactions to the Schick test. I have not as a rule given a "reinforcing" dose of A.P.T. to such subjects. These pseudo-negatives are, however, excellent material for testing reactions, and 6 of my nursing staff who fall into this group kindly offered themselves as experimental animals. They were injected in the left arm, using the usual technique, with 0.1 c.cm. of A.P.T., and in the right arm with 0.1 c.cm. of T.A.F. They were closely observed at 12, 24, and 48 hours, and at 3 and 7 days. General and local reactions were most marked at between 36 and 48 hours; the visible signs were most obvious at 48 hours, after which, except in 2 cases, they began to subside. The results are summarized in Table II.

TABLE II.—*Experimental Test of T.A.F. (Right Arm) and A.P.T. (Left Arm) on Sensitive (Schick-pseudo-negative) Subjects*

Subject	Hours after Inoc.	Headache	Malaise	Temp.	Pain		Tenderness		Redness		Induration	
					R	L	R	L	R	L	R	L
A	24				+	+	++	−	30	25	+	+
	48	No	No	N	+	++	+	++	50	60	+	++
	72				−	−	−	−	fading		−	+
B	24				+	+	++	++	20	30	+	++
	48	Yes	Yes	101°	+	++	+	++	70	80	+	++
	72				−	−	−	+	fading		+	++
C	24				+	+	+	++	10	10	+	+
	48	„	„	N	+	+	++	++	60	10	++	−
	72				−	−	+	++	fading		++	−
D	24				−	−	−	−	5	8	−	−
	48	No	„	N	s	s	+	++	20	30	−	−
	72				−	−	±	+	fading		±	+
E	24				s	s	±	+	15	20	−	−
	48	Yes	„	N	−	++	+	++	50	70	+	++
	72				−	±	±	+	fading		±	+
F	24				−	−	−	−	8	20	−	−
	48	„	„	N	s	s	−	+	10	60	−	++
	72				−	−	−	+	fading		±	++

R = right arm. L = left arm. ± = very slight. + = slight. ++ = moderate. s = stiffness rather than pain. The long diameter of redness is shown in mm.

The 7-day readings were as follows: A, D, E—small painless nodules in left arm only; B, F—induration and sterile abscess in left arm; C—small painless nodule in left arm; slight right axillary adenitis.

It will be seen that in 5 out of the 6 cases there was more local reaction with A.P.T. than with T.A.F. In 4 subjects local signs were subsiding by the third day, except that the left arms had the small nodule of infiltration that is usual with this antigen. Three of the reactions could be classed as moderately severe. All were feeling well by the third day despite their local signs. No member was off duty; in 2 subjects the headaches were severe enough to need acetyl-salicylic acid. Two volunteered the statement that their "worst" arms were not so bad as when they had had anti-enteric vaccine, and the others when asked about this stated quite definitely that that was their experience also. It must be noted that the dose of A.P.T. was an effective immunizing one, while that of the T.A.F. was a tenth of the recommended dose.

At 7 days 3 had nodules in the left arm without pain or tenderness, but 3 presented definite signs, of which more must be said. Subjects B and C were very sensitive. At 36 hours B had to keep her arms folded to minimize axillary pain, which was similar on both sides. At 48 hours the redness of the left arm showed double zoning with approximate diameters of 30 mm. for the inner zone and 80 mm. for the outer; but she felt much better generally than 12 hours previously. She was able to use her arms quite comfortably at 3 days. At 7 days the left arm still showed moderate induration and swelling. There was a superficial abscess from which 2 to 3 c.cm. of pus was withdrawn by aspiration. Culture on blood-agar plate and into infusion broth gave no growth.

Subject C was the only one who showed more reaction with T.A.F. than with A.P.T. She had general symptoms, headache, shivering, and a feeling of sickness at 48 hours, and did not eat her breakfast. At 48 hours both arms were equally tender, although there was much more swelling and redness on the right. At 7 days, on the right side there was slight axillary adenitis but no pain or tenderness at the injection site, on the left side a small nodule at the site without pain or tenderness. This nurse had reacted markedly to anti-enteric vaccines in March, 1941, was in bed and off duty for a day then, and volunteered the statement that her arm was much worse than either was now. She affords an excellent example of what I believe to be generally true, that it is the individual rather than the antigen or its dose that is the chief factor in these reaction phenomena.

Subject F, though her symptoms were not so pronounced during the first 3 days, showed redness, tenderness, induration, and sterile abscess formation in the left arm at 7 days. Two or three c.cm. of pus was aspirated, and this gave no growth when inoculated into broth and on to a blood-agar plate. There was no pain, local or axillary, and no adenitis. On the eleventh day a small incision was made and about 20 c.cm. of pus evacuated.

Discussion

My impression in reviewing these experimental tests is that I have been right in not giving A.P.T. to pseudo-reactors. Until now I have never seen sterile abscess formation, though I was aware it had been reported. Such cases were probably similar to these—pseudo-reactors who had been given A.P.T.: the remedy is, not to use T.A.F., which will give a strong though in most cases a lesser reaction, but not to immunize pseudo-reactors at all. Here I must plead for a careful reading of the Schick tests: the arms must be seen at 24 hours and at 7 days by one who has had some experience of reading the reaction; otherwise pseudo-reactors will be read as positive, and results obtained similar to those in this short experimental series, to the discredit of the antigen when it is the selection of the individual that is at fault. I have notes on a subject who was repeatedly and painfully immunized with T.A.F. because of so-called positive reactions; at last, failing to get a "negative," a blood antitoxin titration revealed the presence of between 5 and 10 units of antitoxin per c.cm.! It is an important though secondary function of the Schick test to detect these sensitive persons, and for this reason the test with control should not be omitted in the older groups.

It is probable that all pseudo-reactors are Schick-negative. I have never seen, at any rate in an adult, an undoubted combined or pseudo-positive reaction. In a series of 51 pseudo-reactors 48 were definite pseudo-negatives, and in 3 I queried the possibility of the reading being a combined one.

Conclusion

As a result of this experience with A.P.T. covering several years, and on consideration of the experimental tests detailed, I would suggest that nurses can be immunized with that antigen without undue risk of reaction. The one thing to guard against is the unnecessary immunization of pseudo-reactors. I am inclined to think, in view of what Fulton *et al.* say, together with my own experience of 0.3-c.cm. doses, that an initial dose of 0.5 c.cm. is not necessary. Schick-positive adults will be efficiently immunized, where it is considered desirable to do so, by giving 0.2 c.cm. and 0.5 c.cm. of A.P.T. with a four-weeks interval. In other words, one method, the efficiency of which has been proved beyond doubt, should be used for both children and adults.

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DIPHTHERIA IMMUNIZATION IN A METROPOLITAN BOROUGH

BY

V. FREEMAN, M.R.C.S., D.P.H.
Medical Officer of Health, Islington

Until very recently London as a whole held an unenviable record as compared with some provincial towns and cities in the matter of diphtheria immunization. Hence there are comparatively few figures available of reasonably large-scale analyses of the state of natural immunity as shown by the Schick test of the child population in the various parts of London—which might be expected to exhibit their own peculiarities—and of the various responses to different immunizing agents. It was therefore considered that some recent figures relating to a large and fairly representative London borough might be of special interest.

In the early part of 1937 an immunization scheme was started, based on the following principles: (1) Immunization of children 7 years of age and under with alum-precipitated toxoid (A.P.T.) in 2 doses. (2) Immunization of children over this age (except in a few special cases) with toxoid-antitoxin floccules (T.A.F.) in 3 doses. (3) Primary Schick tests for children of 7 years and upwards. (4) Post-Schick tests for all immunized cases. These particular methods were adopted in the light of local factors which made it especially desirable that the number of immunizing attendances should be reduced so far as was possible, but bearing in mind also that reactions following injection should be at an absolute minimum and that the immunizing process should have a very high degree of effectiveness.

The progress of diphtheria immunization was completely suspended for the early part of the war. Figures for the last complete pre-war year, 1938, and for the first full war year, 1941, have been analysed, and their results are as follows.

Primary Schick-test Rates

Islington is a densely populated borough (acreage 3,092; Registrar-General's estimated population, mid-1938—292,300), with the greatest density in the south and south-west. It was not practicable, for the purpose of this analysis, to separate children living in different parts of the borough. The figures given are for girls and boys, and do not include children with a previous history of diphtheria or of diphtheria immunization.

It will be noted that the average Schick-positive rates for 1938 and 1941 approximate each other very closely, and are considerably lower than those given by Wilson and others (Fulton *et al.*, 1942) for Oxfordshire, etc. (77.9%, excluding children under 5 years), and Lewis (1941) for Croydon (76.4%). It will also be noted that although at 5 years the Schick-positive rate for 1941 does not differ greatly from Wilson's (85.5%), the decrease during school years as shown in Table I is very much more rapid, the rate standing at a little over 40% for Islington at 14 years, but still at the high figure of 70.4% for the counties. The rates in Table I, however, approximate rather more closely to those given by Lewis for schools of high diphtheria incidence, and in this connexion it may be stated that the diphtheria incidence in 1938 for this borough was about 7 per 1,000 school children and 8 per 1,000 children from 1 to 15 years of age.

TABLE I

Age (Years)	Children Tested in 1938			Children Tested in 1941		
	No. Tested	No. Positive	% Positive	No. Tested	No. Positive	% Positive
5 & 6	11	6	54·5	283	250	88·3
7	31	24	77·4	233	186	79·8
8	80	59	73·8	217	170	78·4
9	81	60	74·0	319	220	68·9
10	87	53	60·9	306	187	61 1
11	69	45	65·2	292	193	66·1
12	32	14	43·75	313	155	49·5
13	28	16	57·2	256	122	47·7
14	18	8	44·5	206	85	41·7
Totals..	437	285	65·2	2,425	1,568	64·7

The anomalies in some of the age groups, particularly the 5- and 6-year-olds in 1938, are obviously due to the small numbers in these groups.

For purposes of comparison with other boroughs I have included the figures for Kensington and for Heston and Isleworth (Table II), for which figures I am indebted to Dr. Bousfield, and also to Dr. Anderson, medical officer of health, Heston and Isleworth, and to Dr. Fenton, medical officer of health, Kensington. Since the Kensington work and a good deal of the Heston and Isleworth work were both done by Dr. Bousfield, individual differences should not affect the figures.

TABLE II.—*Primary Schick-test Rates (1941)*

Age (Years)	Kensington			Heston and Isleworth		
	No. Tested	No. Positive	% Positive	No. Tested	No. Positive	% Positive
5	45	37	82·2	228	221	97·0
6	55	36	65 4	167	154	92 3
7	66	44	66 6	131	120	91·6
8	70	40	57·1	126	116	92·9
9	74	43	58·1	101	85	84·2
10	91	54	59·3	117	91	77·8
11	70	35	50 0	99	79	79 8
12	60	28	46 6	58	49	84·5
13	62	25	40·3	55	43	78·2
14 & over	11	5	45 4	29	19	65 5
Totals..	604	347	57 45	1,111	977	87·9

Results of Immunization by A.P.T. and T.A.F.

Although A.P.T. for children under 7 years and T.A.F. for children over 7 years were the immunizing agents of choice, there were some slight differences in dosage for the years 1938 and 1941, respectively.

TABLE III

	A.P.T. Dosage			T.A.F. Dosage			
	1st	2nd	Interval	1st	2nd	3rd	Interval
1938 ..	0 1 c.cm.	0·5 c.cm.	2 weeks	1 c.cm.	1 c.cm.	1·2 c.cm	2 weeks
1941 ..	0 2 c.cm.	0 5 c.cm.	2 ,,	1 c.cm.	1 c cm.	1·5 c.cm.	2 ,,

A.P.T. for 1938 and for 1941 were not obtained from the same sources, but T.A.F. was supplied by the same firm throughout.

The great majority of the post-Schick tests were performed between the thirteenth and twentieth weeks after the final immunizing injection. All Schick tests are read on the seventh day.

TABLE IV.—*Rates for 1938*

	No Primary Schick	Primary Schick-positive	No. Positive after Immunizing	Schick-conversion Rate	Schick-negative Rate
Immunized with A.P.T.	—	227	10	95 6%	—
	551	—	5	—	99·1%
Immunized with T.A.F. .	—	23	2	91·3%	—

TABLE V.—*Rates for 1941*

Age (Years)	Immunized with A.P.T.				Immunized with T.A F	
	No Primary Schick	Positive after Immunizing	Primary Schick-positive	Positive after Immunizing	All Primary Positive	Positive after Immunizing
1	184					
2	275	2				
3	205	1	1			
4	180	1	3			
5	143	1	55		1	
6	70		132		4	
7	36	1	141	1	10	
8	15		88	1	41	
9	6		24	1	135	
10	2		7		134	
11	4				132	2
12	1				119	1
13					97	
14					43	
	1,121	6	451	3	716	3
	Schick-neg. rate 99·5%		Schick-conversion rate 99·3%		Schick-conversion rate 99·6%	

The above results compare very well with the most favourable ones obtained by other investigators, both for A.P.T. and for T.A.F. Published results for A.P.T. were recently summarized in tabular form (Fulton *et al.*, 1942).

Discussion

I. Dosage Interval

Although laboratory immunological considerations appear to favour a four-weekly or greater interval between doses, it is felt that in some districts mothers are more likely to bring their children for completion of immunization if the interval between doses is as short as possible, and that fortnightly appointments are much more likely to be kept than monthly ones. This is particularly important with children up to 5 who are not under school or nursery control or in residential institutions. Bousfield has stressed this point. If with suitable antigen Schick-negative or Schick-conversion rates of over 99% can be obtained, there would appear to be no valid objection in practice to a fortnightly interval between injections beyond the unconfirmed possibility of a higher relapse rate at a later stage. When results of this order are obtained with a short interval, the evidence that the same antigen when given at longer intervals in comparable cases will materially affect the respective Schick-relapse rates must for the present be considered inconclusive.

II. Primary Schick Test

The age of 7 years was arbitrarily chosen some time ago, pending the collection of further data on the Schick state of the child population locally, as a period when the proportion of Schick-negatives might show signs of rising appreciably. The Schick tests performed so far indicate, as summarized in Table I, that the proportion of Schick-negatives rises to about one-third at over 9 years of age.

Lewis states: "It has been calculated that when the probable number of Schick-negative reactions is 25% . . . then it will mean considerable extra time, much inconvenience, and the unnecessary use of prophylactic, if wholesale inoculation is carried out, irrespective of immunity state." Lewis does not mention the basis of this calculation, but if we consider the problem only as it affects attendances, and assuming that two-dose A.P.T. is the immunizing agent and a post-Schick test is done in every case, then out of every 100 cases, if 33 are primary negative and the remainder positive, 67 will make 5 attendances each—amounting to 335—and 33 will make 2 attendances each—amounting to 66; giving a total of 401 attendances. If no primary Schick test is performed, then 100 cases will make 4 attendances each—that is, 400 attendances. Accordingly, if the primary Schick-negative rate rises above 33% there will be a saving on attendances, but not otherwise, on the above assumptions for immunizing procedure.

From this point of view, therefore, primary Schick-testing may be dispensed with if the Schick-positives are likely to be more than two-thirds of the total group, or below the age of 9 years if the rates determined in Table I are applicable to other areas. If no primary tests are performed above this age there will be unnecessary attendances, and material used, in increasing proportions as the age groups rise.

The above factors deal only with considerations of mass immunization. From the point of view of the individual parent or the child to be immunized, it might be preferable to be given a 1 in 4 or even 1 in 5 chance of not undergoing a complete immunizing course with a possible post-Schick later on.

A further advantage of performing primary Schick tests for higher age groups is that arising from Wilson's conclusion that Schick-negative children of any age, or Schick-positive children of 10 years of age or over, may respond to A.P.T. with severe reactions. This point must be given particular emphasis where there is a high proportion of Schick-negative reactors among the older age groups at school, such as is shown in Table I, and where such consequences, occurring in considerable numbers, would tend to discourage a mass-immunization campaign. A primary Schick test therefore has the additional advantage of selecting the most probable A.P.T. reactors.

III. Post-Schick Tests

It may appear unnecessary, once preliminary investigations have established satisfactory results, to continue post-Schick testing when the Schick-negative and conversion rates are in the region of 99%. Batches of antigens may differ considerably in their immunizing powers, however, and post-Schick sampling therefore seems necessary as a minimal precautionary measure. Further investigation appears desirable as to the optimum proportion which should be sampled, so that poor batches may be detected with reasonable certainty at an early stage. It would not be an easy matter at the present time in some parts of London to recall children in satisfactory numbers for further immunization three, four, or five months after their original immunization with a poor immunizing agent. Provided that time, staff, and material are available, and until antigen variability per unit volume is eliminated, it would seem a safer procedure to post-Schick-test all those immunized. Otherwise, risks are run which must be recognized.

IV. Immunization with T.A.F.

Very satisfactory Schick-conversion rates have been effected with T.A.F. for older children. The administration of 1 c.cm., 1 c.cm., and 1.5 c.cm. was made consequent upon observations by Bousfield, using a variation of the final dose. No single moderate or severe local or general reaction has been reported, and in only a very few instances was the medical officer informed at the following clinic that after the previous attendance there had been a little local tenderness around the site of injection but with no subsequent physical signs.

It cannot perhaps be said that the use of T.A.F. is absolutely necessary for older children, but it is a very satisfactory antigen to use. Wilson and his co-workers note that severe reactions with A.P.T. will be more frequently encountered in Schick-positive children of 10 years of age or over, and that 42% of Schick-positives showed some degree of local reaction to A.P.T. Lewis mentions that when the primary dose of A.P.T. causes a reaction it might be wiser to withhold the second injection of A.P.T. and substitute three T.A.F. injections of 1 c.cm. each. Such a procedure would appear likely to substitute four immunizing injections in a considerable number of older children in place of the two originally planned, and these children would also have experienced the discomfort of a reaction.

If it is particularly desired to avoid reactions in older children it is suggested that T.A.F. as a routine immunizing agent might be restricted to children over 10 years of age.

Summary

A series of children in a London borough from 1 to 15 years of age were immunized and in part primary Schick-tested. The results for two recent complete years, 1938 and 1941, have been given.

Of 437 children of school age tested in 1938, 65.2% were primary Schick-positive. The corresponding numbers for 1941 were 64.7% positive out of 2,425. Over four-fifths of the children were positive at school-entry age, but only a little over two-fifths were found positive at school-leaving age.

A.P.T. given in doses of 0.1 c.cm. and 0.5 c.cm. with a fortnight's interval produced a Schick-conversion rate of 95.6% and a Schick-negative rate of 99.1%. A.P.T. similarly administered in doses of 0.2 c.cm. and 0.5 c.cm. gave a Schick-conversion rate of 99.3% and a Schick-negative rate of 99.5%. T.A.F. given in three fortnightly doses of 1 c.cm., 1 c.cm., and 1.2 c.cm. produced a Schick-conversion rate of 91.3% (23 cases only), and in fortnightly doses of 1 c.cm., 1 c.cm., 1.5 c.cm., a Schick-conversion rate of 99.6%.

Provided a suitable antigen is given in appropriate doses, no practical immunological disadvantage is apparent if an interval of two weeks between doses is employed because it is administratively advantageous locally instead of four weeks.

With A.P.T. in two doses as the antigen, clinic visits will be saved if primary Schick tests are performed in all cases when the expectation of natural immunes is more than one-third of the total for the age groups concerned. In a typical London borough this can be expected from the age of 9 years onwards. The selection of the primary Schick-negatives when they form a considerable proportion of all children also assists in eliminating or indicating (if it is desired to give a single safeguarding injection) the most probable sufferers of local reactions to A.P.T.

In view of the existing variability of the same types of antigens, post-Schick-testing or, as a minimum, post-Schick-sampling is necessary.

Diphtheria immunization clinic work for 1938 was carried out by the author, and for parts of the year by Drs. D. S. Murray and K. M. Hirst. The bulk of the 1941 clinic work was done by Dr. H. W. Swann, to whom appreciation is due for his careful work and enthusiasm, and the remainder by Dr Mary Adams. Thanks are also due to Mr. D. A. Owen, clerk in the Public Health Department, for his conscientious maintenance of records and clinic arrangements generally. Thanks are also expressed to Drs. Bousfield, Anderson, and Fenton.

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PROGNOSTIC VALUE OF THE BLOOD SEDIMENTATION RATE IN PULMONARY TUBERCULOSIS

BY

E. LEWIS-FANNING, Ph.D.
Member of the Statistical Staff of the Medical Research Council

AND

MAURICE MYERS, M.R.C.S., L.R.C.P.
Senior Assistant Medical Officer, Brompton Hospital Sanatorium, Frimley

During the past twenty years the estimation of the sedimentation rate of the red blood corpuscles has gradually become established as part of the routine examination of patients suffering from pulmonary tuberculosis. The test has been thoroughly investigated, and a vast amount of literature describing the results has been published. It is claimed that the test has a definite value as a guide to the reaction of the patient to his disease, and, in brief, it is thought that a rising B.S.R. denotes that the condition of a patient suffering from pulmonary tuberculosis is deteriorating while a steadily falling or consistently normal result indicates that he is improving.

The literature was studied by us with great interest, and for some time the test was performed regularly on all in-patients of this sanatorium, the results being considered in conjunction with serial x-ray films and the usual clinical observations and data. It may be stated at this point that it is our practice to radiograph our patients at monthly intervals, especially during the early months of their treatment. After prolonged investigation we came to the conclusion that while the claims regarding the test were, broadly speaking, true, it was not of great value from the point of view of the hospital or sanatorium physician, whose patients were under close observation, as the test did not give any information which could not be obtained from the usual routine methods and serial x-ray films. Furthermore, the test would have to be performed at regular and frequent intervals on every patient, involving an amount of time and work not commensurate with the value of the information procured. It was also observed that the test was not 100% efficient and that in some cases the results could be misleading. It was possible to observe a patient with obviously progressive disease (as shown by serial x-ray examination) but whose B.S.R. remained unchanged and within normal limits. Conversely, patients with lesions known to have been static over long periods often produced a persistently abnormal B.S.R.

Although these results suggested that the test was not of great value in assessing the progress of patients under institutional conditions, it was thought that it might be of more use when the patient was not in a hospital or sanatorium and in consequence not under such close observation and supervision by his physician. Accordingly the investigation was repeated on the patients attending our out-patient clinics; but again no evidence was obtained that the B.S.R. was superior to the usual examinations in indicating the progress of the disease or evidence of relapse. In addition one was apt to be misled by the alteration in the reading that followed any intercurrent infection which the patient had forgotten or had not thought worthy of mention.

As a result of these investigations we considered that the B.S.R. was of only limited value as an index of progress in a case of pulmonary tuberculosis and could not supersede any of the usual methods of examination. But we had noted that the B.S.R. did alter with the different pathological phases of the disease, and therefore thought it might be worth while to examine the test from a different point of view—namely, from the more remote, as opposed to the immediate, prognosis.

Observations Made

For this purpose B.S.R. estimations were done on admission and on discharge on all patients coming into this sanatorium during a period of nearly 3 years (1936-9). These values were recorded on separate cards for each patient, together with the name, age, sex, date of admission and discharge, the Ministry of Health classification of the state of the disease, the extent of lung involved as disclosed by x-ray examination, and, from the follow-up department of the hospital, the condition of the patient at the latest known date, under the headings "Alive and Working," "Alive," or "Dead."

It will be observed that the data are limited to patients who were discharged, and do not include those dying during their treatment in the sanatorium, for whom only the B.S.R. at entry would be known. But our concern, as stated above, is with the relationship—if any—between the B.S.R. and the state of health subsequent to discharge: the deaths in the sanatorium are for this purpose irrelevant. In all, 630 patients (292 males and 338 females) were discharged between Jan. 1, 1937, and June 30, 1939, their dates of admission lying between Jan. 1, 1936, and June 30, 1939, and their average stay in the sanatorium being 148 days for males and 141 days for females (round these averages there naturally was much variation). These numbers were clearly too small to allow the B.S.R. to be related to the subsequent history of patients of different ages as well as of each sex. Division by sex was clearly necessary, but age, as statistical analysis showed, was not an important factor. In the treatment of the material no differentiation by age has therefore been made. The percentage-age distribution of the patients was, in fact, as follows:

	10—	20—	30—	40—	50+
Males	7	41	33	16	3
Females	18	52	25	4	1

The history of these patients between discharge and the end of April, 1940, was known for variable lengths of time, and it has been analysed in terms of 6-monthly intervals—i.e., the mortality experience in the first 6 months after discharge, in the second 6 months, etc.

Results

An approximate picture of the relation between the B.S.R. at discharge and the subsequent history is given in Table I.

TABLE I

B.S.R. at Discharge	Males		Females	
	No. of Patients	No. Dying after Discharge	No. of Patients	No. Dying after Discharge
0–4 ..	93	0	42	0
5–9	70	0	91	2 (2·2%)
10–29	85	9 (15·9%)	151	5 (3·3%)
30–49	27	7 (25·9%)	32	5 (15·7%)
50 and over	17	9 (52·9%)	22	2 (9·1%)

With males the figures show a clear association between the B.S.R. on leaving the sanatorium and subsequent ability to survive. With the B.S.R. under 10 no deaths at all had occurred in the 163 patients concerned; at 10–29 approximately 1 in 9 of the 85 patients had died; while at 30 or over, 16 of the 44 patients, or approximately 1 in 3, had died. The same trend is apparent with females, though the changes are of a slighter degree. Of the 133 with B.S.R. under 10, 2 (1.5%) had died; at 10–29 the proportion rises to 3.3%, and at 30 and over to 13%.

TABLE II.—*Rates of Mortality for Each Sedimentation Group in Periods of Six Months from Discharge from Sanatorium*

(*a*) MALES

Duration of Observations after Discharge from Sanatorium (months)	B.S.R. 0–4			B.S.R. 5–9			B.S.R. 10–29			B.S.R. 30–49			B.S.R. 50+		
	Deaths	No. Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %	Deaths	No. Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %
Under 6	—	91·0	—	—	67·5	—	3	83·0	3·6	2	26·5	7·5	3	16·0	18·8
6–12	—	70·0	—	—	58·5	—	1	67·0	1·5	2	21·0	9·5	3	11·0	27·3
12–18	—	52·5	—	—	41·5	—	2	44·0	4·5	2	12·5	16·0	3	6·0	50·0
18–24	—	36·0	—	—	25·0	—	2	25·5	7·8	1	7·0	14·3	—	2·0	—
24–30	—	14·0	—	—	11·0	—	1	13·5	7·4	—	3·0	—	—	1·0	—
30–36	—	0·5	—	—	2·5	—	—	2·0	—	—	1·0	—	—	0·0	—
36–42	—	0·0	—	—	0·0	—	—	0·0	—	—	0·0	—	—	0·0	—
Total deaths ..	Nil			Nil			9			7			9		
" patients ..		93			70			85			27			17	

(*b*) FEMALES

Duration of Observations after Discharge from Sanatorium (months)	B.S.R. 0–4			B.S.R. 5–9			B.S.R. 10–29			B.S.R. 30–49			B.S.R. 50+		
	Deaths	No. Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %	Deaths	No. Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %	Deaths	No Exposed to Risk	Death Rate %
Under 6	—	41·0	—	—	89·0	—	1	146·5	0·7	1	32·0	3·2	—	21·5	—
6–12	—	38·0	—	1	72·0	1·4	1	121·0	0·8	2	23·5	4·3	1	16·0	6·3
12–18	—	27·0	—	1	49·0	2·0	2	89·5	2·2	2	15·0	13·3	1	10·0	10·0
18–24	—	18·0	—	—	36·5	—	1	49·5	2·0	—	4·0	—	—	3·0	—
24–30	—	9·0	—	—	19·5	—	—	19·5	—	—	1·0	—	—	2·0	—
30–36	—	0·5	—	—	1·0	—	—	0·0	—	—	0·0	—	—	0·0	—
36–42	—	0·0	—	—	0·0	—	—	0·0	—	—	0·0	—	—	0·0	—
Total deaths ..	Nil			2			5			5			2		
" patients		42			91			151			32			22	

This method of analysis is rough, since it presumes that the durations of observation for all patients subsequent to discharge do not differ materially between the B.S.R. groups. It seems unlikely that these durations would differ, and a more accurate analysis in which they are taken into account confirms the results of Table I. In this analysis (see Table II) calculation was made of the numbers exposed to risk of dying in each 6-monthly period after discharge,* and, related to the deaths occurring in each such period, it gives a death rate at each point of time for the varying B.S.R. groups.

With the males, it will be seen, there is a consistent rise in mortality with increasing B.S.R. above 10 (i.e., at discharge) at each 6-monthly period after discharge. For instance, in the first 6 months after leaving the sanatorium the percentage death rates are 0 at B.S.R. 0–4, 0 at B.S.R. 5–9, 3.6 at B.S.R. 10–29, 7.5 at B.S.R. 30–49, and 18.8 at B.S.R. 50 and over. Similar changes are apparent up to 18 months after discharge, beyond which point the numbers at risk become too few to be of very much value. With the females there is clearly a suggestion of a similar trend, but the figures are not nearly so consistent. For instance, in the period 6–12 months after discharge the percentage mortality runs 0 at B.S.R. 0–4, 1.4 at B.S.R. 5–9, 0.8 at B.S.R. 10–29, 4.3 at B.S.R. 30–49, and 6.3 at B.S.R. 50 and over. At 12–18 months the corresponding figures are 0, 2.0, 2.2, 13.3, and 10.0.

The total mortality subsequent to discharge was much less in the females than in the males—14 deaths of 338 women and 25 deaths of 292 males. Both sets when subdivided as in Table II lead to very small groups at risk, and the smaller number of deaths in the females is likely to give rise to more erratic results. Further data are required to show how closely the prognosis in females is related to B.S.R. at discharge, but it may at least be concluded from the present figures that it is distinctly associated in males and is associated to some extent in females.

The B.S.R. was estimated, it will be recalled, at admission as well as at discharge. These figures enable the *changes* in B.S.R. during treatment to be related to history after leaving the sanatorium (noting again that deaths *during* treatment are not included). These changes are set out in broad groups in Table III, and it was found that all the 25 deaths of males occurred among the 116 patients with a B.S.R. of 10 or over on admission and still retaining that level on discharge; there were therefore no deaths among the 68 males who were admitted with a B.S.R. of 10 or over which during treatment fell below that level, and none in the small group of 13 males whose admission rate was under 10 but at discharge had risen above 10. Of the 14 deaths of females, 12 occurred, similarly, among the 177 patients who had a B.S.R. of 10 or over at admission and showed no fall below 10 during treatment. The remaining 2 occurred in the 46 patients who had a B.S.R. of 10 or over at admission but had improved to 5–9 at discharge. There were no deaths, it may be noted, in the 28 females whose B.S.R. at entry was under 10 and at discharge had risen to over 10.

TABLE III

	Males	Females
(*a*) Stationary B.S.R.		
0–4 at admission and discharge	35	15
5–9 " " "	24	38
10 or over " " "	116	177
(*b*) Improvement in B.S.R.:		
5–9 at admission, 0–4 at discharge	30	15
10 or over " 5–9 "	40	46
10 " " 0–4 "	28	12
(*c*) Deterioration in B.S.R.:		
0–4 at admission, 5–9 at discharge	6	7
0–4 " 10 or over "	2	3
5–9 " 10 " "	11	25

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* The numbers exposed to risk were obtained from the formula:

$$E_{(x)+t} = E_{(x)+t-1} - d_{(x)+t-1} - \tfrac{1}{2}[W_{(x)+t-1} + W_{(x)+t}] - e_{(x)+t}$$

Where t = number of 6-monthly periods after discharge ($t_0 = 0-6$ months).

$E_{(x)+t}$ = number exposed to risk of dying in period t.

$d_{(x)+t}$ = number of deaths in period t.

$W_{(x)+t}$ = number lost sight of in period t.

$e_{(x)+t}$ = number passing out of the experience at the end of April, 1940, having survived for t complete periods.

The B.S.R. group of 10 and over covers a variation from 10 to 100, and in Table IV a further subdivision is made of these values, taking 35 as an arbitrary dividing-line. The numbers at risk are so small that the trend of the death rates can be accepted as only suggestive; but the indication they give is that later mortality is likely to be lower with B.S.R. remaining steady at 10–35 or improving during treatment to that level from over 35 than it will be with an unimproved level of 35 or over at admission and discharge or a rise from 10–35 to over 35.

Table IV.—*Percentage Mortality Rates after Discharge in Relation to High B.S.R. Figures*

Males

Duration of Observation after Discharge (months)	Blood Sedimentation Rate			
	10–35 at Admission and Discharge	35 and Over at Admission and Discharge	35 and Over at Admission and 10–35 on Discharge	10–35 on Admission and 35 and Over on Discharge
Under 6 .. .	5·3	8·9	3·6	31·8
6–12	2·2	22·2	4·8	—
12–18	3·2	22·2	17·4	50·0
18–24	10·8	—	25·0	—
Total deaths ..	8	8	5	4
„ patients .	58	23	28	7

Females

Duration of Observation after Discharge (months)	10–35 at Admission and Discharge	35 and Over at Admission and Discharge	35 and Over at Admission and 10–35 on Discharge	10–35 on Admission and 35 and Over on Discharge
Under 6	0·9	—	4·6	—
6–12 . ..	1·8	9·3	—	9·5
12–18 ..	4·3	8·3	—	14·3
18–24 .. .	2·8	—	—	—
Total deaths ..	6	3	1	2
„ patients	112	25	22	18

The conclusions from these statistics are therefore: (1) The higher the sedimentation rate on discharge from the sanatorium the more unfavourable has the average prognosis been. The association is clear with males, less clear but highly probable with females. (2) The bulk of the mortality experienced fell on the patients who were admitted with relatively high sedimentation rates and retained them at discharge. There is not sufficient material to determine whether the prognosis was better in those whose B.S.R. fell during sanatorium treatment than in those whose B.S.R. rose or failed to improve, but there is a suggestion that this is likely to be the case.

We wish to express our thanks to Dr. A. Bradford-Hill and Dr. R. C. Wingfield for their help and advice in the preparation of this article.

NON-PENETRATING INJURIES OF THE ABDOMEN

BY

TH. SCHRIRE, M.A., M.B., F.R.C.S.
Surgical Registrar, Groote Schuur Hospital, Capetown

In these days of motor, industrial, and war accidents many of us frequently have to give an opinion on patients suffering from non-penetrating injuries to the abdomen. These injuries, as often as not, are sustained under unknown conditions, and the patient's history is of necessity vague and unhelpful. It is therefore timely to consider and evaluate the points that should influence the surgeon in answering the question, "Should this abdomen be opened or not?"

The answer to this question cannot be found in a single symptom or sign. It is a notoriously difficult problem, and Massie (1923) states: "There is no escaping the conclusion that early diagnosis is almost impossible. The surgeon must be guided more by a general consideration of the clinical picture than by the presence or absence of any particular sign." While no clinical diagnosis is infallible, guided by the following points one has been able to give a definite and immediate answer in most of the doubtful cases presented by a succession of harassed house-surgeons.

Diagnostic Points

Shock.—If seen soon after the accident the patient is in a state of typical and profound shock. Even apart from the fact that operation is out of the question in such a condition, the shocked patient is no fit subject for a thorough examination. The treatment of shock takes precedence over everything except external haemorrhage, and all agree that this latter should be temporarily controlled by the simplest means. If internal haemorrhage is of such magnitude as to prevent the patient recovering from the primary shock without operation, it can be safely assumed that a desperate operation to control the bleeding will kill him even sooner. One must be prepared to face the fact that a patient who is so severely injured that he bleeds to death internally without recovering from his primary shock is not a subject for surgery at all. But in most cases there comes a time when, under adequate treatment, the primary shock passes off and internal haemorrhage ceases spontaneously but temporarily. This time is usually about two hours after resuscitation measures have been started, and its recognition is the hall-mark of a good surgeon. To operate too soon will intensify the shock, and to operate too late will allow the blood pressure to recover and bleeding to restart; later, secondary shock sets in. Blood transfusions will help to increase the margin of safety, but as a rule the optimum time is short, and its recognition is a matter of urgency. Experience alone will help here, and it is in these doubtful cases that the experienced surgeon will operate on a larger proportion of patients, and though his percentage of operative failures may be greater he will show a larger absolute number of successes.

Pain.—This is always present, its severity being of very little importance. The pain is often localized to the part struck, and very often bruising and superficial abrasions will help to indicate the spot. While this is the site of maximum damage, it does not follow that a viscus has been injured: some of the most painful injuries are unaccompanied by any visceral damage at all. Often the pain may be referred and may be due to broken ribs, with injury to the lower six intercostal nerves, or to intrathoracic visceral damage. Occasionally the pain is referred to the tip of the right or left shoulder. This does not necessarily mean that there is subdiaphragmatic irritation; it may be due to trauma to the diaphragm itself or to supradiaphragmatic pathology. Still another pitfall is the presence of an unsuspected lesion of the spinal cord. There may be the most excruciating abdominal pain from such a lesion, which is not necessarily thoracic. I have had the mortification of performing a negative laparotomy on a patient who recovered and was later shown to have a fracture of a cervical vertebra with no other neurological signs to help in the diagnosis.

Tenderness.—All injuries of the abdomen will show some degree of tenderness. This tenderness may be acute, though the damage is superficial: an injured viscus usually shows local tenderness, but if this sign can be elicited at a neutral part of the abdomen it can be safely assumed that there has been some spilling of visceral contents. Because of this spill into the general peritoneal cavity *remote* tenderness can always be elicited, and is a valuable diagnostic point.

Rigidity.—For the same reasons *local* rigidity may be ignored. Its presence within the first hour or so cannot be elicited with assurance. Later, local bruising of the belly wall will give a wrong impression of rigidity. *Remote* rigidity is of vital importance and is diagnostic of perforation; it demands immediate laparotomy if the general condition of the patient will allow it. Its presence implies irritation of the parietal peritoneum, which can only be due to free blood or visceral contents in this cavity.

Pulse Rate.—All cases suspected of internal injuries are put on to half-hourly pulse charts as a matter of routine. A rising pulse rate which cannot be accounted for by external haemorrhage or by intrathoracic injuries should call urgent attention to the abdomen. A rising pulse rate alone is not an indication for laparotomy but for a careful general examination. In injured children the pulse rate often rises to 130 or 140 for no demonstrable reason, and, though it requires considerable restraint to hold one's hand, an hour or so may be safely spent in watchful anticipation. As characteristic of peritonitis this sign comes on late, and every effort should be made to diagnose without its aid.

Liver Dullness.—Loss of liver dullness often implies that free gas has become interposed between the liver and the parietes. It also is a late sign and should not be awaited. If the abdomen is distended this sign is not significant, but in the absence of distension or when combined with other signs it becomes important.

Leucocytosis.—The most bizarre counts may be found. Some cases with counts up to 30,000 white cells per c.mm. have shown no perforation and have cleared up on conservative expectant treatment, while others with equally large counts have required suture of ruptured viscera. Similar experiences can be recalled in the presence of normal and low blood counts. This investigation is often not available, and is usually not helpful.

Radiography.—When the primary shock has passed off it is the easiest thing to sit the patient up in bed and, after slipping a loaded casette behind his back, to take a radiograph of the upper abdomen in the erect position. Pneumoperitoneum as indicated by fluid levels under either or both domes of the diaphragm is pathognomonic of free gas in the abdomen and is a simple, safe, and positive indication for laparotomy. The finding is of great positive value, but if negative it does not rule out haemoperitoneum, a ruptured bladder, or a small tear in the alimentary canal.

And, finally, if there is still doubt after one examination, re-examination an hour later has been found to be of the greatest value. Progressive tenderness or progressive rigidity is especially looked for, and a reassessment of the whole condition can then be made without the loss of too much valuable time. A comparison with the earlier examination will usually lead to a certain diagnosis.

Summary

The classical signs of ruptured viscera are considered.

The finding of tenderness and, more important, of rigidity at any part of the abdomen remote from the site of primary injury is considered to be the surest indication for laparotomy.

X-ray findings, if positive, can clinch the diagnosis.

The value of re-examination one hour later in doubtful cases is stressed.

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At the annual general meeting of the Society for Relief of Widows and Orphans of Medical Men, with Mr. V. Warren Low in the chair, the report and accounts for 1941 were presented and adopted. Sixty-three widows and two orphans received grants during the year, and £4,371 was distributed among them, each widow over 65 years of age receiving £75 and those under 65 £60, and each orphan received at the rate of £50 per annum. Relief is granted only to the widows or orphans of deceased members. Membership of the society is open to any medical man who at the time of his election is residing within a 20-mile radius of Charing Cross. Election is by ballot. The invested funds of the society amount to £139,000. Capital may never be sold and used as income. Full particulars may be obtained from the secretary, at the offices, 11, Chandos Street, Cavendish Square, W.1. Since the foundation of the society, in 1788, there have been six secretaries only. The first held office for 27 years and the fifth for 37 years; the sixth, Mr. Edward J. Blackett, has so far held office for 37 years.

Medical Memoranda

Chronic Headache caused by "Silent" Sinusitis

Usually we take very little notice of a headache. It may be due to a cold, influenza, or some other upset, and we know that when the cause disappears so will the headache. When no cause can be found, and yet the headache persists, constant or intermittent, severe or mild, month after month, year after year, then it becomes an unmitigated nuisance and a hindrance to life. Remedies and suggested causes fill the pages of our textbooks, and advertisements of quack remedies abound—sure signs that none can be relied on. Two cases of this nature are reported to show how easily the actual cause of the headache may be missed and the patient thus condemned to long years of helpless misery.

Case 1.—A spinster aged 59 had suffered from constant severe headache for 7 years. At times she had taken as much as 90 grains of aspirin in a day. Since there seemed to be no hope of relief her friends began to fear suicide. Sinusitis had been suspected, and she had been examined by three rhinologists, who were all agreed that there were no clinical signs. The first supported his opinion by radiographs; the second, after washing out the nasal cavities and examining the secretion microscopically, was emphatic that there was no infection. Nevertheless, the fact that the patient had post-nasal catarrh, together with marked contraction of her fields of vision, convinced me that there *was* sinusitis, and when at my request the third rhinologist opened the left antrum the disease was seen. A week after the antrostomy there was a sudden profuse flow of blood and mucus from the left nostril, and the pain at the vertex ceased. A year later she wrote: "I have practically given up aspirin, my head is so much better."

Case 2.—An unmarried woman aged 39, first seen in 1930, had had severe headaches from childhood. They were often quite incapacitating, and latterly had occurred daily. In the hope of relief all her teeth had been removed, her tonsils enucleated, and her septum straightened. When these measures failed no further suggestion could be made by rhinologist, ophthalmologist, or neurologist, and the patient and her doctor were in despair. Clinical signs of sinusitis were entirely absent even during the septum operation, and the *x*-ray report was negative. There had never been any catarrh. Nevertheless, the extreme contraction of her fields of vision led me to diagnose sinusitis as a cause of her headaches. Conservative treatment by nasal medication resulted in considerable nasal discharge and prompt relief of the headache. A year later she had "the best holiday of her life" and could "eat anything and go anywhere" without provoking the headache which formerly followed any indiscretion. In 1941, eleven years later, the patient reported again, well and happy, with only occasional moderate headache. (A fuller account of this case is given in *Proc. roy. Soc. Med.*, 1931, **24**, 891, in which the fields before and after nasal drainage are reproduced.)

These two cases are merely outstanding examples of scores of others in which the existence of sinusitis has remained unsuspected as the cause of headache for many years, sometimes for a lifetime. The hidden nature of the cause suggests an explanation for the frequency of cases of unrelieved headache and of "migraine." When it is realized that though there may be nothing to be seen in the nose or in radiographs of the sinuses we can detect the activities of the hidden oedema around the inflamed sinuses by the fields of vision, these sufferers, hopelessly imprisoned by their own hidden sepsis, can be set free.

London, W. ROSA FORD, M.B.

Sudden Death from Lipoid Pneumonia

The following case seems worthy of record not only because it presents some unusual features in a comparatively rare condition but also because it points a moral.

CASE HISTORY

A patient of mine, a gardener aged 70, died suddenly, and I was instructed by the coroner to make a post-mortem examination. Twenty years previously the man had had a carcinoma of the left side of the tongue, removed by Mr. (now Rear-Admiral) G. Gordon-Taylor. After a preliminary gastrostomy an extensive operation was performed, which included removal of half the tongue, with part of the lower jaw, and a clearance of the lymphatic tissues in the left side of the neck. The gastrostomy was later closed, and he was able to carry on useful work as a gardener right up to the time of his death. On the morning of the day he died he went out to feed his fowls before breakfast, and as he did not return to his meal his wife sought him, and found him dead in the lavatory.

At the necropsy I could discover no evidence of any recurrence of the disease in his mouth or neck, and the old gastrostomy was soundly healed. On opening the thorax I found the mediastinum displaced over to the right side. There were dense pleural adhesions on both sides of the chest, and the right lung was almost completely collapsed. In the lower lobe of the left lung, and firmly adherent to the diaphragm below, was a hard mass, roughly pyramidal in shape, and extending up towards the hilum. It measured approximately 2 in. in each dimension. To the naked eye it resembled a neoplasm; but as I had some doubt as to its nature I sent a portion to a pathologist for section. The mediastinal lymph nodes were hard and fibrous, and the only other pathological findings were a few plaques of atheroma in the aorta.

Section of the tissue sent to the laboratory showed the case to be one of lipoid pneumonia, with very marked reticular fibrosis and numerous large vacuoles surrounded by giant cells. On further inquiry I found that the patient had indeed complained to his wife for some time of increasing dyspnoea on exertion, but had not consulted me about it, though I had been seeing him during the winter to issue certificates for milk and eggs. He had also been in the habit of taking liquid paraffin as a laxative.

COMMENTARY

Lipoid pneumonia was first described by G. F. Laughlin in 1925. Most of the early cases occurred in debilitated children whose powers of deglutition were impaired or whose cough reflex was ineffective. In later years a greater number of cases have been reported in adults, though they have been more often demonstrated at necropsy than diagnosed during life. A large proportion of these cases occurred in patients whose deglutition was affected either by carcinoma of the mouth or throat or by some nervous disease (Freiman *et al.*, 1940). Brown and Biskind (1941) have stressed the occasional resemblance between lipoid pneumonia and carcinoma of the lung, as in this case, though other cases may resemble a low-grade pneumonia (Propert, 1940). Unusual features of the case were the pleural adhesions and the collapsed right lung. Pleurisy is said to be a very rare complication.

The American Medical Association has already drawn attention to the dangers of oily nasal sprays, and I now feel that a warning should be given against the indiscriminate use of paraffin as a laxative by patients with affections of the mouth and throat.

Wivenhoe, Essex. WALTER RADCLIFFE, M.B., B.Chir.

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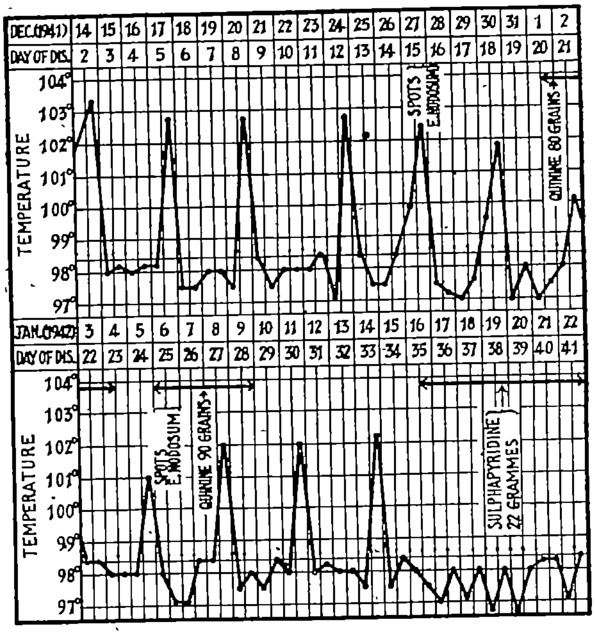
Meningococcal Septicaemia resembling Malaria

Meningococcal septicaemia usually presents a fever remarkable in its irregularity, variability, and duration, and seldom exhibits the regular periodicity shown in the accompanying temperature chart.

CASE REPORT

I saw the patient, a soldier aged 26 who had never served abroad, on Jan. 17, 1942. He had been quite well until Nov. 2, 1941, when he suddenly became ill with pains in the legs, arms, and shoulders, with high fever. The fever continued for a week, and he was treated at his regimental medical post. Afterwards he went on leave, during which he had occasional attacks of fever. Some 6 weeks later, on Dec. 13, he was admitted to hospital, where he continued to have periodic attacks of fever, each of which lasted 12 to 24 hours. Simultaneously with the attacks he had headache, rigor, and sweating, and complained of some pain over the splenic region, but was quite well in between the attacks. On Dec. 27 and Jan. 6 some scattered erythematous spots were seen on the abdomen, and also some tender spots resembling erythema nodosum appeared on the legs. Two attempts to recover meningococci from the blood proved unsuccessful, and blood films were examined for malarial parasites with negative results. Blood counts showed a leucocytosis up to 22,000 per c.mm., with a polymorphonuclear increase during the attacks, but in the interval the leucocytes fell to 8,200 per c.mm. The blood sedimentation rate was 48 mm.; urine and stools showed no abnormality; and the Kahn test was negative. The pulse rate rose during the attacks but never exceeded 104, and the respirations remained at about 20 a minute throughout.

On Jan. 1 a course of quinine bihydrochloride was started, but there was no effect on the recurrence or periodicity of the fever. On Jan. 16 sulphapyridine was given in doses of 2 g. four-hourly, and continued for one week in diminishing dosage, making a total of 22 g. The effect was dramatic, for the fever did not recur and the patient's convalescence was rapid and uninterrupted. No other cases of meningococcal infection were reported from this man's unit. The resemblance of the fever to quartan malaria is close, for it started first as a continuous form of fever and then settled down to a regular quartan periodicity (except for one period from Dec. 20 to 24), with rigor and sweats throughout.



Meningococcal septicaemia is far from uncommon, being one of the causes of a prolonged irregular fever that is apt to be overlooked, and there is much truth in the saying, "When you see erythema nodosum, think of meningococcal septicaemia."

This case shows that sulphapyridine is as specific for meningococcal septicaemia as quinine is for malaria or antimony for leishmaniasis.

I should like to express my thanks to Major-Gen. G. A. Blake, D.D.M.S., Western Command, for permission to submit this note for publication, and to Lieut.-Col. J. C. Hunt, R.A.M.C., for his kindness in giving me the clinical notes.

ROBERT PRIEST, C.B., M.D., F.R.C.P.,
Consulting Physician, Western Command.

The following medical promotions in and appointments to the Order of the Hospital of St. John of Jerusalem were announced in the *London Gazette* of June 23. As Knights: Col. Sir Richard Needham, C.I.E., D.S.O., M.D., F.R.C.S., Capt. R. J. Isaac, L.R.C.P.&S.Ed. As Commanders: Capt. H. F. Powell, M.B.E., M.D., Lieut.-General Alexander Hood, C.B., C.B.E., M.D., Lieut.-General W. H. Hamilton, C.B., C.I.E., C.B.E., D.S.O., F.R.C.S. As Officers: Dr. C. C. H. Binns, Lieut.-Col. C. H. James, C.I.E., F.R.C.S., Dr. A. M. Barford, Major G. F. P. Gibbons, O.B.E., M.B., Mr. J. R. M. Whigham, *M.C.*, F.R.C.S., Dr. W. P. Kennedy, Surg. Cmdr. J. A. Watson, L.M.S.S.A., Mr. H. R. Rishworth, O.B.E., F.R.C.S. As Serving Brothers: Dr. R. MacLeod, Capt. R. S. Harper, M.R.C.S., L.R.C.P., R.A.M.C., Dr. F. C. Mann, Dr. E. H. Shaw, Dr. W. F. Mason, Dr. M. W. Sellars, Capt. B. Singh, I.M.S., Dr. W. Fraser, Dr. R. Dick, Dr. W. Bain, Dr. S. K. Poole, Dr. P. B. Wood, Dr. E. P. Coyne, Dr. T. B. Gilchrist, Dr. J. Kirkwood, Dr. F. S. Hone, Capt. G. B. Thomas, F.R.C.S., I.M.S. As Associate Serving Brother: Said Abdul Rahim Dabbagh, M.D. Beirut.

Reviews

THE MARCH OF MEDICINE

The March of Medicine New York Academy of Medicine Lectures to the Laity, 1941. (Pp 154 $2 00 or 13s. 6d) New York: Columbia University Press: London: Oxford University Press. 1941

We are accustomed to look forward to the publication of the "Lectures to the Laity" delivered at the New York Academy of Medicine, nor does the sixth volume of that series disappoint that anticipation. Dr. Alan Greg leads off with "Humanism and Science," in which he emphasizes the great importance of realizing that illness makes a severe attack on the patient's whole personality. Only imaginative experience, he declares, can appreciate the assault on the image that the individual has formed of himself—" an arcanum, a secret inner chamber of his being, ineffably precious and delicate. . . . It is not his shortness of breath, it is his tumble from omnipotence which infuriates and exhausts": the domestic tyrant stricken with heart disease. "A miraculous moment comes when the doctor becomes the treatment." As humanism in the 15th century freed man from an extreme preoccupation with the exultations and threats of the theologians it may serve now to counterbalance those of the specialists in whatever department.

Dr. Sigerist reviews the career of Paracelsus in the light of the four hundred years that have elapsed since his death. With great literary charm and persuasiveness he presents his subject in a more favourable light than is usual. Doubtless Paracelsus threw aside the dead hand of Galen—so much to the good. What is more doubtful is the value of the astrological system he put in its place.

Dr. Healy discourses on psychiatry and the normal life, in which he reminds us that a normal man is simply a mental concept which is based on averages and is conditioned by the environments of time and place. His conclusion is that with our countless millions of unused brain cells we must have the potential ability to develop more of them for the good of human society. Indeed, if such potentialities are not realized he thinks our very survival is in doubt in the light of our increased powers of self-destruction.

Dr. Edman intervenes as a layman in a lighter vein than is usual with professional philosophers. He finds that his awe of physicians is not reciprocated by them as awe of philosophy, but points out that what an intelligent physician gives his patient is what a philosopher tries to give his readers. The doctor tries to make his patient grow up, to make him see himself and his situation without conflict or evasion. Maturity means facing the issues of existence without illusion, but this does not mean disillusion. Thus his lecture accords pleasantly with Dr. Alan Greg's.

Dr. Riddle takes an encouraging view of "The Promise of Endocrinology." It is interesting to see how the conception gains ground of an integration of that system under the leadership of the anterior pituitary, itself in turn largely controlled through the centres for emotional expression. He considers that in the future the hormones are more likely to be applied to control the emotions than the intellect, and regards the former as playing a larger part in personality than the latter. He lays down the principle that all men, except identical twins, are created genetically *un*equal.

Dr. F. C. Wood winds up an interesting series by a plain statement of "What we do know about Cancer," in which he aims at depriving it of the terrors of the unknown, a very important task. He points to records collected by the American College of Surgeons of 35,000 patients who have lived for five years or more after operation for cancer, statistics which could not have been obtained twenty years ago.

JUNG'S TEACHING

The Psychology of C. G. Jung. An Introduction, with Illustrations By Dr Jolan Jacobi. (Pp 169 12s.) London: Kegan Paul, Trench, Trubner and Co.

Every philosophical psychologist seeks to enunciate a formula that will explain human behaviour. One of the most complete of these is associated with the work of C. G. Jung. Human behaviour being what it is—of infinite variety—the more complete the formula the more complex does it become and the more difficult is the story it has to tell. There is consciousness and unconsciousness; but they are complementary and constantly interacting; so are the personal and the collective unconscious. Attitudes of extraversion and introversion are likewise complementary, and a man may therefore exhibit one in his life but the other in his work. The functions of thought and feeling, of intuition and sensation, are almost mutually exclusive, but each pair may interact with one dominant function and so increase complexity.

All this works dynamically in constant interaction, preserving a plastic balance between opposites; but the energy can be displaced or transformed so that "abnormal" behaviour results. Jung does not in any way refer theoretical "structure and function" of the psyche to the structure and function of the body; consequently in some ways his teaching is more a religion than a science, and is said to have a wider application than "medical healing." In practice he works not only analytically but also synthetically, having regard to aims as well as to causes. The link between the conscious and the compensatory unconscious is the symbol, especially as met with in the dream and in fantasy. The aim of psychotherapy and analysis is to bring the unconscious material into consciousness so that the two may interact harmoniously. This harmonious interaction can never be absolute, only relative; so "cure" can never be complete, or, in other words, man can never be perfect and must always have some neurotic trend.

One of the most important opposites is the image ("anima" or "animus," as the case may be) of the other sex in the unconscious. The first of these images is always the parent of the opposite sex, and the freeing of the child's consciousness of the unharmonious intrusion of this image is one of the most important psychological processes in life. Behind this lies a more fundamental image, called by Jung the "magna mater," materialism in the woman and spirituality in the man. When all these opposites are integrated, then the whole man, the true self, may emerge and the goal of the analysis and synthesis be reached. The symbol of this emergence appears in all sorts of cultures, especially oriental, and this fact seems to point to its universal validity.

The story of Jung's teaching is well told in this little book, but it is not easy reading, and it is doubtful whether those not already acquainted with his work will obtain a great deal of enlightenment from it.

TREATMENT OF SYPHILIS

The Modern Treatment of Syphilis. By Joseph Earle Moore, M D; with the collaboration of Jarold E Kemp, M.D, Harry Eagle, M D, Paul Padget, M D, and Mary Stewart Goodwin, M.D. Second edition (Pp. 674; illustrated 38s 6d) London: Baillière, Tindall and Cox.

Nearly nine years have elapsed since the first edition of this work appeared; a second edition is therefore due, more particularly since the incidence of syphilis not only has ceased to fall but is definitely rising, in this country at any rate. No epoch-making discoveries have occurred in the interval, but our knowledge has advanced in many directions and improvement in serological technique has been noteworthy, but, alas! much more so in the United States of America than in Great Britain.

The increased responsibility thrown on the four collaborators, Drs. Kemp, Eagle, Padget, and Goodwin, has added much to the authority of the book. Perhaps its most striking new feature is that dealing with mapharsen, a preparation which has found much favour in the U.S.A., but which so far has attained little popularity in this country. Dr. Moore is evidently much impressed with its efficacy, since he inclines to its use in preference to neoarsphenamine in early syphilis. Whether time and experience will bear out his contention seems at least doubtful; in dealing with such a disease as syphilis the wise man prefers to wait many years before he commits himself to a eulogy of a new drug. On the other hand massive-dose arsenotherapy, which has been so much boomed by certain workers, is not recommended in the present state of our knowledge. Much is made of the quantitative Wassermann test, but the critical serologist will inquire whether the progressive reduction in the amount of human serum employed should not be taken into account; presumably the serial dilutions are made with physiological saline. The quantitative test is very valuable in estimating progress in the so-called reagin-fast case, and it seems a pity that more use is not made of the sigma (Dreyer-Ward) reaction for this purpose.

This excellent book is essentially one for the specialist. That the treatment of syphilis should occupy more than 600 pages indicates that the subject, late syphilis at any rate, is not one for the general practitioner or the inexperienced.

HANDLING OF GAS CASUALTIES

Gas Cleansing Stations A Manual of Procedure during Gas Attack for Casualty Service Personnel, Members of the Home Guard, Industrial Undertakings, and the Public By Leslie Stewart, Training Officer, First-aid Posts, City of Manchester. (Pp. 64. 2s. 2d. post free) London: Jordan and Sons, Ltd.

As explained in the introduction, the purpose of this handbook is to assist members of the casualty services to obtain an understanding of the treatment of gas-contaminated casualties. The subject is dealt with in 8 short chapters and an appendix, comprising in all 63 pages. The writing is simple and direct and the approach practical. The book should have a wide usefulness in the casualty services throughout the country. Official instructions on the subject of preparedness for gas attack have undergone many changes during the last 5 or 6 years, the chief being that, whereas attention was first specially directed to measures against non-persistent gas, emphasis is to-day placed upon the dangers of blister gas. This excellent handbook deals with the latter problem. We have, fortunately, had no experience of gas attack and we hope that gas will not be used. Should it be used, mental preparedness on the part of all Civil Defence personnel will lessen the risks of panic and facilitate the treatment of casualties.

For the purpose of instruction the author has postulated a simple situation in which blister-gas casualties require treatment. It would be wise when placing this book in the hands of volunteers to remind them that the first gas attack may be with non-persistent gas or with a mixture of non-persistent and blister gases. Very different practical problems will arise according to the type used. For example, a few drops of blister gas inside a gas mask will quickly make the wearer a severe casualty; the air lock in its application to blister gas is for the purpose of affording protection against heavy concentrations of vapour given off from collections of discarded contaminated clothing. If and when the attack comes we shall learn much about our anti-gas organization, and shall improvise and improve and go on doing so until victory is won. In the meantime all those responsible for or preparing to assist in the treatment of casualties will find this careful and practical little book of great assistance.

Notes on Books

Unlike some authors, Mr. **HAMILTON BAILEY** apparently reads the reviews of his books and profits by them. This is flattering to the reviewer and advantageous to a new edition. The inclusion of certain signs—e.g., Kocher's test and Berry's sign—in the eighth edition of *Demonstrations of Physical Signs in Clinical Surgery*, the omission of which we mentioned in our notice of the last, is naturally an improvement, and we have little but praise for this excellent work. Prof. Wood Jones, referred to on p. 133, might be given a footnote as are other authors, and diffuse neurofibromatosis, p. 25, might be called, as is customary, after von Recklinghausen. Mr. Sampson Handley, p. 227, should be described as consulting surgeon to the Middlesex Hospital. The winged scapula (B, Fig. 437, p. 299) would be better shown if photographed from the other side, and "ulnar paradox" might be mentioned in connexion with lesions of the ulnar nerve. We were under the impression that circumflex, not axillary, p. 317, was the old terminology for this nerve. These, however, are minor features to criticize in an edition which is a great credit to both author and publisher. This is now a standard work which should be read and remembered by every medical student. It is published at Bristol by John Wright and Sons, price 25s.

It is difficult to understand for whom the little book, *Visual Outline of Psychiatry*, is really intended. Admiration for Dr. **LELAND HINSIE**'s ingenuity in compressing so much into so little space must be expressed by anyone well acquainted with Freudian theory and practice. Even so the section on the organization of the mind is better than that on the psychiatric syndromes, and the substance of the book can only be of use in reminding and not in instructing the reader. For the student, however, at least in this country, the book is surely useless if not dangerous. It is inconceivable that he could pass an examination on purely Freudian teaching, and few examiners would be pleased if he were to dismiss all the work on convulsive therapy in schizophrenia in one line while advocating deep analysis as a cure, for most consider that this has been singularly ineffective in the true psychosis. Nor would the student be popular if he were to trot out such expressions as "altrigenderism," "heterogenitality," or even "schizoidism," in every paragraph of his examination paper. The book is published in this country at 12s. 6d. by the Oxford University Press.

Two members of the Department of Bacteriology of the University of Wisconsin Medical School, **PAUL F. CLARK** and **ALICE SCHIEDT CLARK**, had the happy idea of compiling a calendar of biology and medicine, and the University of Wisconsin Press have published it at Madison under the title *Memorable Days in Medicine* ($2). The months of the year form the chapters of this pleasant bedside book; and each day has one or more entries for the birth or death of a man or woman, or the foundation of an institution, famous in the annals of our profession or of the biological sciences, or the launching of some enterprise. In a short foreword the authors disarm the critic of their fragmentary material: "We apologize for omitting your favourites; we have omitted many of our own." The print is good, there is a satisfactory index, and some portraits are reproduced, including an unfamiliar photograph of Charles Darwin without his beard and moustache. When the text is revised for a new edition a few minor slips should be corrected—e.g., "Sir" Stephen Paget, "Sir" Richard Bright, and the misspelling of Sir Humphry Davy's first name. We wish we could challenge the distressing statement that no obituary of Thomas Addison appeared in either the *Lancet* or the *British Medical Journal*.

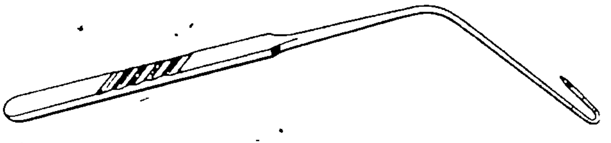
We have previously commended *Approved Laboratory Technic*, by **J. A. KOLMER** and **F. BOERNER**, as a comprehensive bench book dealing with clinical pathology in all its aspects. The third edition has been embellished with an appendix describing fourteen new methods, including those for the estimation of prothrombin, vitamin C, and various sulphonamide compounds, but the original text, which is the work of twenty-eight authors, is little changed. The chapter on agglutination tests, one of several the authorship of which is undisclosed, needs revision, and we would again suggest that the long lists of bacteria liable to be found in various types of material are misleading rather than helpful: no fewer than twenty-one, including *B. subtilis*, "*B. Zur-Nedden*," and "*B. anthracsis*," are said to occur in the eye. The greater part of the book is a prolific source of useful technical information, and the illustrations are excellent. It is published at 42s. by D. Appleton-Century Company.

Preparations and Appliances

NEEDLE FOR REPAIRING FEMORAL HERNIA

Mr. **JOHN W. STRETTON**, F.R.C.S., Kidderminster, writes:

The accompanying sketch, reproduced half-size, shows a needle made to my order by Messrs. Allen and Hanburys. It is the latest pattern of a needle I have been using for years. It is designed to pass sutures through the ligament of Astley Cooper when repairing a femoral hernia.



The needle is threaded (it will take No. 2 silk); its point is first passed, not through, but beyond this ligament, and then passed through the ligament from the far side. Now the needle point is advanced towards the surface, and then retarded slightly to prevent the silk lying too tightly against the needle. Non-toothed dissecting forceps bring the suture to the surface. The bent handle gives a clearer view.

I am indebted to the makers for their help.

Treatment of Scabies.—Burroughs Wellcome & Co., 12, Red Lion Square, W.C.1, advise us that dimethylthianthrene (mesulphen *B.P.C.*), referred to in the *Journal* (July 4, p. 3), has been issued commercially by them since October, 1940, under the brand name "sudermo." Supplies, though limited, are still available.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY AUGUST 1 1942

THE EVILS OF LONG WORKING HOURS

Now that the war will soon be entering on its fourth year, with no prospect of an early termination, it is more than ever important that we should pay careful attention to the question of the hours of labour of our industrial workers. If the hours are such as to induce ill-health, it is obvious that the longer they are continued the more they are likely to do permanent harm to the health of the nation. The evils of excessive hours have been pointed out over and over again by almost everyone who has taken the trouble to investigate the subject. The Select Committee on National Expenditure, in their seventeenth report, said that "they regret to report that the lessons which the last war should have taught seem largely to have been ignored," while the Chief Inspector of Factories, in his last annual report, was similarly of the opinion that "some valuable lessons of the last war had been widely forgotten or were not yet sufficiently appreciated," and he added, "I have particularly in mind the lessons that excessive hours mean less production." A return from 5,493 factories showed that in nearly half of them the women were working between 57 and 60 hours a week, and the disadvantage of long hours was well illustrated by the experience of a deputy chief inspector of factories, who found that at a factory which had been working 54 hours it was impossible to maintain production until in every third week the hours were reduced to 48.

The Government, so far from doing anything to check excessive hours, seems inclined to extend them, at least in respect of those members of our industrial population who are least able to bear them. The Minister of Labour is taking measures to standardize a 52-hour working week in industry and 46 hours for clerical workers, and these hours are to apply to everyone, including juveniles aged 14 and upwards. The hours are not to be imposed by Order, but by a direction to the man-power boards, and there can be little doubt that they will frequently be taken advantage of. It will be remembered that under the Factories Act, 1937, juveniles of 14 and 15 are allowed to work only 44 hours a week without any allowance for overtime, so they are now to be permitted an extra 8 hours a week. This may not, at first sight, appear very excessive in wartime, but in fact it means that, instead of the usual 8-hour day, the juveniles have to work for 9½ hours, except on Saturdays. When the juveniles reach the age of 16 they are permitted, under the Factories Act, to work for 48 hours *plus* 6 hours a week of overtime—i.e., for 54 hours a week in all (for a limited period)—and when they are 18 the women are allowed to work for 54 hours with less limitation, while the men are not restricted at all. In the recent Parliamentary debate on factory welfare (July 22) Mr. Bevin said that they had had to do things about hours of labour which had been extremely distasteful, but that he was considering tightening up at an early date. During the course of the debate one member adduced instances where women were in factories for 12-hour periods. Another member gave details of young people under 17 working over 60 hours a week, while a third member stated that the war effort was definitely being hindered by the long hours now required from the workers.

Long hours of work almost inevitably put a greater strain on the women than on the men, not only because of their poorer physique and stamina, but because of the time they have to devote to housework and to shopping. The shopping is much more of a trial than in peacetime for several reasons. For instance, in an industrial centre such as Birmingham a number of the shops close at five o'clock, which makes it impossible for the women employed on a normal working day to do any shopping. In a London area it appeared that one-third of the women shopped on Friday nights and two-thirds on Saturday afternoons, and they usually had to queue. As they could not get to the shops in the mornings they found it practically impossible to get cooked meats or any of the non-rationed foods. An additional strain, which is much greater in wartime than in peacetime, is brought about by transport difficulties. Many of the workers spend well over an hour each morning and evening in getting to and fro between home and factory, and this adds considerably to their fatigue.

Evidence showing that war workers are suffering from over-fatigue comes from many sources. In the *Times Educational Supplement* (June 27, 1942) there is an article on "Youth in Industry" and a report from the Lincoln Youth Committee, which relates more especially to the 16–17 age group. The maximum hours of work allowed in wartime, says Lincoln, "seem beyond the physical capacity of juveniles. Many of the boys admitted a permanent feeling of fatigue," while a Yorkshire borough finds that many boys seem to be "mentally and physically exhausted." Stirlingshire refers to young people as "physically and mentally overwrought," while Birmingham reports on the strain of long hours of work and compulsory fire-watching. Again, when the Ministry of Health estimates were debated in Parliament a month ago, a number of members voiced the serious effects of long hours of work on young people, and Mr. Kenneth Lindsay reminded the House that it is nobody's business to look after the health of the young people between 14 and 18. Statistical evidence relating to the effects of wartime conditions on the health of the nation has been recently adduced in this *Journal*, and some of it is very disquieting. Dr. Percy Stocks,[1] when comparing the tuberculosis mortality in 1939–41 with that observed in 1937–9, showed that there was an excess of 11% in young women aged 15 to 19, and of 21% in those aged 20 to 24. The corresponding figures for the death rates in 1914–16 were 22 and 14% respectively, or nearly the same, on an average. In the latter half of the war, however, the tuberculosis rate rose very rapidly, till in 1918 it was 50% higher in the two age groups mentioned than in 1911–14. By 1920 the rate had fallen back almost to normal, and there can be no doubt that the wartime rise was due to excessive hours of work, coupled with overcrowding and malnutrition. It was especially marked in the large industrial towns, and the same condition appears to be holding during the present war. Drs. Laidlaw and Macfarlane[2] investigated 1,600 cases of pulmonary tuberculosis notified in Glasgow in 1941, and at the same time they inquired into the occupation and hours of work of the sufferers. They found that, as compared with 1938–9, women between the ages of 15 and 24 showed an increase of 33%, while their deaths showed an increase of 34%. The authors laid special stress on the effects of long working hours, for they found that members of the commercial and professional classes, who were for the most part working 48 hours or less a week, showed but little increase in tuberculosis as contrasted with the overworked industrial classes. Nearly a third of all the industrial women worked over 56 hours a week, and a few of them 65 hours or more.

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[1] *British Medical Journal*, June 27, 1942, p. 789.
[2] Ibid., July 18, 1942, p. 63.

It may be maintained that even if long hours of work do induce ill-health in some degree, the need for achieving a maximum war production renders such hours unavoidable. The fallacy of this argument has been pointed out over and over again. Hours of work which are so long as to induce a state of chronic fatigue and ill-health, so far from increasing production, cause an actual deterioration. It is certainly the duty of all to work their hardest, and most people are capable of putting in rather more hours of work than they do in peacetime, but the margin is not great, and probably in most young persons of 14 to 17 it is non-existent. That is to say, the 44-hour week which juveniles of 14 and 15 are allowed under the Factories Act represents their optimum hours, while the 48-hour week, coupled with 6 hours a week of overtime, is in excess of the capabilities of young women of 16 and 17 if it is continued uninterruptedly for more than a very few months at a time. Young men, owing to their stronger physique, can easily cope with these hours, and it is remarkable how little adult men are affected by the very long hours often imposed on them. This does not prove that such hours are the best for maximum production. The men get into the habit of working at a slower rate, so it follows that they are paid higher wages for an output which they would achieve equally well if their hours were kept at a more reasonable level, such as 60 a week.

ANTIHORMONES

Animals which have had repeated injections of extracts of endocrine gland from a different species become refractory to the physiological action of these extracts. Collip and Anderson[1] were the first to demonstrate that this refractory state depends on the presence in the serum of the treated animals of a substance capable of neutralizing the specific action of the extract. They called the neutralizing substance an "antihormone." Since the experiments of Collip and Anderson, in which relatively crude thyrotropic fractions of the pituitary gland were used, "antihormones" to almost every fraction of the pituitary have been demonstrated. In spite of the tremendous amount of work which has been done in this field there is still no conclusive evidence as to the nature of the antihormones. Collip believed them to be antagonistic hormones, while the majority of other observers think they are true antibodies.

An antibody is usually defined as a substance which is produced in the animal body as the result of a stimulus given by an antigen administered parenterally, and which will react in some demonstrable way with the antigen which has stimulated its formation. Many attempts have therefore been made to show precipitation or complement fixation between hormone extracts and the antihormones they have evoked. Unfortunately many of the preparations used in these experiments have been relatively crude extracts of the pituitary or other endocrine glands. Such crude extracts contain, besides the hormone, a variety of antigens—for instance, serum proteins—which are characteristic for the species rather than the hormone. It is therefore not surprising that in the majority of cases the serum from any animal immunized against such an extract reacts as well in the test-tube with the serum proteins as with the hormone extract used in its preparation. When the most highly purified extracts so far available have been used for immunization, precipitating or complement-fixing antibodies have been formed in much smaller amounts or not at all. Even these small amounts of precipitin can, in most cases, be shown to be directed against species-specific antigens rather than the hormone itself. It has, furthermore, repeatedly been shown that the amount of precipitin present in the serum of an animal immunized against a hormone extract need bear no relation to the power of that serum to inhibit the physiological action of the hormone. This negative evidence cannot, however, be regarded as proof that antihormones are not antibodies. It may be that the hormone acts as a simple haptene capable of combining with its antibody but incapable of forming a precipitate, or the hormone may, as Zondek and Sulman[2] suggest, combine with its antibody in a manner not yet familiar to immunologists. If the hormone is a haptene it may exist in the animal body in combination with a carrier antigen which may be a normal constituent of other tissues or the blood of the same animal species. An antiserum to such a compound would then react not only with the hormone extract used for its preparation but also with any tissue extract containing the carrier only. Such an explanation is suggested by the recent work of Singer,[3] in which it was shown that antigonadotropin could be absorbed from a serum by an extract of kidney prepared in the same manner as that used in the preparation of the immunizing gonadotropic extract. Singer's conclusions are unfortunately based on experiments with small groups of animals and require confirmation. That a naturally occurring hormone (thyroxine) can behave as a haptene in artificially conjugated antigens has been strikingly demonstrated by Clutton, Harington, and Yuill.[4] The antibody evoked by such an artificial antigen has been found, moreover, to be capable of inhibiting the physiological action of injected thyroxine in test animals.

Studies on the physical and chemical properties and site of formation of antihormones have brought forward a great deal of evidence in favour of regarding them as true antibodies. Thus they are precipitated in the globulin fraction of serum, and show the same degree of resistance to heat and changes in H-ion concentrations as true antibodies. They depend for their formation on an intact reticulo-endothelial system irrespective of the state of activity of the endocrine glands. Furthermore, antihormones, like other antibodies, are formed, in any particular species of animal, only in response to material from a different species, and if only short courses of immunizing injections are given there is definite species-specificity of the antibodies produced. Species-specificity, as is well known, may disappear when long courses of immunizing injections are given. A pregnant woman, for instance, does not produce antihormones directed against gonadotropin, although during pregnancy gonadotropin is present in the body and is excreted in the urine in much greater quantities than normal. On the other hand, the human subject who receives, for therapeutic purposes, many injections of gonadotropic extract of bovine pituitaries ultimately becomes refractory, and the subject's serum is then found to contain antihormone capable of inhibiting the gonadotropin of bovine origin.

The investigations on the biological and immunological properties of the relatively crude extracts from endocrine glands as yet available, and the antihormones they evoke, have shown, therefore, that in many ways antihormones resemble true antibodies, and no undeniable evidence against this hypothesis has been cited. Nevertheless, final proof of the antibody nature of antihormones will depend on the demonstration of an *in vitro* reaction with the corresponding hormone in the test-tube. This demonstration will require hormone preparations which are immunologically as well as chemically pure. It seems more than likely that the way towards this final proof is through the field of synthetic immunochemistry.

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[1] *Lancet*, 1934, **1**, 76; *J. Amer. med. Ass.*, 1935, **104**, 965.

[2] *Proc. Soc. exp. Biol.*, N.Y., 1937, **37**, 343.

[3] *Austral. J. exp. Biol. med. Sci.*, 1941, **19**, 125.

[4] *Biochem. J.*, 1938, **32**, 1119.

SULPHONAMIDES AND THE METABOLISM OF BACTERIA

The importance of the sulphonamides as chemotherapeutic agents has been a great stimulus to research into their mode of action. During the last two years it has been shown that *p*-aminobenzoic acid will inhibit the bacteriostatic action of the sulphonamides on a wide range of organisms, and is even necessary for the growth of more nutritionally exacting bacteria. The similarity in structure between *p*-aminobenzoic acid and the sulphonamides, and a study of the concentration of the drugs necessary for inhibition, have led to the notion that sulphonamides act by competing with *p*-aminobenzoic acid for enzymes whose proper function is essential to growth. Wood[1] has extended previous observations by finding that the bacteriostatic potency of each of six sulphonamides is directly proportional to its ability to counteract the antibacteriostatic action of *p*-aminobenzoic acid. So, although there may be a very large disproportion in the concentration of the competing substances, the linear relationship between them is nevertheless interpreted as indicating competitive inhibition. The circumstantial evidence for this theory is very great, but its final proof must await the identification of the enzyme system involved. Macleod,[2] investigating the distribution of inhibitors of the sulphonamides among animal and bacterial extracts, found, however, that some were still active when the *p*-aminobenzoic acid had been removed by extraction with acid ether. And Green and Bielschowsky[3] have encountered similar extracts in which the inhibition seemed to be specific, as most of the growth-promoting factors had already been destroyed. Kohn and Harris[4] have now produced direct evidence that methionine, a naturally occurring amino-acid containing sulphur, has the property of inhibiting the bacteriostatic action of sulphonamides on *E. coli*. There may be other such inhibitors of unknown constitution in proteose-peptone. The inhibition of sulphonamides by methionine must be different from the inhibition by *p*-aminobenzoic acid, for there is no close structural resemblance to the sulphonamides, and the inhibition is seen only in a relatively poor salt-glucose medium and with low concentrations of sulphonamide. On the other hand the specificity of the inhibitor is great; no similar substance will produce the inhibition, and the *l*-form is ten times as effective as the *d*-form. Ethionine, which differs only by a CH_2 group, will even decrease the rate of growth in the absence of the sulphonamides, and this decrease is overcome by methionine; several of the homologous α-amino acids show a similar effect, which in two instances also is opposed by methionine. These observations suggest competitive activity for an essential enzyme, with methionine as the natural substrate and ethionine as an antagonist, just as *p*-aminobenzoic acid is the natural substrate for the enzyme system which is antagonized by the sulphonamides. To explain the inhibition of sulphonamide activity by methionine, Kohn and Harris suggest that the methionine phase of metabolism is secondary to the *p*-aminobenzoic acid phase, and that there may be a number of such stages in the essential metabolism of the bacteria. Thus, although the presence of sulphonamides blocks the *p*-aminobenzoic acid phase, the addition of a variety of inhibitors, such as methionine, might fill up the exhausted reserves at a secondary stage and enable the processes vital for growth to continue.

If this idea should prove correct—and it will of course require adequate confirmation—it is easier to see how bacteria can become " drug-fast " by elaborating their own " inhibitors " (really the normal substrate) at the secondary stage by a reaction which will by-pass the blocked primary stage; and the presence of an excess of such inhibitors in pus would explain the inactivity of sulphonamides there. Moreover the elucidation of bacterial metabolism in this way will lead, it is hoped, to the elaboration of new chemotherapeutic agents which can upset other phases in the metabolic cycles of bacteria.

THE BED-BUG

The report of the Medical Research Council's Committee on Bed-bug Infestation for the period 1935–40 has just been issued.[1] It includes six articles dealing briefly with the life and habits of the insect and with methods of combating infestation. Briefly the main conclusions are as follows. Temperature, more than any other physical factor, governs the life of the bed-bug. In an unheated room in Britain it is too cold during about one-half of the year for activity or breeding. There is a high mortality in winter, and by the spring the population consists mainly of adults and large nymphs. Control methods at this season should be most efficacious, as there are fewer bugs to kill, and living eggs (the most resistant stage) are entirely absent. No chemical fumigant is perfect; heavy naphtha has certain advantages, but cyanide is still the most efficient substance. Cleanliness on the part of the housewife will alone reduce even a serious infestation to negligible proportions, particularly if advice and direction from competent officers are available. Attention to certain details in building will produce buildings with few harbourages, and in which it will be difficult for bed-bugs to establish themselves. If public health authorities are able to apply the recommendations of this report they should be able to make real progress against bed-bug infestation. But once again it is clear that education of the general public to ensure their whole-hearted co-operation is essential before these domestic parasites are likely to be exterminated. There is no easy way to achieve this end; it will require perseverance and hard work from all parties concerned.

STERILIZATION OF DRY POWDERS

A brief account has now appeared[2] of the recent case in which fatal tetanus was believed to have been caused by the local application of unsterile sulphapyridine powder. The case is also referred to in a letter from Miss G. M. Sandes in our issue of July 18. The powder was scattered in the pelvic cavity during an operation for pyosalpinx, and tetanus developed seven days later. *Cl. tetani* was cultivated post mortem from pelvic tissue, and non-toxigenic organisms of similar morphology were cultivated from the material of two cardboard containers of sulphapyridine, and from the drug itself in one of them. The evidence is not conclusive that the infection was of this origin; it does not appear to have been proved that the organisms found were in fact *Cl. tetani*, and it is mentioned that catgut was used in the operation. There are nevertheless ample reasons for concluding that tetanus could be so produced; cardboard and coarse paper are notorious for harbouring sporogenous bacteria, and have been implicated in disasters of this kind before. The container in question bore a label stating that the contents had not been sterilized, and a representative of the manufacturers, giving evidence at the inquest, recommended that sulphapyridine powder for use locally should be sterilized by dry heat at 160° C. for 20 minutes. Presumably the more usually employed temperature of 140°–150° C. for one hour would be equally effective, but it should in any case be more generally known that temperatures of this order are necessary for sterilizing dry powders and many other materials which cannot be penetrated by steam. There is a common impression that autoclaving will sterilize anything, but the temperature attained—usually not over 120° C.—is only effective in the form of moist heat, and serves only for such materials as watery fluids and fabrics. A powder in a closed vessel is subjected only to dry heat at this temperature, and the temperature required for the sterilization by dry as distinct from moist heat is many degrees higher. If, on the other hand, the powder is in a thin layer, and fully exposed to steam, it may be possible to sterilize it by autoclaving, as suggested by Dr. J. C. Cherry in our correspondence columns this week. The same argument applies to non-watery fluids such as liquid paraffin, and it might have been supposed to be true of tulle gras until R. M. Savage[3] showed recently in this *Journal* that autoclaving unexpectedly does sterilize this material, partly because it is not quite dry and partly because it contains something chemically bactericidal. A gas or electric hot-air oven is a simple piece of sterilizing apparatus too seldom found among surgical equipment; the only place furnished with it is usually a bacteriological laboratory. It provides also an admirable method of sterilizing any glassware, including all-glass syringes and most kinds of instruments.

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[1] *J. exp. Med.*, 1942, **75**, 369.
[2] Ibid., 1940, **72**, 217.
[3] *Brit. J. exp. Path.*, 1942, **23**, 1.
[4] *J. Pharmacol. exp. Therap.*, 1941, **73**, 343, 383.

[1] Med. Res. Cncl. Spec. Rep. Ser. No. 245, H.M.S.O., 1942. (1s.)
[2] *Pharmaceut. J.*, May 30, 1942, p. 192.

HEREDITARY FACTOR IN CARDIOVASCULAR DISEASE

The premature death of Raymond Pearl must have brought to an end some of the multifarious activities which he initiated. But he was the founder of an active school, and it is satisfactory to know how much is being carried on by his associates and pupils. One project, incomplete at the time of his death, has been carried to completion by A. Ciocco[4]: this was an attempt to throw light on the constitutional factor in cardiovascular disease. The extensive material was composed of copies of the death certificates of a sample of life-insurance holders who died between 1937 and 1940, together with records of their medical examination and family history obtained at the time of application. Out of 11,000 cases those chosen for study were persons whose parents were dead at the time of application, the causes of death being stated in specific terms; the cause of death of the policy holder had also to be unequivocally stated. Only white males, were included. These criteria were satisfied by 2,309 records. In drawing conclusions from this sample it has to be remembered that the group is far from representative of the general population, and that age at the time of application was, owing to the criteria adopted, considerably above the average. Nevertheless, there does not seem to be any reason for rejecting the striking positive findings at which Ciocco arrives. The percentage of policy holders who died of cardiovascular diseases was 54.3, compared with 43.0 at age 30 and over in the country as a whole. Too much cannot, however, be read into this owing to the limitations of the sampling. Duration of life was slightly but significantly longer among the cardiovascular group than among those dying from other causes. Of the parents of those dying from cardiovascular diseases 31% of the fathers and 29% of the mothers died from the same cause, as compared with 26% and 23% respectively among the parents of the remainder; these differences are significant. The really striking result, however, is the difference shown when the parents are classified according to whether neither, one, or both died from cardiovascular disease. When both parents died from other causes the percentage of policy holders dead from cardiovascular diseases was 51; when the father died from this cause, 57; when it was the mother, 56; and when both parents died of cardiovascular disease the percentage was no less than 65. This study, therefore, supports the hypothesis that innate biological constitution is a factor of much importance in the aetiology of these conditions. Ciocco ends by pointing out that the recognition of hereditary constitution as an important factor does not mean that selective breeding is the only sensible preventive measure. As in other instances, this knowledge should be a warning of the need for observation and care when the family history indicates that the patient is more likely than the average to be susceptible to a particular disease.

THE MIND OF THE CRIPPLE

A conviction is slowly permeating the minds of those who care for physically disabled persons that, just as Napoleon found in war, so in orthopaedics, the moral factor is to the material as three to one. If the patient's psyche can be induced to work in harmony with the surgeon and the physiotherapist, recovery is accelerated and made more sure. The patient co-operates in the treatment and supplies that activity and determination without which results are at best mediocre. A valuable contribution to the understanding of the mind of the crippled child has been made by the Child Guidance Council in an excellent pamphlet[1] based on three lectures given to the nursing staff of an orthopaedic hospital. The first two lectures deal with mental deficiency and with backwardness, but perhaps the most illuminating is the third, on those emotional reactions of the cripple which may make him unhappy, difficult, or antisocial. Emotional stability is essential for a good adjustment to life, but nothing is more elusive than the formulation of its ingredients. The pamphlet impresses on the nurse the vital truth, too often forgotten, that the greatest enemy of the emotions is fear. The allaying of fear, it points out, is even more important in an orthopaedic hospital than elsewhere, because the infant paralysed or confined in splints can do nothing to escape from a threatening situation. The ward should therefore not be kept quite dark, and the nurse should be quick to detect the first sign of fear in a child patient and comfort him and restore his security. To avert fear of falling, a child should be securely tucked in. He may fear suffocation from bedclothes and may fear strangers; the nurse's duty is to protect him from these fears and to establish herself as a mother-substitute as efficient as possible. An initial lack of self-reliance is especially intensified by illness affecting the use of limbs, and by anything which makes difficulties for the child or marks him out as different from others. Removal from home is a potent enemy of security. It is obviously not possible for every nurse to unravel complicated emotional problems; these are material for a child guidance clinic. What she can do is to reassure him and give him affection, to interest him and stimulate him so that he will determine to beat his handicap and make good. She will treat the aggressive or disobedient child with patience and understanding, and, most important, she will be loyal to her colleagues and superiors and not let the child play off the members of the team one against another. Dr. Anaple Christie, writing in the *Journal of the Chartered Society of Massage* for last January, also stressed the vital need to work for the child's emotional stability, to treat him as an individual, and to develop his initiative and sense of responsibility. Her paper and this pamphlet have paved the way for the systematic instruction in psychology which will soon be recognized as indispensable in the education of every orthopaedist and medical auxiliary.

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[3] *British Medical Journal*, April 11, 1942, p. 472.

[4] *Human Biology*, 1941, 13, 350.

[1] *The Mind of the Cripple*, 23, Queen Square, Bath. (1s. 6d.)

PITFALLS IN "REMOVAL FOR MENTAL OBSERVATION"

BY

ARTHUR HARRIS, M.D., D.P.M.

The general practitioner is often called upon to see patients who are showing acute mental symptoms and to advise as to whether their removal to the local observation ward by the relieving officer is indicated. The conditions under which the examination is made are often adverse; there may be considerable confusion and turmoil, and a calm, unhurried appraisement of the case may be difficult. In these circumstances it is not surprising that not infrequently mistakes are made which become obvious in the calm, orderly atmosphere of the hospital. The object of this paper is to consider in the light of experience the snags which the practitioner is most likely to encounter and the chief errors likely to occur, although it is very far indeed from being comprehensive.

The main danger lies in the patients in whom the mental symptoms form part of some severe organic disorder. Many organic cases are eminently suitable for admission to observation wards, and indeed the behaviour of these patients may make this the only practicable method of dealing with them; but a consideration of the cause and of therapeutic possibilities may suggest an alternative means of disposal. The underlying trouble may be completely missed, with resulting complaints from the relatives that the patient has been treated as a lunatic instead of as a sick man.

A great safeguard against this type of mistake is the ability to recognize the "organic" mental picture, which, although described in detail in textbooks of psychiatry, including the psychiatric sections of general medical textbooks, seems to be not nearly widely enough appreciated by the profession. Curran and Slater, in the *Lancet*, 1935, 1, 69, pointed out that physicians often are ill equipped to analyse mental symptoms and lacking in special knowledge of them. For example, a young man the outstanding features of whose condition were failure of memory and disorientation in time, so that he went for his dinner when he should have gone home, and forgot which job he was working on—typical organic symptoms—was regarded as a case of functional insanity by several people, including a junior neurologist, because he showed no neurological signs. Precious months were therefore lost in the treatment of his general paralysis, and all hope of cure vanished.

Signs particularly indicative of an organic origin are memory disturbances with their corollary, disorientation in space and time. Mistakes in identities often occur, and the patient may believe the physician to be a relative or a friend of his or someone who has treated him previously. Excessive concentration of attention or preoccupation with anxieties or abstract ideas of the "absent-minded professor" type is not accompanied by true memory disturbance.

Toxic and Infective Conditions

Most infections may produce delirium, and there is no direct relation between the severity of the mental symptoms and the degree of constitutional disturbance. Alcoholic subjects are peculiarly liable, and, in them, mental symptoms tend to make their appearance early. Pulmonary conditions, cases of typhoid, endogenous intoxications such as uraemia, and a heterogeneous miscellany of febrile states frequently find their way into observation wards for this reason. The general aspect of the patient and the presence of fever and of distinctive physical signs should afford pointers to the correct diagnosis. Meningococcal meningitis may produce sudden furious delirium unaccompanied by fever or meningitic signs. In such cases the history will usually provide evidence of diagnostic value in the shape of prodromal symptoms of a few hours' or a day or two's duration, such as headache, vomiting, and pains in the limbs. Now that sulphapyridine is tending to supplant serum in treatment it is not nearly so detrimental to the interests of the patient to send him into the observation ward instead of to a fever hospital, and he can be nursed there quite satisfactorily. A good example of the type of meningitic case which gets into the observation ward is afforded by a married woman who complained to her husband, an A.R.P. worker, of nausea, general malaise, and pains in the limbs just before he started off for a twenty-four-hour shift. He thought that she had "flu," and advised her to stay in bed until he came back. On his return he found their flat in great disorder and his wife rushing about wildly, with her clothing disarranged and babbling incoherently.

Cases of neurosyphilis showing mental symptoms are usually most satisfactorily treated in mental hospitals, and removal to the observation ward in the first place is therefore not contraindicated. Alcoholic confusional and hallucinatory states are also satisfactorily dealt with in the observation ward.

Organic Lesions of the Brain

Numbers of patients with organic cerebral lesions, who would be better sent into general hospitals in the first place, find their way into observation wards; and cases of tumour, both primary and secondary, various vascular conditions, and disseminated sclerosis have passed through my hands in this way. The importance of not regarding absence of neurological signs as indicating absence of organic disease and of recognizing the type of mental disturbance produced by organic conditions is to be stressed. In one case a woman became forgetful and would go into a shop and fail to remember what she wanted to buy there. Her amnesia and confusion increased, but her doctor did not suspect serious disease until she became aphasic and suffered from transient losses of consciousness. She became comatose and died in the observation ward, post-mortem examination revealing a large highly malignant glioma.

In two rather difficult cases there was sudden collapse, after which the patients remained mute although conscious and aware of their surroundings. Both were sent in with a diagnosis of hysterical mutism, but the development within the course of a day or two of a right-sided hemiplegia rendered this untenable. Careful consideration of the history and the circumstances in which the collapse occurred would have prevented the mistake. To arrive at a diagnosis of hysteria purely by exclusion is unwarrantable. The condition is one which presents definite clinical features and a characteristic history and mental state, well described in the textbooks. The dramatic nature and mode of onset of the symptoms; the possibility of their being of some value to the patient by providing him with a solution, albeit an unsatisfactory one, of his difficulties; his emotional attitude to the symptoms; and the tendency in his previous personality to seek the limelight and to create an impression, are important.

Cardiac Failure

The confusional and delirious states associated with congestive cardiac failure are usually transitory and clear up dramatically when the primary condition is adequately treated. It is a mistake, therefore, to rush these patients off to the observation ward in the early stages of their illness if this can be avoided, although a certain small proportion will fail to respond to treatment and become chronically psychotic, in which event removal to a mental hospital may be indicated.

Reaction to Severe Physical Pain

The behaviour of some emotional individuals during an attack of severe pain may be so uncontrolled as to appear completely mad. For example, a doctor was called to a house and was told that a young man who had been visiting a friend there had suddenly been taken ill while his friend was out. When he went into the room the patient clutched his hand desperately and mumbled inarticulately, and was quite incapable of coherent speech. The doctor not unnaturally concluded that the man was insane, and sent for the relieving officer. On arrival at the observation ward the patient appeared quite normal, but stated that he had just had some dreadful pains and described a typical attack of renal colic. When they found out the nature of the hospital to which he had been sent, both he and his family expressed great indignation, and one cannot help feeling that the doctor's reputation in the district suffered considerably as a result of this unfortunate incident.

Failures of complete diagnosis such as those described above are easily rectified and rarely prejudice the welfare of the patient: at the worst they involve him in an unnecessary journey between hospitals, but they are somewhat mortifying to the keen practitioner who prides himself on his professional skill. The patients and their relatives often attach undue importance to these failures because of the faulty attitude of the general public towards mental disease and the sharp distinction which they draw between it and physical disease.

The mistake of removing a person to the observation ward on totally inadequate grounds is not commonly made. Foreigners with little or no knowledge of English are sometimes the victims. I remember particularly a voluble, excitable harbour official from Dunkirk whose behaviour following upon the stress of the evacuation caused unnecessary alarm to harassed refugee reception centre officials accustomed to British phlegm and unfamiliar with the more mercurial temperament of our Latin neighbours. Mere eccentricity or even delusional beliefs in the absence of definite antisocial trends are no grounds for interference with the liberty of the subject. One of my patients was a woman with queer hypochondriacal and religious ideas; but the former were derived from old country superstitions, and the latter were shared by other members of the exotic sect to which she belonged, so there was no justification for regarding them as evidence of insanity.

Delinquents, both children and adults of low intelligence, are sometimes sent for observation. No harm is done thereby, since such people present psychiatric and psychological problems, but they are usually better dealt with in the out-patient clinics which exist for the purpose in most large towns.

The patients for whom Section 20 of the Lunacy Act of 1890 is intended primarily are those whom it is fairly urgently necessary to put under control and restraint. In delirious states especially this urgency is usually much reduced by the administration of 2 drachms of paraldehyde or of a similar drug. The question of suicidal risk in depressed patients is the most difficult one facing the physician in this respect. Co-operative patients who can be dealt with in a more leisurely manner may be brought under treatment by other means. Subjects of functional psychoses can be seen in psychiatric out-patient clinics, and from there, if necessary, arrangements can be made for them to enter mental hospitals as voluntary patients. Cases of suspected tumour and other organic neurological disorders can be sent to general or neurological hospitals for diagnosis and treatment.

I am indebted to Dr. O. W. Roberts, medical superintendent of St. Francis Hospital, and to Dr. Allen Daley, medical officer of health to the L.C.C., for permission to publish this paper.

LEPROSY IN THE COLONIAL EMPIRE

Lord Moyne, formerly Secretary of State for the Colonies, presided over the annual meeting of the British Empire Leprosy Relief Association. Sir William Peel, chairman of the executive committee, in reviewing the work of leprosy control and cure in the Empire, so far as it can be made under war conditions, mentioned the appointment by the Association in 1940 of three doctors to Nigeria, a step which had proved most beneficial to the leper colonies at which they were stationed. The work in this territory was gradually extending, but the estimate of the number of lepers remained very high, though this might be due to a growing readiness of patients to come forward rather than to an actual increase in the number of cases. From the colonies now in enemy hands reports had come of inspiring devotion to duty. Sir William mentioned the leper settlement at Sungei Buloh in the Federated Malay States, perhaps one of the finest settlements of its kind in the world, where its head, Dr. G. A. Ryrie, had remained at his post during the occupation of the colony by the Japanese, and had been requested by the Japanese to continue his work. He added that the Association had offered financial help to this settlement, should it be needed, as soon as contact through the Red Cross or otherwise was made.

An address was given by Dr. H. G. Anderson, medical secretary of the Church Missionary Society, who said that in view of the wide publicity it had received it was rather sad to have to record that the diphtheria toxoid treatment of leprosy had not fulfilled the early claims made for it, though a negative result of this sort had its value. No praise could be too high for the biochemists who had explored the field of synthetic chemistry. By the yardstick of history their work was still young, but the pace was quickening, and their triumphs were only the first indications of great possibilities. One problem facing the association in the future was that of still further aid to and liaison with the laboratory. He thought the first step should be an enlargement of the association's clinical staff, for, after all, it was the clinician who was the senior partner in the association between medicine and the biochemists. It would be wise, after the succession of frontal advances in their work, to consider seriously the more adequate consolidation of the bases created over-seas. As a first move he suggested the doubling of the staff of qualified doctors. With such an addition the survey and clinical laboratory work would automatically be able to take their vital share in the attack on leprosy.

ANAEMIA IN X-RAY WORKERS

A number of workers in *x*-ray departments in E.M.S. hospitals have been taken off work because they were considered to be suffering from minor degrees of anaemia due to the effects of *x* rays. Such action, states the Director-General, E.M.S., in a letter to Regional Hospital Officers and Sector Hospital Officers, is unnecessary, as the anaemia from which these persons may be suffering is almost certainly not due to the specific action of *x* rays. In order to allay any uneasiness and to guide hospitals in the treatment of such cases, it is asked that the information in the following note on blood examinations in *x*-ray workers be passed on to all E.M.S. hospitals with *x*-ray departments.

Blood Examinations

Periodic blood examinations of *x*-ray workers have been carried out in many institutions over a long period of years. Many such records are available. In none of these institutions has a single case of aplastic anaemia occurred, and there appears to be no record in the literature of aplastic anaemia developing in any *x*-ray worker who was not also in contact with radium.

A few cases of ordinary secondary anaemia are found from time to time, and these appear to result from the conditions of employment rather than from any specific action of the rays. Very rare examples have been met with in which the white cell count has been seriously reduced, but recovery has taken place after a short absence from work. One interesting and apparently extremely rare example has been observed at King's College Hospital of a girl who, on return to work, developed a severe leucopenia for the second time and was advised to find some other occupation.

It seems generally agreed that periodic blood examinations—at intervals of 6 to 12 months—are advisable as a means of detecting haemoglobin and red cell deficiencies in persons working under unfavourable surroundings, of discovering the very exceptional *x*-ray worker who may develop serious white cell deficiency, and as a reassurance to radiographers in general. It is also a reasonable procedure to make a blood examination of all candidates for employment in an *x*-ray department before they start work. Minor degrees of anaemia need not be treated more seriously among radiographers than similar conditions in other occupations. Minor degrees of leucopenia should suggest a further examination at a short interval—e.g., two weeks—and if confirmed and progressive should entail removal from work until the blood state is re-established and the count found to remain constant.

The term "*x*-ray anaemia" has no particular meaning and should be avoided.

Eleven distinguished medical men, representing the home country, the Dominions, and the United States, have been elected to the Honorary Fellowship of the Royal Society of Medicine at a special meeting. The two from the home country were Lord Horder and Sir John Herbert Parsons, a former President of the Society. The two from Canada were Prof. W. E. Gallie, Dean of the Medical Faculty of the University of Toronto, and Prof. Jonathan Meakins, Director of the Department of Medicine at McGill. The two from Australia were Sir Charles Blackburn, consulting physician, Royal Prince Alfred Hospital, Sydney, and Sir Hugh Devine, Lecturer in Surgery at the University of Melbourne. New Zealand and South Africa each had one representative—namely, Sir Henry Lindo Ferguson, Professor of Ophthalmology and Dean of the Medical Faculty, Otago University, and Dr. A. W. Falconer, Professor of Medicine at the University of Capetown. The three medical men in the U.S.A. were Dr. Hugh Cabot, consulting surgeon at the Mayo Clinic, Dr. David Cheever, Associate Professor of Surgical Anatomy at Harvard (who had charge of the Harvard Surgical Unit which was sent to the Western Front in 1915-16), and Dr. W. T. Longcope, physician-in-chief, Johns Hopkins Hospital, Baltimore.

Correspondence

The Teaching of Anatomy

SIR,—The correspondence which followed our letter, published in your *Journal* on Feb. 7, 1942, on the teaching of anatomy, shows a substantial measure of support for our opinion that an anatomical curriculum of greater educational value could be provided if there were a reduction of descriptive detail in the general course.

Time is needed in the curriculum for a broad education in structural organization with its functional implications, and the subject-matter should be selected from a wide field. A knowledge of the requisite descriptive detail should be built up on this basis. For example, it is of far greater value to the student that he should learn the plan of construction of nerve plexuses through an understanding of the nature of that plan rather than by memorization of a system of apparently arbitrary interconnexions. There should be a sound knowledge of the differentiation and growth of tissues, and the study of histological detail should be concurrent with that of gross structure.

We agree with those correspondents who have drawn attention to the extensive changes that have taken place in the curriculum during the twenty years that have elapsed since Prof. Berry's contribution to your *Journal* (Jan. 15, 1921), to which reference was made in your leading article of March 21, 1942. These changes, which have been already introduced in the anatomy departments of many medical schools, have been noteworthy for the increasing emphasis which is laid on the study of the living subject and for the variety of methods employed. Again, there has been more pruning of minutiae than is realized by some commentators, who depend on their own recollections of education in the past, or on a consideration of the needs of their own particular specialization.

Further reduction of descriptive detail will concern some systems more than others, but it cannot be effected, as has occasionally been suggested, by the complete elimination of some region of the body from the course of dissection. From our experience as teachers we are convinced that attempts to learn from previously prepared dissections do not replace the advantages of personal dissection, and there is a loss rather than a gain of time in the attainment of a given standard. We agree, however, that for the purposes of the ordinary M.B. student certain parts of the body do not require to be dissected in great detail.

In your leading article you expressed the hope that effective action will follow without delay. We concur in this view. While there may, in the near future, be some redefinition of the scope and functions of the practitioner, with a consequent change in the requirements of the curricula in anatomy as well as in other subjects, we feel that the ventilation of opinions which has been privileged in your *Journal* will have served to assist in further action.—We are, etc.,

ARTHUR B. APPLETON.
J. D. BOYD.
W. E. LE GROS CLARK.
W. J. HAMILTON.
J. WHILLIS.

"Positive Health"

SIR,—The first object of medical service, says the Planning Commission, is to provide a system directed towards the achievement of positive health. The phrase is not defined. That achievement, clearly, must be by prevention. I thought of Surg. Capt. D. H. C. Given's letter (Dec. 27, 1941, p. 928) that 87% of the teeth of the Indian coolie labour recruits at the Singapore base were perfect, whereas the corresponding figure for our own naval ratings was only 2.75%. Something had prevented abnormal dentition, overcrowding, and decay of the Asiatics' teeth, something operative before the seventeenth week of their mothers' pregnancy. I thought, too, of a remark in a letter received from Dr. Scharff of Singapore: "The war had given us the long-wished-for opportunity of trying out the wholesale distribution of 'husked rice' to the natives of Malaya. In the areas studied this measure had halved our infant mortality (160 per mille dropped to 80!) largely because of its effect on the improvement of health in the mother." And it seemed to me that the "medical service directed towards the achievement of positive health" must be mainly preventive, and, moreover, mainly dietetic; and clearly, too, the mother's diet has, in many respects, settled the constitution of the individual as many years as he has lived, and more, before he presents himself to the ordinary practising doctor as a patient. Which brings us to this—that we must take thought how to advise the mothers and potential mothers about their food. What a task!

I tried to ascertain from the chief figures of the Planning Commission whether something of this sort was in their minds and was behind the words "positive health." They neither confirmed nor denied it. But surely nothing less will suffice. Dr. Innes Pearse of the Peckham Health Centre is more forthcoming in your issue of July 18 (p. 78). She takes the words to imply early recognition of disease and then change of environment: "Nothing but periodic overhaul can disclose the disorders of those unaware of their presence," and "it [the overhaul] must be accompanied by circumstances which enable the family . . . to move out of the environment that has created these disorders into one in which they live and function more fully—i.e., in health." She is speaking, doubtless, from her invaluable experience of the Peckham Centre; and as I understand that dietetics and, more than that, the proper growing of the vegetables constitute essential features of its work, there is no doubt that "environment" includes the source, quality, and choice of the food supply.

Dr. Pearse points to the knowledge of the man in the street that "hospitals and clinics, which have a 'corner' in scientific instruments, without which he presumes that the medical services cannot do justice to the nice demands of non-incapacitating disorder, will almost inevitably immobilize him should he go near them"; and advocates, not the periodical medical overhaul of individuals, which, even if it were accepted, would have a bad effect on the mind, but the periodical health overhaul of the family. This she has carried out with 2,000 families, it seems, in the great experiment at Peckham. Admirable, detailed, laborious work, giving attention to a multitude of points. And, of these, some few are paramount; from the long-term point of view one, food, not only its nature but its quality. The old rowing coach used to say: "At each stroke you must bethink you of 32 maxims; but if you carry out 3 of them the rest are automatic." So with nutrition. With the best wish for the continuance and spread of the pioneer work of Dr. Pearse, I feel that nutrition is the chief weapon in her and our crusade for "positive health"; and, moreover, is one which can be carried into fields not ripe for a system of "periodic overhaul."

To be more precise about the "quality" of food I would illustrate it by the article by Rowlands and Wilkinson on "The Vitamin B Content in the Crop" (*Biochem. J.*, No. 1, 1930). Having noticed that pigs on home-grown barley and wheat did better than on bought, they fed two groups of rats upon grass and clover seeds, manured respectively with dung and chemical manure. The upshot was that those on the former grew nearly twice as well as those on the latter. As a brilliant little book by Mrs. Grant says: "The question of fertile soil affects the housewife much more deeply than is at first realized" (*Feeding the Family in Wartime.* Foreword by Lord Woolton. Harraps).—I am, etc.,

LIONEL JAS. PICTON.

Holmes Chapel.

SIR,—I am glad to find the meaning of "positive health" questioned by Mr. A. R. Jordan (July 4, p. 22). Quoting from the aims set forth by the Medical Planning Commission in its draft interim report, he infers that the term stands for "health at or above the average." He errs; for its warm advocates on the Commission define it as high-grade physique. This corresponds exactly to the alternative definition Mr. Jordan mentioned and deplored at the close of his letter—namely, "exuberant health." A few members strongly objected to the adjective "positive." I am disappointed to find no response to his lead, as I fear that, if the term is retained, it will appear ludicrous to our successors.

When the aims of an issue so great as the physical salvation of a nation are stated, journalese should be avoided. Let us, at the opening of this great campaign for health, use a term whose meaning is readily grasped and so avoid speculation in the minds of readers. If we want ambitiously to stress fine physique for all, we may say in plain English "abundant health." But as such an ideal does not come within the range of practical politics, should we not be content with stating merely "health for all" as our aim? Our descendants will still be struggling to attain even that 100 years hence.

The majority of the nation lack health at present, and in many ways—major and minor. Let us consider a few hard facts. We may fairly assume that the Army which went to France in 1939 was composed of the best of our young manhood, yet no less than 87% of the recruits needed dental treatment and 12% of the total were found to require dentures. A large percentage of children suffer from tonsillitis and apparently require operation. So much for the commencement, while, at the other end of the alimentary canal, constipation and piles are the bane of hundreds of thousands. Varicose veins and foot troubles are very common. The truth is that millions of our population are afflicted with more than one of the foregoing minor ills. Among major maladies peptic ulcer is so common and affects men in the prime of life. Evidence on this also has been provided by the war, for of the sick evacuated from France 12% had peptic ulcer. In later life cancer causes what is often a cruel ending to the lives of some 70,000 a year of our population, and the total crippling and pain inflicted by rheumatism makes another hideous mountain of wreckage.

On reflection, it seems well to approach with circumspection and humility such a stupendous task as the replacement of widespread disease by universal health. When stating our aims, let us not be Utopians but explicit and realistic, as becomes men of scientific training.—I am, etc.,

Bristol A. WILFRID ADAMS.

Primary Medical Interests

SIR,—Your correspondence on "Positive Health," "Social Medicine," and "Health Centres" has become even more interesting than usual. I am not sure, however, that advocacy of a thorough-going State service is going to serve the real needs of positive health, which, I venture to think, is a spiritual, mental, and genetic problem once the elementary fundamental need of a good environment is satisfied. This is not the case to-day for a large section of our people. Granted that research is needed, this takes a long time to carry out. Meanwhile it is quite obvious that, without waiting, many steps to positive health and social advance can be taken. Our post-war framework must be one which gives people room to live in, not only in their houses and gardens but in the arrangement of their houses in relation to one another.

I have never understood why the family and the home is not of primary medical interest, and if it is political (I am not a member of the Socialist Medical Association) then we must all take an interest in politics, though not necessarily party politics. The same may be said about the primary needs of good food for everyone, and the great question seems to me to be how the views of the medical profession are to achieve their proper authority without getting entangled in the hurly-burly of "party" which they must keep out of.—I am, etc.,

Letchworth, Herts. NORMAN MACFADYEN.

The Planning Commission's Report

SIR,—The issue of the Medical Planning Commission's interim report will, I hope, lead to a great deal of thought and adequate discussion, and it is with this object in view that I submit these observations dealing with matters that are not adequately dealt with in the report.

1. The report pays lip service to "positive health" but makes not the slightest suggestion in connexion with its attainment. I suggest that the primary health centres should be the outposts of this service, and that a room (possibly a waiting room or hall at other times) should be available for instructional films, lectures, gymnastic "keep fit" classes, etc., etc. Cookery should be taught or else the centre linked up with existing cookery schools, and doctors should urge their patients to attend these classes as a positive contribution to the prevention of lesions of the alimentary tract. Housewifery as a contribution to environmental hygiene must be taught and encouraged; squalor and dirt are detrimental to health. Dental services must play an important part, and a more conservative dentistry encouraged among the poor; there is no mention of dental services. Propaganda will be required. The report does not mention convalescent camps or camps for jaded workers as exist in Russia.

2. The present appalling state of "industrial surgery" is rather slurred over. At present, though compensation is payable to workers suffering from injuries or diseases resulting from their occupation, no provision is made for the treatment of such cases, and to a very large extent this is left to charitable institutions to carry out under the gratuitous direction of an honorary consulting staff and the immediate supervision of an inexperienced and newly qualified resident staff. The result of this is that much of the treatment is bad and disability prolonged. There has been a tendency recently to concentrate on fractures, but no mention is made of septic hands and their crippling effects, many of which could be avoided if the knowledge already available in textbooks were applied, nor of minor muscle injuries. Moreover, if a remuneration adequate to encourage surgeons to take up this work were paid, and the subject efficiently tackled, not only would this knowledge be applied but further knowledge would soon be gained. In this connexion some reform in the way in which doctors are subpoenaed to give evidence must be achieved. At present one's work is interrupted to go miles to hang about in the discomforts of a law court, and either not give evidence at all or else merely repeat what has already been written. The least that should be done is that the doctor should in these cases only be called by the direction of the judge using his discretion, and the power to issue a subpoena should not be vested in any solicitor. It is this side of the matter as well as the absence of remuneration that makes keen surgeons avoid dealing with these cases, as they dislike being mixed up in the sordid atmosphere of the courts. Other causes of industrial casualties such as hernias, etc., are for similar reasons too often left to the inexperienced. The need for reform in dealing with all these cases is urgent. The number of man-hours saved would be enormous if these industrial casualties were efficiently treated, knowledge pooled, and a statistical check kept on the period of disability in assessing the value of the methods employed.

3. Teaching hospitals cannot be regarded as the pinnacles of clinical medicine. For one thing the selection of staff is too haphazard. Social or athletic attainments may play too great a part in appointments. For one vacancy there may be many applicants, and even supposing, as we are not inclined to do, that the best candidate is always appointed, the others may be much above the average and seek posts elsewhere. When the next vacancy occurs the applicants that time may not be so good, but one has to be appointed as those previously rejected are no longer available. Further, there is not sufficient interchange, and, as a rule, the teaching hospital would sooner elect a mediocre candidate of its own school than bring in a brilliant candidate from another. A man may be elected quite rightly for his teaching ability rather than for his clinical ability, and it has been said that in the case of most teaching hospitals it would be easy to find as good or an even better staff from those who failed to get on to the staff. Nor are all teaching schools equal in any one respect. In actual practice many of the non-teaching hospitals do work of as high an order as the teaching hospitals, and again there are teaching hospitals which are more teaching in name than in practice, and only have occasional students. If there were to be a teaching hospital in each region it would mean breaking up and decentralizing the London medical school. This, of course, might be a good thing, but would carry with it, so far as the staff is concerned, the dangers of isolation and perhaps the loss of the stimulating effect of contacts with other teachers.

It has been argued in some quarters that to plan post-war medicine now is to divert our energies from the more urgent and immediate necessity of winning the war. On the other hand, one hears rumours of plans for socializing medicine, and one prominent member of Parliament in a broadcast speech boasted that capitalists would never regain the privileges they had lost during the war, while at the same time inviting them voluntarily to give up further privileges as an act of patriotism. I am not in the least concerned about the rights and wrongs of the various political ideals, but in medicine we have given up a great deal of our freedom during the war, voluntarily and patriotically, and while we may, and I hope will, be prepared to continue to do so for the public good, it would be, to my mind, contrary to all the ideas of fair play if this patriotic abnegation were exploited for party purposes, and it is for this reason that we must watch our liberties lest, while fighting the enemy, we are stabbed in the back by those who put party before all.—I am, etc.,

Hove. H. J. McCURRICH.

SIR,—There is an aspect of the interim report of the Medical Planning Commission which does not seem to have received the attention it deserves. It appears in several places, but is most clearly expressed in paragraph 60, which says:

> "It is recognized that it will be necessary to amend the existing law in order to permit medical practitioners to act as members of local authorities while participating in the medical services outlined in these proposals."

A general principle running through the whole constitutional structure of this country is here expressed in the law relating to local authorities. It is a law which not only prevents corruption but also prevents interference with the private lives and liberties of the subject, and it is surely unlikely that such a law can be altered as easily as the paragraph quoted would suggest. Also, there is no reason why an exception should be made for the medical profession, and claims for similar representation would soon be heard coming from other professions such as engineering, surveying, and even from the trades. It must equally well be realized that if the law cannot be altered there can be no medical representation.

The point appears again in paragraph 58 by including in the Regional Councils "an adequate representation of the medical profession." If the Regional Councils are to constitute a new series of bodies independent of local authorities, a series of fresh laws would have to be enacted to cover them. Again, it is unlikely that Parliament would create a new law transgressing a principle almost as fundamental as that of the Habeas Corpus Act in protecting the liberties for which we are fighting by preventing the setting up of a dictatorship.

The position should be made clear by an authoritative statement from persons with high legal and political qualifications before any further castles are built upon a foundation of political sand. If some such statement could be made as that "there could be no medical representation in control of a State Medical Service that included the whole or a substantial proportion of the profession," then medical opinion might be much more unanimous on many controversial issues mentioned in the interim report. My own opinion, for what it is worth, is that a Regional Council containing interested medical representation would soon lose all power and become advisory in character.—I am, etc.,

London, S E 3. J. E. STOKES.

Treatment of Haemophilia

SIR,—The paper by Messrs. C. L. Endicott, J. H. Mitchell, and G. Qvist (July 11, p. 34) shows so great an unfamiliarity with the modern treatment of haemophilia that we hope that it does not represent the views of the average dental surgeon. Calcium and citrous fruits certainly have no part in that treatment, but it is quite wrong to advise the dental practitioner to "direct his efforts at controlling haemorrhage to local application of demonstrably effective agents rather than to speed up the coagulation processes by systemic medication." The value of fresh blood transfusion in haemophilia has been known ever since blood transfusion became popular, and more recently the value of plasma and derivatives thereof has become appreciated. Johnson's[1] results with lyophile plasma are particularly striking. When a haemophiliac needs dental treatment—and many of them do—he should be admitted to a hospital under a medical man who understands the disease. It is essential not to underestimate the threat of haemophilia before the operation or to overestimate it afterwards. Provided the patient has good veins for transfusion he should not die from a bleeding tooth socket. In the case reported the bleeding was a slow capillary ooze. Experience suggests that replacement of the blood lost would not have necessitated transfusion more often than every other day. Yet because of excessive concern over the local lesion, a relatively harmless external bleeding was converted into a fatal internal bleeding for the anatomical reasons which the authors have so clearly demonstrated.

Local treatment was discussed in detail by one of us in 1935.[2] It was pointed out that "closing the skin over bleeding-points which cannot be controlled is bound to lead to an extensive haematoma." Nothing but harm can come from over-zealous local treatment. A dressing soaked in Russell's viper venom combined with firm pressure applied for 5 minutes will usually stop bleeding for 2 to 24 hours. In our last two cases Parfentjev's[3] thrombin was even more successful. The intervals between bleeding become gradually longer till the haemorrhage ceases. Those familiar with haemophilia know only too well asphyxia produced by haemorrhage into the floor of the mouth, and infiltration into the planes of the neck is one of the most dreaded complications. To sew the gum over a bleeding socket is to invite this complication. It is our hope that the facts so clearly presented in Endicott, Mitchell, and Qvist's paper will effectively discourage measures of this kind in the future.—We are, etc.,

R. G. MACFARLANE.
Oxford. L. J. WITTS.

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[2] *St. Bart's Hosp. Rep*, 1935, **68**, 228.
[3] *Amer. J. med. Sci.*, 1941, **202**, 578.

SIR,—One of the comments to the article in your issue of July 11 (p. 35) contains the following: "It is doubtful if in the present state of knowledge it is possible to take adequate pre-operative measures to control haemorrhage in haemophilia." I wish to make a direct challenge to this statement.

In 1936 I discovered a remedy for haemophilia which was announced to the profession in the *Lancet* of Nov. 14 in that year. The discovery was then in its first stages. Continued research has enabled me to produce a substance which will lower clotting-times in haemophiliacs and in normal persons, and will arrest bleeding, whether internal or external. In my book *Haemophilia and Egg-white Derivatives*, and in the *Lancet* paper referred to, I gave details of over 60 teeth extractions in haemophilia, and on page 3 of the book I pointed out the dangers of local interference. My work has been verified clinically by other doctors and by clotting-time determinations, and so recently as five weeks ago a pathologist used my anti-haemorrhage material on a patient who had a spreading haemorrhage into the neck and was unable to swallow solids. The pathologist wrote: "When I gave him 2 c.cm. of your preparation intravenously yesterday I was astonished at his improvement; to-day he got up and was able to eat."

In my opinion, teeth extraction in haemophilia is a simple and safe operation if my material is used. It can be given prophylactically as well as against actual attacks.—I am, etc.,

Sheffield W. A. TIMPERLEY.

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Narco-analysis in Treatment of War Neuroses

SIR,—I was very interested in Major J. F. Wilde's article (July 4, p. 4) describing his results from the use of this method in 50 cases. During the past 15 months I have had experience of the treatment of 200 such cases and cannot share his enthusiasm.

I have always been impressed by the fact that nearly always no further information was obtained by using the drug than was already available from ordinary conversation, provided one departed from the more formal type of interview and met the patient half way. If, after listening to the patient's description of his symptoms and excluding organic disease by every possible means, the doctor explains that he is not really a sick man but an unhappy one suffering from some thwarted desires, which the doctor sympathizes with and would like to help with if he can regard the doctor as his friend, the patient will almost always respond with an emotional reaction, usually accompanied by tears and a confession of the truth of this statement. From this moment the flood gates are open and by simple questioning most of what one wants to know can be ascertained, not only about his present difficulties but also his more remote worries and private affairs, and this state of "rapport" once established will persist throughout subsequent interviews.

This latter fact is important as the doctor is not merely seeking information but trying to effect a cure, and for this purpose a satisfactory transference is necessary, a factor I have often found lacking after narco-analysis, as the patient tends to return to his former attitude, and when this is accompanied by the usual mild degree of amnesia for the period of anaesthetization he may minimize the significance of the statements he has made and would like to deny them. For example, I had a patient who admitted inverse sex feelings in the early part of his life, and from my questioning I had little doubt that his present depression was associated with a persistence of these feelings, but he maintained that he had "put all that away." Under the influence of pentothal the correctness of the diagnosis was confirmed, but when seen the next day he scoffed at the idea and was sure that it was only the drug which "made him talk such rubbish." A confession extorted by force can be denied later by the patient if it suits his convenience, and, more important, if his "super-ego" still remains as it was.

In a large proportion of cases, however, there will still remain unconscious factors which cannot be elicited by the simple establishment of "rapport," and it is here that hypno-analysis is the ideal short cut and a real advance on the more time-consuming methods of orthodox psycho-analysis. In this matter it is astonishing how relatively easy it is to induce hypnosis in war neurotics as compared with their peacetime counterparts. In cases where this has failed I have not found any assistance from the use of pentothal. From my experience I would maintain that the latter never reveals deeply repressed material nor unmasks a true amnesia, but only a pseudo-amnesia. By that I mean that the patient really has access to the apparently forgotten material but does not wish to reproduce it, either for his own or others' inspection, because he is ashamed or frightened of it or realizes it possesses a certain value as a means to an end.

As an illustration of this point I would like to quote an example of a type of case in which I think pentothal is definitely a help—that is, an anxiety state of extreme degree in which the patient is too agitated to be able to settle to listen to an explanation of his illness. The man in question was showing extreme terror, unable to sit still during interview, and when it was suggested that his experiences at Dunkirk were a probable factor in causing his illness he said that he did not remember what happened and that, therefore, it was no use discussing it. As he was unapproachable by any other means he was given an injection of pentothal and a full account of his experiences obtained. When seen the next day he admitted that he had really been quite aware of the facts all the time but was trying hard to forget them and "did not want anyone to drag them up again." There was only slight improvement of his condition, but he was now agreeable to frequent talks about his troubles and subsequently improved enough to be fit for duty. Here the amnesia was obviously only apparent, and the process of repression a conscious rather than an unconscious effort.

To conclude, I should like to maintain that narco-analysis should only be rarely resorted to as it is a confession that more simple methods have failed; secondly, that it is not a reliable means of effecting a transference; and, finally, that it is not a means of gaining access to deeply repressed material.—I am, etc.,

J. L. Clegg.

Consulting Psychiatrist to an E M S Hospital.

Diphtheria Prophylaxis

Sir,—In your issue of June 13 (p. 735) there appears a rather misleading statement to the effect that medical practitioners are entitled to receive A.P.T. free of cost from the local authority. It ought to be made clear that Section 177 of the Public Health Act, 1936, limits the facility to "the poorer inhabitants." These are already being treated under local authority schemes (either by general practitioners or medical officers) with A.P.T. supplied through the E.M.S. laboratories, and the obvious measure for practitioners dissatisfied with the private supply of A.P.T. is to refer patients to the local authority for treatment. Surely your statement was not intended to mean that private practitioners could obtain free A.P.T. from the local authority and charge their patients fees for administering it.—I am, etc.,

Health Department, West Bridgford. W. B. Watson.

*** We understand that in view of the vital necessity for countering the increased risk of diphtheria arising from war conditions, the Ministry of Health has arranged for the free issue to local authorities of diphtheria prophylactic, and it is urging them to persuade as many parents as possible to have their children immunized. The Ministry does not contemplate that this campaign can be restricted to any particular class of parents or children.—Ed., *B.M.J.*

Standardized Wassermann Reactions

Sir,—The discussion in your columns of this matter will advertise again the canon that the blood serum test is an integral factor in the diagnosis and treatment of syphilis; and there must be consequent insistence on the test being subject to the least possible error.

The arbiter of the worth of any test for the live patient will always be the experienced clinician, and he has long and well learnt that whenever the result of the serum test must weigh heaviest in the evidence, at the least it should be repeated. To lessen the chance of error, standardization of material reagent and of human method is an obvious step. The Medical Research Council's publications have gone far towards standardization of method, and all those who have the care of syphilis patients are indebted to Col. L. W. Harrison for the valuable service constituted in the supply by the Ministry of Health's special laboratory of tested (which surely is to say "standardized") reagents.

Dr. Orpwood Price (July 11, p. 54) tells us that three things used in the performance of the Wassermann test can be standardized—the technique, the antigen, the saline—and that the complement, the amboceptor, and the red blood cells cannot be so dealt with. In view of the supply of tested complement and amboceptor from the Ministry's laboratory, Dr. Orpwood Price's meaning is not perhaps fully apparent. However, I pose the question, Why bother any more with Wassermann tests for blood serum which require the dubbed refractory three, carrying many more chances of error than can enter into a precipitin blood serum test for syphilis, such as the Kahn or Laughlen, which require only the dubbed amenable three? Moreover, though the Wassermann test still enjoys a tacit "approval" in "approved" laboratories, many years' clinical experience has not yet detected any superior reliability or usefulness for it over the Kahn as a blood serum test for syphilis; on the contrary, in some stages of syphilis it is notably inferior. And if on top of this it is more subject—as it is—to error in any hands in any laboratory, again, what and why the inertia that underpins its "approval" as the blood serum test?

In dealing with syphilis as a public measure I put forward the axiom that the best for the patient and the public is for the medical officer in charge of the patients to have had such first-hand experience of the performance of all serum and other laboratory tests as to be able to do them again for himself if need be; that his pathologist or his, the clinician's, laboratory technician (why not?) should be at his elbow; an active though subordinate colleague in the medical care of the patient. This is hardly possible in the large clinic with the large laboratory, where the doctor and his pathologist may easily be kept too far apart, even though they be under the same roof. I maintain that because laboratory tests are integral, indispensable factors in diagnosis and treatment, laboratory and treatment rooms should be but different near-by rooms in one house, with one head of the house, who must be the medical officer actively and primarily engaged in, and responsible for, all that pertains to the proper diagnosis and treatment of the patients. He, not the staff of the treatment centre, must be the doctor. Therefore, in the major ruling interest—the patients'—"plans for the future" should provide for splitting all large V.D. clinics and large V.D. laboratories into smaller treatment centres, and for each centre of clinic-and-laboratory to be under one director.—I am, etc.,

H. M. HANSCHELL,
Director, V.D. Department,
Albert Dock Hospital.

SIR,—The point at issue is that while large numbers of laboratories carry out Wassermann tests, few can be trusted to give really reliable results. This casts no aspersion on the skill of the pathologists concerned, since it is obvious that it is only in those laboratories which carry out large numbers of tests and in which there is a close liaison with the clinical side that results can be properly checked; without such a check errors may creep in only too easily. If the Ministry of Health would publish a list of those laboratories which have been approved under the V.D. scheme, practitioners would know where to send specimens of blood in the hope of getting results on which reliance could be placed.—I am, etc.,

London, S W 1 T. E. OSMOND.

Tetanus after Sulphonamide Treatment of Cavities

SIR,—Dr. E. C. Atkinson (July 4, p. 24) has certainly proved the fallacy of the second part of the statement, "Sterilization of sulphonamide crystals does no harm but is unnecessary." I have found, however, that, although sterilization is necessary, unless care is taken in carrying it out harm is done to the crystals, and I think that the recommendation suggested of sterilizing at 160° C. for twenty minutes will prove harmful to the drug. If sulphapyridine is heated above 150° C. for twenty minutes it shows some darkening in colour. Sulphathiazole will certainly form a purple tint at this temperature, as also will sulphanilamide. This change in colour probably renders the powder toxic, and it should not be used.

I believe Dr. Atkinson is right in his statement that the powder is constantly used in hospitals without being sterilized, and I would suggest that the reason for this is that the makers have not supplied adequate information as to how this sterilization should be carried out. I have used the following technique of sterilization for the past eighteen months and have found it satisfactory; I give it in some detail in the hope that it may prove useful to others using the drug.

1. Place 15 grammes of the powder in a 500-c.cm. conical glass beaker which has been previously boiled. Plug the mouth of the beaker loosely with sterile cotton-wool.
2. Boil a glass jar in which it is intended to store the powder. (This jar may then be labelled with an ordinary gum label after the jar has been boiled and before it is placed in the autoclave. The label will remain on the jar during the autoclaving, and is quite readable, if a little discoloured, when the jar is taken out) A glass rod and a few small bowls should also be boiled.
3. All the above are placed on a large tray in the autoclave.
4. The door of the autoclave is made fast and the vacuum pump turned on until a negative pressure of 16 lb. to sq. in. registers.
5. Shut off the vacuum pump and turn on the steam. Raise steam to a pressure of 16 lb to sq. in (16 lb. pressure to sq. in.=260° F. or 126° C. approximately). This pressure of steam is maintained for 20 minutes.
6. Turn off the steam and empty the autoclave of steam The vacuum pump is turned on until a negative pressure of 16 lb. to sq. in. is registered. (The object of producing a vacuum the second time is to make sure the powder comes out dry.)
7. Shut off the vacuum pump, open the autoclave, and take out the tray. (The person taking out the tray should wear sterile gloves, gown, and mask.)
8. Place the tray on a sterile table The powder in the beaker may be slightly caked, and may need to be pounded a little with a glass rod. It will then easily be transferred into the glass jar (which has been in the autoclave already labelled). The glass stopper is placed in the jar.
9. The jar is stored in a sterile theatre drum ready for use.

If the powder before being placed in the beaker is not moistened its sterilization may not be quite so effective. However, the powder if moistened before being placed in the beaker (as recommended by some) will crystallize to a greater or less extent according to the degree of moisture achieved. On taking it out of the autoclave it will be found to have lost its nice powdery appearance. This crystallization does not alter its therapeutic value, although it may render its absorption from a wound less rapid.—I am, etc.,

Dublin. J. C. CHERRY.

Treatment of Scabies

SIR,—Advance in the treatment and control of scabies has been delayed by the element of mystery and uncertainty which has followed it down the ages. Prof. R. M. Gordon and Dr. D. R. Seaton (June 6, p. 685) have introduced a new substance which may prove to be a definite therapeutic advance. Whereas the limitations of their animal experiments were appreciated by the authors, certain of their conclusions support traditional beliefs which are now being questioned by clinical observation. The infectivity of clothing and blankets depends on the ability of the patient to infect them and is a variable factor. With the average case to-day the parasitic population is not large, and the infectivity of fomites is correspondingly low. Investigations in the last war seem to have been carried out with cases having a great number of active and potentially infective mites, and reports often placed blankets among the chief sources of infection. In cases seen over the past few months I have not yet been able to find or to expect the presence of as many mites in a case of scabies as were recovered by the above authors from the small piece of silk tied overnight to an infected rat's tail.

A hot bath, often with soaking and scrubbing of the body, is accepted as the usual preliminary to treatment. The traditional reason given is that the burrows are thereby opened. After a study of the microscopical appearances of active burrows, I have found that before any treatment these burrows are either already open at their entrances or have been scratched further open by the patient, or have had their roofs penetrated by emerging nymphs. The active ovigerous female usually lies in cuticle of normal appearance one or more millimetres ahead of the atrophic and friable portion of the burrow which would be removed by scrubbing. The mites are found to be killed by benzyl benzoate with the same speed and completeness whether a bath is given beforehand or not. I do not doubt that bathing assists the treatment of severe infections, crusted scabies, and rat scabies. The ova which may be recovered after benzyl benzoate therapy appear intact under the microscope, but when an attempt is made to hatch them by incubation they shrivel up and collapse, whereas ova removed before treatment develop normally. I have not found a second course of treatment to be necessary in any of the cases so far treated.

It will prove of great value to an Army in the field if further research reveals to what extent bathing and full disinfestation can safely be omitted from the treatment of scabies. Ablution and disinfestation facilities may thus be freed to deal with the more urgent problem of control of the louse. Such an advance can, however, only be made if the conclusions drawn from experience of the last war are re-examined by clinical observation and experiment, and are retained only so far as they are found to apply to the present day.—I am, etc.,

H. F. LUNN,
Captain, R A M C.

Operations and Workmen's Compensation

SIR,—The letter of Dr. Hermann Levy (July 18, p. 82) raises matters of great importance in regard to Workmen's Compensation; but there are others.

No one with any knowledge of the facts would deny the correctness of the observations made by Dr. W. A. Brend and quoted in Dr. Levy's letter. It would appear desirable that all cases coming within the Workmen's Compensation Act should be referred to a neutral body for decision. I suggest that the Ministry of Pensions is admirably suited to perform this work, as it has a highly trained medical personnel whose most important function is that of assessment of disability and disablement.—I am, etc.,

Tunbridge Wells. W. O. MOORE EDE.

Use of the Term "Orthopaedic"

SIR,—It would be a help to those wishing to arrive at an unprejudiced opinion on this matter if Brigadier Max Page would supplement his letter (July 18, p. 79) by giving the reasons for recanting the views expressed in his presidential address to the Section of Orthopaedics of the Royal Society of Medicine[1] in 1935, in which he stated: "The term

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[1] Page, C. Max, *Proc. roy. Soc. Med.*, 1935, **29**, 63.

'orthopaedic surgeon' is now so well established in this country that the title is not likely to be displaced, although the later development of our specialty has marred its aptness. . . . The limited application of 'the term, which may be translated 'the correction of deformities in children,' was certainly lost when early in the nineteenth century the orthopaedic surgeon commenced to treat the adult, and the field of the specialty has widened ever since. Indeed, since the last war orthopaedics has so expanded that it may now properly be considered as that section of general surgery which deals with any disorder of the locomotor apparatus."

The aspiration of most orthopaedic surgeons would perhaps be best expressed by the exhortation of Sir Robert Jones[2] in a presidential address to the British Orthopaedic Association: "We should be known not by the label which is attached to us, which in many ways is unfortunate, but by the excellence of our work."—I am, etc.,

H. JACKSON BURROWS.

Maternity Service of the Future

SIR,—We submit below a memorandum on the improvement of the maternity services of the country, based on the statement made by Dr. Everett on our behalf at the meeting of the Section of Obstetrics of the Royal Society of Medicine on May 15.

The trend of what may be termed "official opinion" seems to be towards establishing a comprehensive institutional scheme for maternity service for the whole country, based on the rapid rise in institutional confinements during recent years. We recognize that in industrial and crowded urban districts institutional planning for the great majority is inevitable; but we wish to emphasize that over the greater part of the country—suburban, semi-rural, and rural—the ideal scheme will be based on the principle that many confinements will still take place in the home, partly because of the insufficiency of maternity beds, especially for private cases.

Such a scheme must be regional, and will entail the following: (A) A first line or periphery consisting of general practitioners and midwives. (B) Local hospitals with local consultants. (C) Central organizing consultants for each region.

As regards (A), the first line, we consider the general practitioner is essential for two reasons: (1) The personal relationship between doctor and patient. The majority of women planning for confinement ask that they shall be attended by their own doctor. Their confidence in the family doctor, with the doctor's knowledge of the patient's physical and mental make-up, is of inestimable value in the conduct of a maternity case. (2) The number of medical officers required to staff an efficient maternity service would render the exclusion of the general practitioner a practical impossibility. Not every practitioner wishes, or is necessarily competent, to practise midwifery. It is suggested that a list would be drawn up in each area, inclusion in which would imply willingness to serve, special training and/or experience, and an undertaking to attend postgraduate courses. The midwives would be highly trained responsible nurses, also with opportunity for refresher training. All patients treated at home must give the name of one of the doctors on the list for S O S service.

(B) The local hospitals and consultants would be established in suitable towns and country districts of the region. Adequate accommodation must be provided as regards number of beds (including private wards), equipment, and ancillary services (*x*-ray facilities, pathological laboratories, etc.). They would be available for all cases of difficulty or abnormality, as well as for mothers who prefer to be admitted for confinement. Central hospitals are unnecessary and disadvantageous because of the difficulties and dangers of transporting emergency cases over long distances, and the disinclination of patients to be removed to hospitals outside their own districts. The local consultants should form a most important part of the service, and their qualifications and selection should be very carefully considered. They should have had at least ten years' postgraduate experience of obstetrical practice. They should have had some experience of general practice, which would give understanding of the outlook and difficulties of the general practitioner, and they should preferably hold some higher degree in obstetrics. They should be chosen by the central consultant of the region, in consultation with the local practitioners of the service, in order to retain the confidence of the latter, without which their work would be gravely handicapped.

Ante-natal Care.—Ideally this should be the responsibility of the doctor who is to deliver the case, and it is unfortunate and manifestly wrong that at present much of this important work is in the hands of whole-time clinic medical officers, who never deliver a case. Doctors on the practising list should do their own ante-natal work. Midwives' patients should attend clinics under the local consultant, who would report and consult with the patient's doctor in every case of abnormality.

(C) The central consultant of the region should be an obstetric specialist of repute, and should be wholly responsible for the organization of the service in the area under his control. He should always be mobile and readily available to visit local hospitals in consultation or emergency.

We hope that when a comprehensive scheme is adopted for the maternity services of the country the general practitioner's point of view will be considered on the lines of the scheme here suggested.—We are, etc.,

G. WINN EVERETT.
EDWARD A. WILSON.
R. C. B. RAMSAY.
STEPHEN A. SCORER.

Bushey Heath, Herts.

Declining Population

SIR,—In one sentence Dr. Margaret Hadley Jackson (July 11, p. 55) vigorously denies that contraception is a cause of the decline in the birth rate, and in the very next she frankly admits that many persons are shying away from parenthood for a variety of reasons. And how? By the use of quinine and mercury and other noxious ingredients with or without or inside rubber products, which injure, often-times permanently, one of the most delicate and selective cell sites in the body—namely, the arbor vitae of the cervix. Is it to be wondered at that those who do routine gynaecological O.P.s or conduct sterility clinics in large teaching centres have found during the last ten years that more than 50% of patients with primary sterility have used contraceptive means or gadgets supplied to them by so-called welfare clinics; and that many a bride and young mother has a "strawberry" erosion indicative of endocervicitis, which it will take months of anxiety and care to treat, and even then with no security of prognosis? Nine years ago Séguy and Vimeux in Paris demonstrated that the penetrability of the cervical mucus plug, which is normally ever there, is in inverse ratio to the number of leucocytes present; in other words, the clearer and more transparent the glairy fluid, the more certain the chances of conception. It is this mucus plug, with the cells and glands that make it, that chemical contraceptives injure and alter.

In the early 'thirties Germany and Italy, closely followed by France, forbade by law the sale of contraceptives except in attested cases, and simultaneously they closed down the vested interests concerned, not merely for reasons of cannon fodder, nor for arguments of *Lebensraum,* but because their Registrars-General, like our own, viewed with dismay the fast-falling birth rates, well recognizing, as the Russians since have, that unchecked and indiscriminate birth control spelled not only race suicide but economic ruin; for had not Darwin and, later, Oswald Spengler testified that without numbers there can be no selection and no racial advance, and that decreasing fertility and increasing eugenism tended not only to the non-production of genius but also to the non-production of pioneers and leaders of men?

No one finds fault with spaced births after the first child. It is the necessity for the first child at an early date and at an early parental age that is imperative. Of course it is impossible to suppress birth control; but surely its principles should not be relaxed to-day, or its methods be injurious and/or unbridled, even before, as well as just after, matrimony. What is still more urgently necessary is, that the State should remove those obstacles and deterrents to parenthood that stifle instinct—the fear of poverty, the fear of physical breakdown, the fear of social decadence through lack of good educational facilities, the fear of failure or stoppage in a career. Only remission of taxation, housing relief, family endowment, and physical assistance schemes can lessen the risk of the childless, or one-child, family to itself and the State.

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[2] Jones, Sir Robert. *J. Bone Jt. Surg.,* 1926, 8, 247.

There seems little doubt that Dr. Jackson is correct in assuming that the condition of subfertility is on the increase and to-day more frequently encountered. Among the multiple factors responsible I suggest that the present generation of young people are paying the price of ante-natal and post-natal avitaminosis in their parents during and after the last war; for there can be little question that the prevention of sterility begins *in utero* and continues through the periods of the first and second dentitions to the all-important time of puberty, when the greatest strain falls upon development and most particularly upon the generative system of both sexes, a time when every school doctor and home doctor should ever bear in mind that most wise axiom of Gowland Hopkins: "The vitamins are to the endocrines what the endocrines are to the economy."—I am, etc.,

London, W. V. B. GREEN-ARMYTAGE.

Treatment of Hypertension

SIR,—The leading article on hypertension (July 4, p. 15) will have interested a wide circle of readers, and none more than those who, like myself, have been using in recent years detoxication methods in the treatment of high blood pressure.

Now that it has been scientifically established that high blood pressure can be produced by a toxic agent which forms in the kidney when its blood supply is cut off, there will be less reason for us to draw upon our imagination when we try to explain good results. In future, when a marked fall in pressure occurs after a few days' or weeks' treatment, shall we not be justified in claiming that this has occurred as a result of nullifying the action of that toxic agent by some method of detoxication which has been employed? Further, when symptoms we associate with the progressive stages of Bright's disease gradually disappear as treatment continues (an experience I have had on many occasions when using the permanganate method of detoxication that was introduced by Nott in a paper in the *Journal* of Dec. 26, 1925) need we be so greatly surprised by the remarkable results achieved?

Since we are now told that when only one renal artery in the experimental animal is clamped changes take place in the minute anatomy which are indistinguishable from those seen in Bright's disease, and that these changes are also found in the undamaged kidney, does this not suggest that the permanganate method has the power at times of neutralizing this self-same toxic agent when it is circulating in the blood? If this is so, have we not a scientific explanation for the remarkable results which Nott reported in the paper referred to above? As I am one of many who have used his treatment regularly for the past 17 years with great success, I believe I shall be expressing their opinions as well as my own when I ask if the time has not come to accord a little credit to one who has added something of very great value to our therapeutic knowledge?—I am, etc.,

London, W.1. GILBERT ORME.

Nurses in Hospital

SIR,—Dr. S. L. B. Wilks writes (July 18, p. 84) that "the brutality of matrons (and sometimes of sisters) to their nurses is notorious" and "needs no investigation," and goes on to state that "the remedy lies with hospital boards and medical officers." I submit that his statements and the general tone of his letter are unsupported by well-known and widely recognized facts, and that they constitute an unjustifiable and gross attack upon many who are the responsible leaders of a great profession, and contain also a libel on hospital boards and their medical officers.

I suggest that the need for Dr. Wilks to make an investigation is very great, and that if he will be at some pains to extend his knowledge of relevant facts he will find that the one hospital he knows well has its equals all over the country, and that matrons throughout the land are loyally and ungrudgingly caring for the welfare and interests of their nurses and probationers.—I am, etc.,

Inverness. T. C. MACKENZIE, M.D.

Obituary

H. S. BIRKETT, C.B., M.D., LL.D.

Many medical men in this country have already heard with much regret that Brigadier-General Henry Stanley Birkett, the eminent Canadian laryngologist, died on July 19 at Montreal, where he occupied the chair of laryngology and otology in McGill University for 37 years and was dean of the medical faculty for eight years. At four annual meetings of the British Medical Association he held office as vice-president of his section: 1897, Montreal; 1906, Toronto; 1930, Winnipeg; and 1932, Centenary Meeting in London.

Born on July 17, 1864, at Hamilton, Ontario, the son of William Birkett, merchant, Birkett came to this country for his early education at Chester. He returned to Canada for medical study at McGill, graduating M.D., C.M., and winning the Holmes gold medal in 1886. His long service to the Montreal General Hospital began as house-surgeon, and he was appointed laryngologist in 1891. At McGill University he was a demonstrator of anatomy for seven years, and became professor of laryngology and otology in 1895 and emeritus professor in 1931. His tenure of the post of dean of the medical faculty was interrupted by the last war, during which he gave outstanding military service. He organized and commanded for 3½ years No. 3 Canadian General Hospital (McGill) for service with the B.E.F. in France. He was then made consultant in oto-laryngology at Boulogne, and in 1918-19 Assistant Director-General of the Canadian Medical Services over-seas with the rank of brigadier-general. In these posts he made many lasting friendships with British medical officers, both regular and temporary. He was created C.B., Military Division, in 1917, and received the Colonial Officers' Auxiliary Decoration.

Birkett's standing in his own specialty may be judged from the offices he held at one time or another: President of the American Laryngological Association, of the American Otological Society, and of the American Laryngological, Rhinological, and Otological Society; Honorary President of the Clinical Congress of Laryngology, held in London in 1919; Semon lecturer, University of London, 1922; honorary member of the Scottish Otological and Laryngological Society, of the American Academy of Ophthalmology and Oto-laryngology, and of the Italian Society of Laryngology. He was consulting laryngologist and otologist to the Royal Victoria Hospital, Montreal, a governor of the Montreal General Hospital, and past-president of the Montreal Medico-Chirurgical Society, of which he had been general secretary. McGill University conferred upon him its LL.D. degree *honoris causa* in 1921. He wrote many papers on diseases of the throat and nose, contributed to Osler's *System of Medicine* and to Jackson and Coates's large textbook, and published his Semon lecture on the transatlantic development of rhino-laryngology.

W. K. ANDERSON, M.D., F.R.F.P.S.G.

By the death of Dr. William Kirkpatrick Anderson, which took place on June 27, Glasgow has lost one of its physicians specially known for his work in psychological medicine. He received his medical education in Glasgow University, graduating M.B., Ch.B. in 1902 and M.D. in 1926. He became a Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow, in 1924. His professional training was continued a Dundee Royal Infirmary, and he then entered general medica practice in Glasgow, at the same time developing his inclinations towards psychological medicine. In 1914 he was appointed by the Corporation of Glasgow visiting physician and physician in psychological medicine to the Eastern District Hospital and to Stobhill Hospital. In 1923 he became lecturer in psychiatry in the Anderson College of Medicine, proving himself to be a popular teacher, gaining the confidence of those who appreciated his instruction. During and after the last war he had charge of the mental wards in Dykebar Military Hospital Renfrewshire. Dr. Anderson made frequent contributions to medical literature, some of which were: "Morphinomania" and "Gastric Infection secondary to Oral Sepsis and Systemic Disease," published in the *Practitioner*; and his chief work on

Malarial Psychoses and Neuroses, published in 1927, was generally accepted as a standard book of reference on the subject. He also published in the *Glasgow Medical Journal* a paper entitled "The Superior Mediastinum in its Clinical Aspects: with Special Reference to Signs of Aneurysm of the Transverse Aorta"—a record of 110 cases; and in conjunction with Drs. Horowitz and Palmer an account of a case of a fatal agranulocytosis after sulphapyridine therapy.

Dr. Anderson travelled frequently on the Continent, visiting German medical and psychological clinics in Dresden, Munich, Berlin, and Vienna, and some of the sanatoria in Switzerland. He was keenly interested in social work and was a generous contributor to various means of carrying on this activity. His literary interests were specially centred in biography, particularly that relating to American statesmen. His many professional friends will cherish happy remembrances of a man who had the gift of friendship, and one who maintained the highest traditions of his profession.

Dr. **GEORGE BECKETT BATTEN**, who died on July 9 at Dulwich, was one of the earliest workers in radiotherapy, for he began treatment of ringworm of the scalp by *x* rays in October, 1896. He was born in India, near Agra, on November 10, 1860, and was educated at Haileybury College, of which his grandfather had been the first Principal when the school was established under the aegis of the East India Company. He went up to Edinburgh University with a reputation for prowess in games, and having graduated M.B., C.M. in 1884, became house-surgeon at the Royal Infirmary; he proceeded M.D. in 1887. Entering a partnership in Dulwich he took a prominent part in local affairs and was one of the joint founders of the Peckham centre which, under the L.C.C., was known later as the Old Kent Road Clinic. Dr. Batten joined the B.M.A. 57 years ago, and had been chairman of the Norwood Division in 1914-15 and of the Camberwell Division 1920-3. During the last war he was surgeon in charge of the *x*-ray department of the Southwark Military Hospital, combining this work with that of honorary radiologist to the Children's Hospital, Sydenham. In 1918 he was president of the Roentgen Society, and in 1921 was one of the first to receive the D.M.R.E. of Cambridge. He was a past-president of the Electrotherapeutic Section of the Royal Society of Medicine, and one of the earliest Fellows of the Faculty of Radiologists. His daughter, Dr. Grace Batten, is a group radiologist in the L.C.C. medical service.

Dr. **GEORGE VIGERS WORTHINGTON**, who died suddenly at Llandrindod Wells on July 8, had a varied career before settling down to spa practice. The son of a doctor, he was born at Lowestoft on May 18, 1870, and from Marlborough College went up to Pembroke College, Cambridge, and thence to St. Bartholomew's Hospital, graduating M.A., M.B., B.Ch. in 1895. After serving as house-surgeon at Bart's he won the Brackenbury surgical scholarship, and then spent two years in India holding various appointments. During the South African War (in which he was awarded the Queen's medal and clasp) Dr. Worthington was second surgeon to the Princess Christian Hospital and later specialist plague M.O. for Cape Colony. In the last war he held a temporary commission in the R.A.M.C., as medical officer to the Red Cross and Auxiliary Military Hospitals at Llandrindod Wells and consulting medical officer to the Red Cross Hospital at Knighton. He was the author of several papers on spa treatment of arteriosclerosis and rheumatoid arthritis, and wrote a little book on the climate and waters of Llandrindod Wells. He joined the B.M.A. in 1897 and served on the Spa Practitioners' Group Committee from 1934 to the time of his death.

Dr. **RICHARD OGILVIE GIRDWOOD**, pathologist to the Southern Group of Hospitals, Liverpool, has died at the house of his mother in Aberdeen. He was born on June 16, 1896, and graduated M.B., Ch.B. of the University of Aberdeen in 1923, after which he served for a time as assistant in the pathological department of that university, then as assistant city pathologist and bacteriologist at the Bradford Municipal Laboratories, and as senior assistant pathologist to the Royal Sussex County Hospital, Brighton. Before taking up his appointment at Liverpool in 1937, Dr. Girdwood had worked on insulin at St. Thomas's Hospital and had published a number of papers on pathological subjects in the *Journal of Pathology and Bacteriology*. He joined the B.M.A. in 1924.

Alderman **JAMES HENRY CHESSYRE DALTON**, M.D., a veteran worker for the public health, died on July 13 at his home in Cambridge. He was born in Manchester on April 15, 1861, and from Marlborough College went up to Trinity College, Cambridge, in 1880. He was placed 12th Wrangler in the Mathematical Tripos of 1884 and went on to study medicine in London at St. Mary's Hospital, qualifying in 1889. After taking the M.D. degree and the D.P.H. in 1893 he returned to Cambridge to devote himself largely to problems allied to public health. He was elected a guardian in 1898 and a town councillor soon afterwards, and for many years served as chairman of the Public Health Committee. In 1903 he was Mayor of Cambridge and in the following year was appointed a justice of the peace. In 1907 he was elected to the County Council and became a county alderman in 1928. When the Education Act came into force he accepted chairmanship of the Borough Maternity and Child Welfare Committee. Throughout all his years of public service Dr. Dalton was indefatigable in his efforts to raise the health standards of both the county and the borough, and he worked in close touch with the officers concerned. As chairman of the Tuberculosis Committee his work was invaluable. Dr. Dalton joined the B.M.A. in 1891 and represented the Cambridge Division at the Annual Meeting in Belfast in 1909. One of his sons is Dr. C. H. C. Dalton of Ipswich.

Dr. **JAMES ERNEST SCANLAN** died at Middlesbrough on July 15 with tragic suddenness, aged 51. The only son of the late Dr. A. E. Scanlan of Middlesbrough, he was educated at Epsom College and at St. Mary's Hospital, and after qualification served from 1916 till 1918 as surgeon lieutenant R.N.V.R. on Atlantic Patrol. At the conclusion of the war he joined his father in practice and ultimately succeeded him. For twelve years (1919-30) Dr. Scanlan was assistant surgeon to the North Riding Infirmary, and only resigned when he found that the increasing calls of a large general practice made it impossible to devote the necessary time to his hospital duties. He was a keen Freemason, a Past-Master of the Ferrum Lodge and a Past-Principal of the Ferrum Royal Arch Chapter. Only two months ago he received the honour of P.P.G.H. He had been a member of the B.M.A. for many years. Dr. Scanlan is survived by his wife and two daughters. He will be greatly missed by a large circle of personal and professional friends.—G. H. L.

Universities and Colleges

UNIVERSITY OF LONDON

LONDON HOSPITAL MEDICAL COLLEGE

The following Entrance Scholarships have been awarded for 1942-3: Price Scholarship in Science (value £100)—K. L. Cleminson. Epsom Scholarship (free medical education)—D. R. Reid. Price University Scholarship (open to students of Oxford and Cambridge; value, £100)—J. T. Wright (Worcester College, Oxford). Open University scholarship: (*a*) £100—J. C. Sloper, Corpus Christi College, Cambridge; (*b*) £100—A. G. Beckett, Merton College, Oxford.

GUY'S HOSPITAL MEDICAL SCHOOL

The following awards have been made for 1942:

Entrance Scholarships in Arts.—Scholarship, value £100, C. J. Earl. Exhibitions, value £50, P. A. Shave and C. H. Neaves. War Memorial Scholarship in Science, value £200, E. L. W. Leiser. Entrance Scholarship in Science, value £100, J. D. Oriel.

ROYAL CANCER HOSPITAL (FREE)

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—L. S. Carstairs, R. C. M. Hadden, G. M. Ross, *D. W. Seth-Smith.

UNIVERSITY OF SHEFFIELD

At its last meeting the University Council received the resignation of Dr. M. S. Spink of his posts of assistant bacteriologist and demonstrator and temporary lecturer in bacteriology. The Council accepted the resignation with regret and accorded its thanks to Dr. Spink for his services to the university.

UNIVERSITY OF EDINBURGH

A graduation ceremony was held on July 15, when the following degrees and diplomas were conferred:

M.D.—[2]J. N. Hay, [2]W. K. Henderson, [4]Major D. M'Intosh, R.A.M.C., D.S.O., [4]Lieut. A. C. Mackenzie, I.M.S., [1]Major-Gen. J. A. Manifold, A.M.S., [14]Lieut. J. M'D. Simpson, R.A.M.C., [2]J. Thomson.

M.B., CH.B.—Grace B. Aitken, A. F. Alexander, Harriet J. M. Arnott, Mary A. Ashton, G. M. Baird, [3]A. H. Banton, R. C. Bignold, R. E. Bosanquet, [3]I. D. B. Bottomley, H. M. Bradmore, A. W. Branwood, Agnes A. Brash, J. Brims, Margaret E. Browne, Elizabeth S. Brydone, W. H. Burnett, Violet S. Burns (*née* Dow), Catherine C. Burt, J. D. Caldwell, Yun-sun Chang, G. R. Clark, M. J. Colbourne, J. O. Craig, Jessie A. R. Cripps, W. L. Cummings, R. Cutts, J. T. Donaldson, Rose I. L. Donaldson, [3]J. P. Duguid, T. B. Dunn, J. R. Fountain, M. S. Fraser, W. J. Fraser, [3]R. M'K. Fulton, R. P. Gillespie, J. G. Gilmour, N. J. Graham, D. C. Haig, J. D. Halford, Barbara Hall, C. W. Hamilton, W. R. Hatswell, J. Haworth, J. A. Howell, J. C. Inglis, G. D. Jack, E. L. Jacobs, G. M. Jones, I. S.

Kirkland, J. E. Laing, J. M. Large, A. R Laurence, K MacK. Leitch, [3]L. G. Leitch, W. S. Locke, [3]R T. S Louttit, C. S. R. Lowdon, A. A. C. MacArthur, D. G M'Cann, A. J. A. M'Cormick, A. B M'Culloch, J. A. M'Ghie, D. A. Maciver, J R. Mackenzie, Elizabeth M'Kenzie-Newton, Joan E. W. Mackie, J. S M'Kinnell, A. T. MacKnight, D. G. Maclean, A M'Queen, K. A. M'Rae, A F J. Maloney, F. D. Martinson, D S Matthews, I D. Maxwell, G. O. Mayne, A L. Meikle, J. L. Merson, Violet F. Michie, S L Mitra, Enid M Monson, E V. B. Morton, E N Moyes, Alexandrina K Muir, Edith R Munro, D J G. Naudé, M. J. D Noble, J. Philip, D. Ll Richwhite, A. C. Ritchie, Rosemary R. M Robinson, S. H. Roe, J. R Rook, Grace Ross, T. M. Rowatt, Diana T Rushforth, Sheina B. Scott, J A Simpson, W. P Small, R H N. Smith, S. P Smith, [3]J D. T. Steele, Joan E Stewart, I H Stokoe, J N Swanson, J. H Taylor, W. N. Taylor, Mair E M Thomas, B A. Thompson, Anne M. Toms (*née* Brown), A F. Torrie, Katherine E C. Traquair (*née* Forbes), A N Val Davies, D R Wallace, J A K. Wallace, Marion E Welsh, L. Willson, T. M'S. Wilson, W. A. Wilson, Margaret P Yeoman, J. Young

D P H—[4]Marguerite E. M Day, Jessie M L. Goodbrand, J N. Hay, [4]B. T. Jones, [4]Ethel J Kay, [4]Margaret S. B Langton, [4]Beryl J Lawrence, E. J. M Shearer, [4]Doreen M Waddington.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—F O Adewole, W. A M Akiyemi, L G. Bruce, J. Crabb, W. E. Lawes, C H H B Sparrow

The following prizes were presented:

Ettles Scholarship and Leslie Medal, Beaney Prize in Anatomy and Surgery, Royal Victoria Hospital Tuberculosis Trust Medal, and Annandale Medal in Clinical Surgery: R T. S Louttit. *Scottish Association for Medical Education of Women Prize:* Grace Ross. *Mouat Scholarship in the Practice of Physic:* R. T S Louttit, prox acc., I. D B Bottomley *Buchanan Scholarship in Midwifery and Gynaecology, Wightman Prize in Clinical Medicine, Sir Robert Jones Prize in Orthopaedic Surgery, and Stark Scholarship in Clinical Medicine:* A. H Banton. *James Scott Scholarship in Midwifery and Gynaecology:* A. J. A. M'Cormick. *Dorothy Gilfillan Memorial Prize* Sheina B Scott. *Keith Memorial Prize in Systematic Surgery:* I D B. Bottomley *Murdoch Brown Medal in Clinical Medicine:* M J Colbourne *Pattison Prize in Clinical Surgery.* W P Small *Syme Surgical Fellowship:* A W Wilkinson *Vans Dunlop Scholarship in Materia Medica and Medicine:* Sheila P V. Sherlock. *Gunning Victoria Jubilee Prize in Botany.* Elizabeth G. Gray *Gunning Victoria Jubilee Prize in Forensic Medicine.* L. F Brown. *Thomson Memorial Medal in Child Life and Health:* R. M MacDonald *Lewis Cameron Undergraduate Prize in Bacteriology:* R J. M M'Cormack, R. F Robertson, and P. R Walbaum (equal) *Anderson Henry Prize in Botany.* J. M'A Todd. *Colonel Thomas Biggam Memorial Medal and Prize in Pathology:* R F Robertson *Maclagan Prize in Forensic Medicine* H T. G Strawbridge *Cunningham Memorial Medal and Prize in Anatomy* I S. R. Sinclair. *Whiteside Bruce Bursary* Rosemary W Lawrence. *Vans Dunlop Prize in Botany and Zoology:* Barbara E. Clayton

[1] Highly commended for thesis
[2] Commended for thesis
[3] With honours
[4] *In absentia.*

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on July 21, with the President, Dr. Charles McNeil, in the chair, Dr. William George Clark (Edinburgh) was elected a Fellow of the College.

Medical Notes in Parliament

Emergency Hospital Scheme

On July 13 Mr. DAVID ADAMS asked the Minister of Health whether he was aware of the cumbersome character of the administration of the Emergency Hospital Scheme, necessitating a multiplicity of forms and returns; that the Ministry had recently instituted a complicated record form for the medical notes of patients admitted to chest centres; that a recent draft weekly return for wartime day nurseries had to be submitted in triplicate asking for information under 27 different heads; and whether he would cut down the size and number of these forms. Miss HORSBRUGH said that it was the constant effort of the Emergency Hospital Scheme to restrict its forms and returns to the minimum necessary for conducting so considerable a service effectively, and for meeting Service requirements, keeping relatives informed, and ensuring proper treatment of patients. The form E.M.S.105 was a simple form used, with carbon copies, for Service and police cases and civilian casualties. It was the main means of recording the admission and movement of such patients, of informing relatives and Service authorities, and of enabling proper allocation to special treatment to be followed up. The form for certain chest cases applied only to a small number of specialist cases, enabled the medical case notes to be kept on more uniform lines, and so helped in continuity of treatment when patients were moved, as well as enabling specialist treatment methods to be observed and improved. She was making inquiries from the regional offices about the return for wartime nurseries, as no such return was required centrally.

Tuberculosis Treatment in Wales

Mr. ERNEST BROWN on July 14 met a deputation from the Welsh Parliamentary Party to discuss tuberculosis treatment in Wales. The deputation included Sir Henry Morris-Jones. The Minister said that the Welsh Board of Health had had consultations with the Welsh National Memorial Association. The latter's lengthening list of people awaiting treatment was largely due to an increase in civilian cases, probably resulting from wartime conditions; the discharge of unfit men from the Forces; and inability to use all available beds owing to lack of staff—in particular, domestic staff. Moreover, the trend was for the period of treatment in hospital to lengthen, resulting in a slower turnover of cases. The present waiting list numbered just over 500; of whom about 100 were Service or ex-Service men. The number of beds available in the Association's own institutions was 1,969, including 160 beds rented to the Association from the emergency hospital provision. Of these 1,969 beds, 128 were out of commission owing to shortage of nursing and, particularly, domestic staff. The employment of non-resident and part-time domestic staff had been widely adopted but had not been able to meet requirements. The Ministry of Labour had recently instructed its Regional Controllers to give preference to filling vacancies for domestic workers at hospitals, with special emphasis on sanatoria. It might be possible to provide more beds from the Emergency Hospital Scheme, and some help might be given at the new 600-bed hospital shortly to be opened near Swansea.

Hospital Survey in Lancashire and Cheshire

On July 21 Mr. ERNEST BROWN informed Major Owen that the terms of reference to the officers whom he had appointed to survey the hospital services in the North-West were: "To survey the hospitals (other than mental hospitals and mental deficiency institutions) in the geographical counties of Lancashire and Cheshire, and in North Wales and other neighbouring areas which look to those counties for hospital treatment; and having regard to the information thus obtained, and to the general principles of post-war hospital policy laid down by the Minister of Health in the House of Commons on Oct. 9, 1941, to advise the Minister what areas would appropriately be served by a hospital system centred on the teaching hospitals of Liverpool and Manchester, and what modifications or extensions of the existing hospital facilities would be necessary or desirable to give effect to that policy." The terms of reference made no express mention of Bangor.

Last-war Service and Gazette Rank

On July 21 Sir ALFRED KNOX asked the Secretary of State for War whether it was his intention that medical men who served in the last war in the rank of lieutenant or captain, R.A.M.C., should now be called up at the age of 41 to 46 years and posted to serve under youths of 25 to 30 years of age, who only received their medical degrees a few months ago. Sir JAMES GRIGG replied: Medical men called up for service who held commissions in the R.A.M.C. for a year in the last war are gazetted captain from the date of joining. Few R.A.M.C. officers under 30 are commanding units, and these are in all cases Field Force units with active duties, to which it is not intended to post the 41- to 46-year-old officers.

Maternity Accommodation in Glasgow.—On July 14 Mr. JOHNSTON, replying to Mrs Hardie, said he had seen the report of the Medical Officer of Health for Glasgow that the demand for indoor accommodation for confinements was increasing and was very difficult to meet The aim of the Government's hospital policy was to secure that hospital treatment should be available to every person in need of it, and that included adequate provision for maternity cases. In the meantime, expectant mothers in Glasgow might be admitted to emergency homes outside the city set up under the Government evacuation scheme, in which there was at present vacant accommodation.

Alien Dentists—Miss HORSBRUGH, on July 14, informed Mr Harvey that the Minister of Health was fully alive to the need for making all possible use of dental man-power available in the country, and the question of facilitating the employment of alien dentists with registrable qualifications had recently been discussed by his Department with the Home Office, the Board of Education, and representatives of the dental profession. The school medical service probably offered the best scope for the employment of these dentists, and a memorandum was issued to local education authorities on this subject last April by the Board of Education Permission to practise could not be given to dentists not possessing registrable qualifications without admitting a standard lower than that required of British applicants. This course had obvious objections.

Tuberculosis in Glasgow School Children.—On July 14 Mrs. HARDIE asked the Secretary of State for Scotland if, in view of the increase in the number of cases of suspected tuberculosis among children examined on entrance to Glasgow schools, he would have an investigation made into the quality of the milk supplied in the city Mr. JOHNSTON said he had no reason to believe that the milk supplies to Glasgow were the cause of any part of the increase in suspected tuberculosis. The cases in question were of suspected pulmonary tuberculosis, which was not generally due to bovine infection conveyed by milk.

Notes in Brief

On March 31 last there were 1,507 persons in England and 400 in Wales who had been on local authority waiting lists for institutional treatment for tuberculosis for upwards of 10 days. In Scotland at that date 652 persons had been awaiting admission for more than four days.

The Services

Capt. (Temp. Major) G. F. Edwards, R.A.M.C., has been appointed an M.B.E. (Military Division) in recognition of gallant and distinguished services at Malta.

CASUALTIES IN THE MEDICAL SERVICES

Lieut. Eric Mace Foster, R.A.M.C., the only son of Mr. and Mrs. S. M. Foster of West Bromwich, was accidentally drowned on March 26 while serving with the Middle East Forces. He was born on June 26, 1918, and was educated at the University of Birmingham, where he graduated M.B., Ch.B. in 1940. After holding hospital posts he entered the R.A.M.C. as temp. lieut. in Aug., 1941, and was posted to the Middle East a few months later. He was a member of the B.M.A.

Missing.—Lieut.-Col. G. F. A. Condon, I.M.S., Capt. J. V. Schofield, R.A.M.C.

Wounded.—Brigadier R. R. G. Atkins, M.C., Temp. Surg. Lieut. G. P. Fahrni, R.C.N.V.R., War Subs. Capt. W. B. McKenna, R.A.M.C.

DEATHS IN THE SERVICES

Major-General Thomas George Ferguson Paterson, C.B., D.S.O., I.M.S. (ret.), late of Aldeburgh, Suffolk, died in a London nursing home on July 7, aged 65. He was born on Dec. 6, 1876, and was educated at Trinity College, Dublin, where he graduated B.A. in 1899 and M.B., Ch.B., B.A.O. in 1901. He entered the I.M.S. as lieut. in 1902, became capt. in 1905, major in 1913, brevet lieut.-col. in 1919, lieut.-col. in 1921, brevet col. in 1928, col. in 1930, and major-gen. in 1932, retiring in 1935. He served throughout the war of 1914-18 in Iraq and Egypt, was wounded at Sahil, and was twice mentioned in dispatches and received the D.S.O. in 1917. He was appointed an Honorary Physician to the King in 1928 and received the C.B. in 1935. During his service in India he held the post of Deputy Director of Medical Services, Northern Command. He had been a member of the B.M.A. for 32 years.

EPIDEMIOLOGICAL NOTES

Discussion of Table

A decline in the incidence of infectious disease was recorded in England and Wales during the week. Diphtheria was the only disease with an increased incidence, there being 40 more cases than in the preceding week. The differences between the totals for the counties for the past two weeks were generally very small. The largest variation shown by scarlet fever was in London, where 25 fewer cases were recorded last week than in the previous one. The greatest variations in the returns for whooping-cough were a decrease of 50 cases in Kent and an increase of 28 in Staffordshire. An outbreak of diphtheria involving 44 persons in Kent, Romney Marsh R.D., was the outstanding feature of the returns for this disease. These were the first cases reported from this area during the present year.

The notifications of measles were 220 fewer than in the preceding week, when the very large increase of 1,206 was reported. The counties with the largest decreases in incidence were Middlesex, London, Surrey, and Essex, where 151, 78, 72, and 65 fewer cases were recorded. The largest increases were those of Nottinghamshire 116, Hampshire 62, Kent 60, and Staffordshire 51.

The incidence of dysentery decreased by 87, due to the decline in the outbreak in Cumberland, Penrith U.D., where 31 fresh cases were reported, compared with 100 in the preceding week. New outbreaks occurred during the week in Buckinghamshire, Newport Pagnell R.D. 16 cases, and Shropshire, Ellesmere R.D. 7 cases.

The chief features of the returns for Scotland were an increase in the notifications of scarlet fever and a decrease in the number of cases of diphtheria. The rise in the incidence of scarlet fever was due to an outbreak in Paisley, where 56 cases were reported, compared with 4 the previous week. The incidence of measles, which fell by 273 and 358 cases in the preceding two weeks, showed a further small decline of 18.

Returns for the Week Ending July 18

The notifications of infectious diseases during the week in England and Wales included: scarlet fever, 1,558, whooping-cough 1,295, diphtheria 692, measles 7,050, pneumonia 516, cerebrospinal fever 83, acute poliomyelitis 16, dysentery 198, paratyphoid 6, typhoid 5.

No. 27

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not-notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	87	5	37	3	5	201	15	51	2	5
Deaths			1				—	1		
Diphtheria	768	34	131	50	25	794	36	168	16	27
Deaths	13	1	4	1	—	25	1	5	—	1
Dysentery	155	15	53	—	—	61	4	34	—	—
Deaths		—	—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	—	—	—	1	—	—	1	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						186	4	43	3	2
Deaths						3	—	—	1	—
Erysipelas		—	40	8	2		—	33	7	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				98						
Deaths	45	5	9	4	7	32	2	13	11	2
Measles	7,361	737	231	97	201	6,524	187	62	90	—
Deaths	4	1	5	—	—	5	1	1	2	—
Ophthalmia neonatorum	106	4	29	2	—	73	2	28	2	—
Deaths										
Paratyphoid fever ..	8		5	2						
Deaths			—		—					
Pneumonia, influenzal*	625	39	1	—	5	680	23	4	—	5
Deaths (from influenza)	9	2	—	—	—	6	22	1	1	—
Pneumonia, primary ..			172	17				156	14	
Deaths		—		13	5		—		4	3
Polio-encephalitis, acute	—	—				2	—			
Deaths		—					—			
Poliomyelitis, acute ..	5	—	—	1	—	12	—	5	2	—
Deaths		—	—				—	—		
Puerperal fever ..	—	—	20	4	—	1	1	14	3	—
Deaths		—					—			
Puerperal pyrexia ..	182	12	12		—	158	9	18		1
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever ..	1,297	59	288	51	22	787	23	112	42	17
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	13		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	4	—	1	7	1					
Deaths			—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,390	127	21	55	23	5,316	246	101	50	10
Deaths	3	—	1	—	—	28	3	4	1	—
Deaths (0–1 year) ..	256	29	67	18	18	273	21	66	33	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,574	482	582	158	124	3,898	460	584	168	99
Annual death rate (per 1,000 persons living)			13 1	10·5	†			12·7	11·2	—
Live births	6,144	650	872	386	251	4,978	328	887	375	178
Annual rate per 1,000 persons living ..			18 0	25·8	†			18 0	24 9	—
Stillbirths	215	19	26			208	18	41		
Rate per 1,000 total births (including stillborn)			29					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The seventeenth Congress of the French Medical Association of North America will be held at the Hôtel Mont-Royal, Montreal, on Sept. 14 to 17.

The second Latin-American Congress of Plastic Surgery will be held at Buenos Aires in October. The exact date will be announced later.

The Minister of Health, opening a new six-day residential nursery in Leeds last week, said that there were now 700 wartime nurseries in Britain, and another 700 were under construction.

His Excellency the Soviet Ambassador has made a donation of £100 to the work of the Anglo-Soviet Medical Council.

At the annual general meeting of the Central Council for Health Education Dr. Charles Hill was elected chairman in succession to Dr. W. Allen Daley, who, with Sir Walter Langdon-Brown, was elected vice-president. Dr. Maitland Radford succeeds Dr. Hill as vice-chairman, and Mr. Henry Lesser has been re-elected honorary treasurer.

The many friends in this country of Prof. A. Castiglioni, formerly professor of the history of medicine at Padua, will be glad to know that he is giving a series of weekly lectures on medical history at the Yale University School of Medicine.

Beginning with its issue of May 9 the *Journal of the American Medical Association* is devoting a section each week, entitled "Medicine and the War," containing official notices by the Committee on Medical Preparedness of the A.M.A., announcements by the Surgeon-Generals of the Army, Navy, and Public Health Services, and other Government agencies dealing with medicine and the war.

For some time now school medical officers have tended to reduce the period during which a child contact of a case of infectious disease should be kept away from school; in some instances, even, the contact has continued at school. The Ministry of Health and the Board of Education have issued a joint statement on this matter, bringing the official memorandum (last revised in 1927) more into line with medical opinion. Copies of the memorandum can be obtained from H.M. Stationery Office, price 1d.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEPHONE No.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Artificial Respiration in Phosgene Poisoning

Dr. J. L. BARFORD (Redhill, Surrey) writes: I recently heard it advocated by a medical A.R.P. instructor that as a last resort artificial respiration—presumably by Schafer's method—should be tried in case of phosgene poisoning when oxygen, CO_2, etc., were unavailable. It was pointed out that the patient, having stopped breathing as a result of flooding of the lungs with exudate, would undoubtedly die if nothing was done, and that such an extreme measure was advisable in the hope, presumably, that the movements, rhythm, and position would help to drain the lungs and possibly to stimulate the respiratory centre. As artificial respiration in these cases is very definitely vetoed in the manuals and charts, I should be glad to have any further expert advice or opinion. Secondly, in a book review in your columns recently the author advocated direct transpiration in the treatment of blast injury of the lungs. Is there any evidence in other literature of the usefulness of this procedure?

Persistent Psoriasis

Dr. C. W. PATTERSON (Golcar, near Huddersfield) writes: With regard to the query of S. C. M. concerning psoriasis (May 9, p. 600) the following may be of interest. (1) At a recent medical board a man was seen with typical psoriasis, who said that the eruption occurred every 7 years, lasted a few weeks, and then cleared up. Periodicity in disease is often traceable to some nervous origin. (2) About 5 years ago I was consulted by a girl of 17 for psoriasis of trunk and limbs. After treating her unsuccessfully I sent her to the out-patient department of the local hospital. About 2 years later I visited a member of the family, and on one occasion asked the mother how the daughter with psoriasis had progressed. With apparent reserve the mother replied that the girl was completely cured. When asked what remedy had been successful the mother said that after attending the hospital for a year there was no improvement, but that an elderly pedlar had called one day, and, seeing the girl's arms, had volunteered to cure her. When pressed for information the rather embarrassed mother informed me that the "cure" was to dab her own urine upon the eruption when retiring at night. Relief and cure were rapid. When I saw the patient subsequently and the "cure" was discussed, I asked, "But didn't it smell?" The rather elegant young woman replied, "Well, naturally, but I washed it off next morning." Was this cure by suggestion? I might add that in the course of 23 years' practice I have encountered two patients who have confessed to drinking their own urine as a cure for "rheumatism." One would think that if ever cure by suggestion were likely to succeed this is, *par excellence*, the example.

A Case of Neurosis

"X" writes: The patient described by J. W. M. (June 27, p. 808) would probably be greatly assisted by a spray of 2% percaine. He could use this with safety up to a maximum of six or seven times a day, and it is highly probable that within a few days his habit of vomiting would be broken. I have had an almost exactly similar case and this line of treatment was highly successful.

LETTERS, NOTES, ETC.

Nomenclature of Night-blindness

Dr. J. PRICE WILLIAMS (Ambleside) writes: In his interesting article on night-vision tests (June 27, p. 800) Mr. Francis Preston makes a welcome and praiseworthy effort to supply a long-felt want by finding a new word to replace "hemeralopia" and "nyctalopia," a word which will express itself and leave little or no room for confusion. He suggests "nyctamauria" or "nyctamauroma." I don't object to the former, but must protest against the latter on a ground which he himself indicates. The termination "oma" is common enough, but it is used invariably to express something concrete or objective (see his little list), whereas blindness, whether by day or night, is mainly, if not entirely, abstract or subjective. It is a condition or state, and the termination we usually employ to express that is "osis" and not "oma"—e.g., pediculosis, diverticulosis, and (oh!) tuberculosis. Perhaps "nyctamaurosis" would be better than "nyctamauria" in spite of its extra syllable and lack of strict accuracy. We already have "amaurosis" to express one form of blindness, and I think a good many of us regard it as the equivalent of blindness in general. Hence the word would tell its own tale and would be consistent with the other "oses." Even if we feel bound to invent "hemeramaurosis" to balance it there would be no room for confusion.

MEDICINE 100 YEARS AGO

Extract from letter by J. F. H. R. W. in the *Provincial Medical Journal* for July 30, 1842, headed "Parochial Medical Relief":

"Gentlemen,—Should the following observations be deemed of sufficient importance to obtain insertion in your very useful Journal, I shall feel both flattered and obliged. In the present age of improvement, I venture to offer some suggestions relative to the medical relief of the poorer classes. It has long been my opinion that parish patients would feel much more satisfied, and have less aversion to the existing poor laws, were they permitted, when ill, the privilege of choosing their own medical attendant. I have frequently heard them exclaim, 'We are not even allowed the surgeon we like best, but are obliged to be attended by a man of whom we know nothing, or by one we cannot trust.' I need scarcely appeal to you, as members of the profession, for confirmation of the fact how, in many instances, faith in the skill of the professional person tends to alleviate the sufferings of the patient, and acts in some measure as a remedy to the disease itself. The privations to which such individuals are subjected must be at all times great. Surely, then, it is not unreasonable to ask that they should enjoy the right of selecting the man in whom they place the greatest confidence; besides which, 'a parish doctor,' as he is termed, is always an object of abhorrence; however skilful, however great the attention received from him by paupers, they always fancy themselves objects of neglect. . . ."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 8 1942

THE SPHINCTER MECHANISM OF THE LOWER END OF THE BILE DUCT*

BY

GORDON GORDON-TAYLOR, C.B., O.B.E., LL.D., F.R.C.S.

Temporary Surgeon Rear-Admiral

That some sphincteric arrangement exists in this region is of course incontrovertible. The obliquity of the bile duct in its passage through the wall of the duodenum, which attracted the attention of Fallopius in the sixteenth century, would seem to indicate an important part played by the muscular coats of the gut in the control of biliary outflow; this obliquity of channel and the marked prolongation of the "portio intestinalis" of the choledochus in certain animals—e.g., sheep, certain whales, seal, walrus, dolphin, leathery turtle, etc.—are very significant. Samson Wright (1940), however, adumbrates a dual mechanism and suggests the existence of additional fibres round the termination of the duct just before it finally reaches the lumen of the duodenum. It is concerning the existence of this special sphincter, its nature, and origin that there appears to be uncertainty.

The precise relation of function to structure may necessitate investigation by several methods of approach; there is no contentious rivalry between the methods of science, and one may prove of value in supplementing the lessons learned from another mode of inquiry, and may help to illumine the dark and more obscure parts of the problem. Various methods of investigation have been utilized by many different workers on the present problem: (1) the lessons from the results of operative surgery in man; (2) the experimental method, including the pharmacological approach; (3) the study of anatomy, including histological and embryological methods; and (4) the comparative-anatomy approach.

Surgical Evidence in Favour of a Special Intrinsic Sphincter

The hepatic infections which appear prone to constitute a frequent aftermath of promising operations for reconstruction of the injured or strictured main biliary channel, when the choledochus or more often the hepatic duct is united by surgical effort to the stomach or duodenum, and the recurrent attacks of cholangitis which are apt to punctuate the after-story of those for whom choledocho-duodenostomy has been performed for other pathological conditions of the main duct, are suggestive of a special sphincter mechanism at the lower end of the bile canal. The presence of such an intrinsic mechanism appears the more probable, since the bilio-digestive anastomoses referred to involve a portion of the alimentary tube apart from the biliary caruncle, and in those cases in which an end-to-end repair of the structured duct is possible and the integrity of the ostium is maintained, ascending cholangitis is less likely to appear. There seems to be something peculiar in the neuromuscular mechanism in this area which is absent in the muscular tissues of the neighbouring stomach or duodenum.

The presence of air in the upper portion of the biliary tree may denote a patent anastomosis, but also indicates the absence of a sphincter controlling reflux into the duct. The readiness with which the contents of a barium meal may penetrate up to the hepatic ramifications of the biliary tree after hepaticoduodenostomy was demonstrated radiologically by Lardennois; no mechanism comparable to that which obtains at the "biliary ostium" is reproduced by any surgical attachment of hepatic duct or choledochus to duodenum.

Mallet-Guy, Auger, and Croizat demonstrated experimentally the constancy and severity of ascending biliary infection which follows any surgical intervention that sections or destroys the sphincter mechanism; Bengolea and Velasco-Suarez (1939) also specially emphasized the frequency of cholangitis as a sequel to choledocho-duodenostomy, and entered a strong plea against its routine performance.

The remarkable immunity (Walton, 1939b) to ascending infection shown by cases of congenital dilatation of the bile duct for which an anastomosis has been performed between such a bile pond and the duodenum may be due to the escape of a certain quantity of the bile through the normal ostium and the preservation of the normality of the sphincter mechanism.

The Experimental Method of Inquiry

Perhaps the greater bulk of the literature relating to the problem has emanated from the experimental laboratory. The intermittent flow of bile from the intact papilla in man and gall-bladder-bearing animals, which contrasts with the continuous dribble in mammals which lack a gall-bladder, is thought to suggest the action of a special sphincter mechanism in the former group. The differing reaction to mechanical irritation of the biliary caruncle in the two mammalian groups which either boast or lack a gall-bladder has been reckoned as betokening divergent sphincter mechanisms; and the dilatation of the extrahepatic ducts after experimental or surgical cholecystectomy has also been regarded by some observers as indicative of some special functioning sphincter in the gall-bladder group and its absence in the other.

Mann and Higgins (1927) pointed out that if the intramural bile duct in animals was dissected away from the duodenal wall, care being taken to remove all the intestinal muscle grossly visible, there remained enough muscle around the lower end of the duct to prevent the escape of bile, even at a pressure greater than the secretory pressure of the liver or that induced by contraction of the gall-bladder: the area of the duct in this experiment which responded to stimulation was limited and restricted. Lueth (1931) expressed his certainty that the intramural portion of the common bile duct possesses a special sphincter mechanism, and even estimated that this sphincter exerts one-third to one-sixth of the total resistance offered to the flow of fluid through the "portio intestinalis."

Considerations of space preclude any complete catalogue and review of the experimental work devoted to the problem, and it would be churlish and impertinent for a surgeon dealing mainly with human anatomy to pass judgment on the labours of those whose approach to the problem bristles with formidable technical difficulties, yet it is not easy to find the truth amidst the fog of conflicting experimental results. Despite the use of methods of inquiry cleverly devised, elaborately staged, and graphically recorded, the experimental investigation of this limited anatomical district is necessarily a somewhat rude insult to the integrity of the extrahepatic ducts, and engenders a certain scepticism and a lack of confidence in the deductions derived therefrom. For example, some disturbance of the sphincter mechanism in man results from a mere choledochotomy, as is evidenced by the presence of pancreatic ferments in the human bile which drains from the bile duct; the escape of granules of carmine, etc., as shown by Bond, also suggests the derangement of sphincter action effected by a minor mundane manœuvre. The accuracy of results in experimental work which involves incision and intubation of the bile duct must therefore be always open to criticism.

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* The second and concluding part of a Hunterian Lecture delivered at the Royal College of Surgeons of England, June 18, 1942.

The Pharmacological Method of Approach

Major Hilary Long (1942) has ingeniously endeavoured, by means of carefully conducted pharmacological perfusion experiments upon the biliary ducts, to differentiate purely sphincter effects from those produced by the activity of the duodenal musculature, and claims by her research to have demonstrated an intrinsic choledochal sphincter acting "independently" of duodenal tone and peristalsis in the dog. The pitfalls and difficulties of the experimental method have already been sympathetically referred to; yet very suggestive and illuminating is her contention that the concentration of bile salts and the alkalinity of the bile produce relaxation of this special sphincter; thus the sphincter may be closed to the efflux of bile which is not of the appropriate reaction and concentration, and a train of untoward circumstances be inaugurated.

The Anatomical Approach

The arrangement of the muscle fibres round the intramural portion of the duct has been investigated by different workers employing histological methods or the dissection-microscope on material preserved and prepared in diverse fashions. There has been little unanimity of opinion since the time of Oddi, who claimed in 1887 to have demonstrated a more or less distinct band of circular fibres encircling the "portio intestinalis" of the duct, which, apart from some slender loops that lose themselves between the fibres proper of the gut, are almost independent. Hendrickson (1898) as a result of dissection both described and depicted an intrinsic circular sphincter in man, dog, and rabbit; Boyden and his co-workers in text and illustration have described an intricate web of muscle fibres surrounding the duct which are separable into definite collections and for which a very special nomenclature has been coined; nevertheless, these workers neither discuss nor depict any circular fibres near the papillary orifice, such as have been mentioned and figured by Hendrickson, Newman (1931, 1933), and others. Broman (1921) mentioned a well-formed intrinsic sphincter in the foetus of the Antarctic whale, and Helly (1899) also emphasized its existence in human anatomy. On the other hand, Auster and Crohn were unable to demonstrate any distinct intrinsic sphincter.

My colleague Prof. John Kirk kindly interested himself in the subject on my behalf, and investigated *adult and foetal human material* both histologically and by dissection, and has afforded me ready and willing access to his preparations. We have assured ourselves that in no specimen examined histologically was any circular arrangement of muscle fibres found at or near the opening of the common bile duct on the duodenal papilla. Muscle can be seen in considerable amount on the more basal portion of the intramural duct; but this is oblique and longitudinal in its arrangement, and can be definitely and indubitably traced in continuity with the circular muscle coat of the duodenal wall; in other words, when the duct pierces the outer wall of the duodenum it carries in some of the circular muscle fibres of the duodenum, which are now arranged in an oblique and longitudinal fashion in the wall of the duct itself. The muscle of the duct is abundant in its basal intramural portion, and bundles of the longitudinal muscle fibres can be traced into the connective-tissue core of many of the villous processes.

It was subsequently realized that our findings are very closely comparable to those of Dardinkski (1934-5), who reported: (1) the greatest constriction of the common duct is produced by the intestinal muscle; (2) the independent muscle fibres described by Oddi as responsible for sphincteric action are longitudinal or oblique, and not circular. He also (3) drew attention to the muscle fibres in the villi and suggested that they may play an active part, and (4) noted the mucous gland which we had observed as a most conspicuous feature in histological examination of the terminal bile and pancreatic passages. Furthermore, microscope-dissection of the lower extraduodenal part of the common bile duct shows the presence of well-defined longitudinal muscle fibres which pass deep to the longitudinal muscle of the bowel and become directly continuous with the circular coat of the duodenum. The longitudinal and oblique arrangement of the muscle fibres in the duct wall would seem to indicate that the papillary muscle acts as a retractor of the papilla; and this action, in point of fact, can be readily seen in operations in man which involve opening of the duodenum. This initial retraction of the papilla is followed by the biliary efflux from the ostium and inspection of its postero-internal wall.

The muscle bundles in the villi by their contraction may stiffen these structures and secure their closer apposition, in a manner comparable to the disposition of the human fingers assuming what is termed the "accoucheur's hand"; on the other hand, the temporary intermittent shortening of the villous processes by the action of the contained muscle fibres may aggregate them into a clump or cluster which prevents regurgitation of the duodenal contents, and, acting in co-ordination with the circular tunic of the duodenum, temporarily holds up the issue of bile. Kirk and I have also satisfied ourselves that no circular arrangement of fibres exists in the hepatic duct in either adult or foetal material; there is no evidence of an anatomical sphincter here, despite cholangiographic suggestions of a "physiological sphincter" (Mirizzi, 1940).

An embryological approach towards solving the question of a separate intrinsic sphincter has been employed by Boyden and Schwegler (1936, 1937) with exemplary thoroughness. They claim that the musculus proprius of the duct differentiates *in situ* from the mesenchyme and *is not an emanation from the duodenal musculature.* It is admitted that where the duct penetrates the gut wall the margins of the "fenestra" contribute a few scattered fibres to the outer longitudinal coat of the sheath, but that the inner circular coat round the lumen of the duct is exclusively intrinsic in origin. These authors, as a result of their studies of the foetal and adult stages, mention "fasciculi longitudinales," but, unlike Kirk and myself, pay far more attention to an annular sheath of intrinsic muscle round the duct, and also describe a "sphincter ampullae"(!).

The Comparative Approach

Like any other discipline the "comparative" method is not without its dangers and pitfalls: generalizations drawn from the dissection or examination of a single specimen are apt to be misleading: the law of variation obtains in the subhuman as well as in the human type. The concepts of human anatomy are based upon numberless dissections of myriads of material; it is essential that museums of comparative anatomy should assemble ample store material, to be held at the disposal of research workers. The so-called "Physiological Series" of the old Museum of the Royal College of Surgeons of England contained much that constituted an illuminating basis and background of the anatomy of man.

My "comparative" interest in this region concerned itself initially with the involution of the so-called "ampulla," which in point of fact is an infrequent abnormality in man. The beautifully arranged physiological series in the lamented Museum in Lincoln's Inn Fields afforded strong evidence that the "ampulla" is an involutionary anatomical structure, and it may be possible some time to produce and publish morphological evidence in support of this view. But a study of the collection referred to also furnished here and there naked-eye evidence that the muscle surrounding the terminal part of the bile duct originates from the intestinal musculature: elementary embryology would indeed suggest such a derivation.

No comprehensive comparative histological study has been possible during the war, but careful examination of such selected material as time has permitted indubitably confirms the genesis of the muscular sheath of the "ampulla" from the muscular coats of the duodenum in at least certain types; for example, the origin of the bile-duct musculature in the circular coat of the duodenum is apparent in the lion and tiger cub, and Prof. John Kirk has made extensive researches in the cat. In this animal, where the duct pierces the duodenal wall the circular muscular coat becomes greatly thickened and is indeed several times thicker than the circular coat of the bowel at a short distance proximally and distally. In this region where the circular coat is so markedly thickened Auerbach's plexus is distinctly enlarged, and clumps of ganglion cells may be seen collected in that area in much greater numbers than in the duodenal wall elsewhere. The muscular thickening and the concentration of ganglion cells must indicate increased muscular action where the common bile duct penetrates the circular coat of the bowel from without. No sign of any intrinsic circular muscle ring round an ampulla has been discernible. It is hoped that in the future further comparative histological investigation may be carried out. But there is also macroscopic evidence of such a muscular relationship: thus in certain of the Carnivora—e.g., *Viverra civetta*—and in some Pinnipedia—e.g., *Phoca vitulina*—it is abundantly clear even to the naked eye that the muscular coat of the ampullated duct takes origin from the intestinal muscle tunics (Figs. 3 and 4).

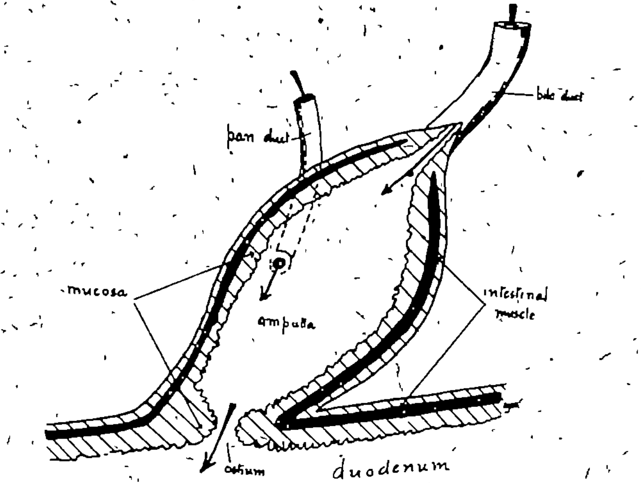

FIG. 3.—Civet (*Viverra civetta*): R.C.S. Museum (store specimen). Wall of ampulla formed by muscle of duodenum, which ceases abruptly at apex of ampulla. No muscle in walls of pancreatic and biliary ducts. (I.e., ampulla = intestinal pouch, not a mere dilatation of lower end of ducts.) (Cross-hatching indicates cut surfaces.)

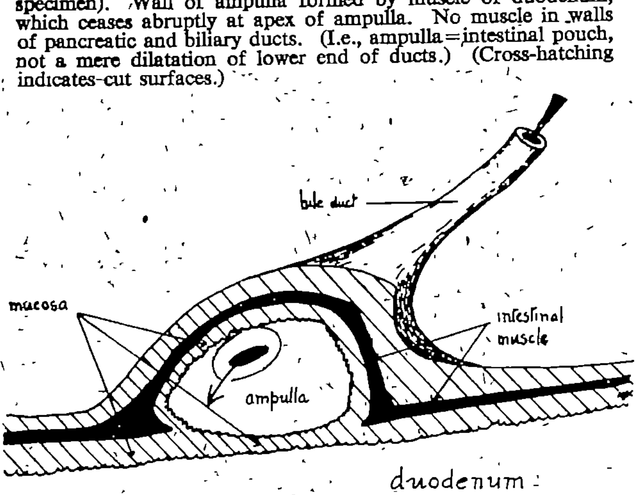

FIG. 4.—Seal (*Phoca vitulina*): R.C.S. Museum (store specimen). Ampulla wall formed of intestinal muscle, which is confined to the pouch and does not extend into the bile duct. (Cross-hatching indicates cut surfaces.)

Summary

This paper comprises two sections of a recent Hunterian Lecture.

It emphasizes the low grade of malignancy of many tumours of the lower end of the common bile duct and adjacent head of the pancreas, and appeals for more radical measures in this type of case. Several personal cases of resection are quoted, and reference is made to those of other surgeons.

The diverse methods of scientific investigation lend support to the view that a special intrinsic sphincter exists at the terminal portion of the common bile duct or the conjoined bilio-pancreatic duct.

The muscle sheath of the duct is derived from the circular muscle tunic of the duodenum.

Although circular muscle derived from the bowel tunics is to be found round the basal portion of the intramural duct, only longitudinal and oblique fibres are present in the distal portion of the papilla. Some of these fibres are prolonged as a core into the villous processes with which the wall of the terminal segment of the duct abounds.

The direction and arrangement of these fibres shows that their action is partly to retract the papilla and partly to erect or to aggregate the villous processes centripetally, thereby preventing reflux from the duodenum and controlling the exit of bile.

There is no circular arrangement of fibres close to the ostium —a reputed disposition credited with mythical properties.

There are few muscular fibres in any of the extrahepatic biliary ducts, and certainly no circular disposition of muscle fibres forming a sphincter in the hepatic duct.

The kindly co-operation of Prof. John Kirk and of Prof. A. J. E. Cave has been invaluable in the preparation of this lecture; my warmest thanks are due to both these friends for all their help so spontaneously and enthusiastically given. Mr. S. R. Scarfe of the Anatomical Department, Middlesex Hospital, has prepared the innumerable histological sections which have formed the basis of part of this inquiry, and to him I am indeed most grateful. My friend Col. A. E. Hamerton has generously afforded me material from the Gardens of the Zoological Society. Surgeon Commander W. A. Hopkins, R.N., and members of the staff of the pathological department of a naval hospital have readily and eagerly granted me facilities for work in their laboratory. Surgeon Vice-Admiral Sir Sheldon Dudley has always a stimulating effect on any worker, and at all times encouraged me, so that the occasional minutes and hours of surgical inactivity inevitable in war have not been idly spent, and an endeavour has been made to carry on, though feebly, the spirit and tradition of the Founder of our Museum, who seized the fleeting hour for Science, even amidst the distractions and disorders of war.

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ENTERITIS IN A NURSERY HOME ASSOCIATED WITH GIARDIA LAMBLIA*

BY

G. ORMISTON, M.D., M.R.C.P.Ed.

JOAN TAYLOR, M.B., B.S., B.Sc., D.P.H.

AND

G. S. WILSON, M.D., F.R.C.P., D.P.H.

The following account of a prolonged outbreak of enteritis associated with *Giardia lamblia* (*G. intestinalis*), affecting both children and adults in a nursery home for evacuees, is reported partly because little attention seems to have been paid in Great Britain during recent years to infections with this protozoon and partly because there is reason to suspect that the condition is commoner than is generally supposed.

History

The outbreak occurred in a spacious country-house, referred to as the Grange, used both as a family residence and as a wartime nursery. The domestic arrangements of the two communities were separate, but there was naturally a good deal of communication between the two sides of the house. Consequently, the entire population, numbering 51 in Jan., 1941, was exposed to the infection, and 86% showed signs or symptoms as a result.

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* A Report to the Medical Research Council from the Emergency Public Health Laboratory, School of Pathology, Oxford.

The infants, 31 in all, of both sexes, and aged at the time of admission from 4 to 16 months, came from poor working-class homes in or about London. They were cared for by eight nurses under the supervision of a matron with special paediatric training. The nursery accommodation was ample and reasonably well adapted to its purpose, and the management of the children very satisfactory, so that a detailed description of the hygienic arrangements may be omitted. The first batch of infants arrived at the home on July 18, 1940, in good health. Included were twin sisters aged 16 months and a boy of 13 months, all of whom had loose stools on July 29; these were the first to be recorded. Within another week 3 more, and within six weeks all the infants, had loose stools. Further infants joined the nursery in Aug., Sept., and Nov., 1940, and in Jan., 1941, and all but 3 became similarly affected within a month—2 within as short a period as seven days and 2 within nine days.

Some of the adults soon began to have diarrhoea as well. Two nurses were attacked early in August, and other nurses, and the family in residence and most of their servants, in the months that followed. Symptoms in the nurses appeared within 10 days to 8 weeks of their arrival. Several months elapsed before some of the house servants had diarrhoea, but this can probably be explained by the fact that they had less contact with the children than the nurses and the private residents.

Between July, 1940, and Jan., 1941, 28 out of 31 infants were affected and 16 out of 20 adults. The more intensive phase of the outbreak extended from Aug. to Dec., 1940, during which time additional children arrived at the nursery in small groups. From Jan., 1941, the acute episodes were less in evidence, but the trouble continued to smoulder until May, when treatment put an end to it.

Symptoms

Infants.—In nearly all cases the earliest sign of infection was looseness of the stools. This did not at first arouse anxiety. The infants were given grey powders and were not confined to bed. A few of them rapidly got worse. The stools became fluid, pea-soup or dark green in appearance, and increased in number up to ten a day. No blood was seen. There was repeated vomiting, dehydration, loss of appetite and weight, and sometimes a rise of temperature to 100° F. In one case at least there was severe abdominal pain and tenderness. Recovery from this acute phase took place in a few days, but was sometimes delayed for two or three weeks. These urgent symptoms appeared quite soon in some of the infants, but in others they were preceded by a mild form of diarrhoea for several weeks. In all, 9 infants were severely ill; 2 of them had to be removed to hospital, where they died. In the remaining 19 infants the initial symptoms were less striking. Once started, the enteritis continued for a few days to a month or more. The stools were generally loose, though persistently fluid in a few cases, brown or green, often with a noticeable excess of mucus, but without blood, and numbering two to four in the 24 hours. Some of the infants vomited on several consecutive days or intermittently. Systemic effects were mild, and the infants were not confined to bed. A chronic stage followed the initial acute or subacute attack, except in the 2 fatal cases and in 2 that cleared up completely. In 7 cases diarrhoea was persistent till therapy was instituted. Soft green or brown stools were passed every day. One of the patients had loose green stools for seven months, and 3 whose stools were always fluid suffered impairment of appetite and growth. In the remaining cases the diarrhoea was intermittent, taking the form of subacute attacks lasting for two to four days or longer, every few weeks. Again the stools were loose, green or brown, or else fluid. As the attacks subsided in some of the infants the stools became large, soft, and white before they were normal.

Adults.—Of the adults affected 6 were nurses, 4 were members of the resident family, and 6 were servants in their employment. Only 3 nurses and 1 servant appear to have been free from symptoms. In general, members of the nursing staff were the first to be affected, and the domestics the last. The onset was somewhat different from that in the children. There was no prodromal period of mild diarrhoea, but a sudden acute and usually violent attack of diarrhoea accompanied by more or less severe abdominal pain. The stools were dark, very loose or fluid, and numbered 10 to 20 or more in the 24 hours. Blood was never noticed. The pain was of a griping nature, usually in the lower abdomen, but in some patients located in the epigastrium or the right hypochondrium. Vomiting was frequent. Additional symptoms in order of frequency were giddiness, loss of energy, weakness or faintness, anorexia, headache, nausea, flatulence, backache, and fever. When the attack was over there was usually a rapid convalescence. About one-third of the 16 adults affected had one attack, a like proportion had two, and the remainder three attacks before treatment. The interval between the attacks varied from four to eight weeks. One nurse had prolonged attacks at short intervals over a period of three months. She kept at her work, but suffered from lack of energy and "pain in the stomach and back, especially when carrying anything or making the cots." Two other nurses stated that after their last attack they had never been really free from diarrhoea, and often felt weak and faint. These nurses had apparently entered a chronic symptomatic stage of the infection like the children. The other adults felt perfectly well between attacks, and many of them remained free of symptoms for some months. No physical examination of the adults was made either before or after treatment, as all were engaged in their affairs and none was acutely ill when seen.

Bacteriological Investigations

At the request of Dr. Cowan, medical officer of health, Gloucestershire County Council, the Oxford laboratory was asked to investigate this outbreak. The Home was first visited on Jan. 29, 1941. Bacteriological examination of the stools at a neighbouring laboratory had shown organisms of the paracolon group in several specimens, and it had been suggested that these were probably water-borne. There were two water supplies available for the nursery, and both had apparently been condemned by local analysts. Our investigation of the two water supplies showed that they were collected from a hillside under almost perfect conditions, and both bacteriological and chemical examination confirmed their freedom from excretal pollution.

There were two milk supplies—one to the nursery and the other to the private residents. A sample from the nursery supply proved to be of relatively poor bacterial quality. Since, however, all milk and water for the children was boiled, it was difficult to believe that they could be responsible for the outbreak.

Specimens of faeces from 25 children and adults were examined for organisms of the dysentery and *Salmonella* groups, with completely negative results. Blood serum from 4 of the adults was tested for agglutinins against organisms of the *Salmonella*, dysentery, *Brucella*, *Proteus X*, and *Leptospira* groups—again with negative results. Further faecal specimens were obtained in February from 8 children with recent or current diarrhoea, special arrangements being made for their receipt at the laboratory within a few hours of collection. These were examined for protozoa. Five of them contained *Giardia lamblia* in either the free or the cystic form, three in very large numbers. Since, according to Dobell (1921), the infection rate in this country is between 4% and 9% for adults and 14% and 40% for children, it seemed desirable to obtain further information on the frequency of this parasite in the Grange. Accordingly on March 3, 1941, specimens of faeces were examined from 29 children and 22 adults.

The method we used consisted in rubbing up a small portion of the faeces on a slide in a 1% solution of eosin with a wooden toothpick or platinum spatula, so as to make a moderately opaque suspension. A cover-slip was applied, and the preparation was examined at once under a 1/6-inch objective. This method has the advantage of providing a pink background, against which the unstained protozoa can be distinguished readily by contrast. *Giardia* appears as a pear-shaped body about 10 to 20 μ long by 6 to 10 μ wide in the free form, and 10 to 13 μ by 8 to 9 μ in the cystic form, having a faint bluish tinge. Little structure is visible, but if a second preparation is made in a drop of Lugol's iodine, the nuclei, the axostyles, and other details can often be seen. The results of our examination are recorded in Table I.

TABLE I.—*Frequency of Giardia lamblia in Faeces*

	No. Examined	No. Positive	% Positive
Children ..	29	13	45
Adults ..	22	6	27
Total ..	51	19	37

The proportion of children carrying *Giardia* was higher than that of adults. Taking both together, no less than 37% of the 51 persons examined proved to be infected. An analysis of these figures was made in relation to (1) the presence of loose stools at the time of examination, and (2) a history of continual or intermittent loose stools for some months previously (Table II).

TABLE II.—*Frequency of Giardia lamblia in Relation to Diarrhoea*

	No. of Patients	Positive		Observed % Difference between the Two Groups	Standard Error of this Difference	Observed % Difference divided by its Standard Error
		No.	%			
A. Loose stools at time of examination . .	7	5	71	39	18·5	2·1
B. No loose stools at time of examination . .	44	14	32			
C. History of intermittent or continual loose stools for some months . .	11	9	82	57	13·5	4·2
D. No history of intermittent or continual loose stools for some months . .	40	10	25			

From Table II it is seen that the proportion of persons harbouring *Giardia* was more than twice as great in those with loose stools at the time of examination as in those without. The numbers, however, are small and the odds against getting such a distribution by chance alone are not more than 27 to 1. The proportion of persons harbouring *Giardia* was more than three times as great in those with a history of intermittent or continual loose stools for some months as in those without, and the odds against such a distribution are over 37,000 to 1. There appeared, therefore, to be little doubt that the association of *Giardia* with chronic enteritis was more than coincidental. When it is remembered that Groups B and D were not strictly control groups, practically all the patients in these groups having suffered at one time or another from diarrhoea, the association becomes even more significant. It is hardly necessary, however, to point out that such an association does not prove the causal relationship of *Giardia* to the enteritis, but it does add weight to other evidence that may be brought in favour of this assumption.

Treatment

Since Brumpt (1937) recorded his finding that mice infected with *Giardia muris* could be rapidly freed from infection by the oral administration of quinacrine, several workers have successfully applied this treatment to human beings. Galli-Valerio (1937), Love and Tayloe (1940), Voltrina (1941), Nutter, Rodaniche, and Palmer (1941), and Hartman and Kyser (1941) used atebrin; but de Muro (1939) and Grott (1939) obtained better results with acranil, a hydrochlorate of a new acridinic compound prepared by Bayer. Atebrin and quinacrine, it may be noted, are different names for the same substance. Chemically this substance is an acridine compound related to the antimalarial plasmoquine, but differing from it in the substitution of the acridine for the quinoline nucleus; it has therefore no direct relationship to quinine. Since acranil was unobtainable we decided to try quinacrine.

Six children who were heavily infected with *Giardia* were transferred to a cottage some distance from the Grange and put in charge of two nurses. One of these was heavily infected; the other, who had joined the staff only three weeks previously, had not suffered from enteritis and had no *Giardia* in her stools. All food was prepared in the cottage, and no communication, except by the matron, was permitted between the inhabitants of the cottage and those of the Grange. Before treatment began, and again after the conclusion of the first course of treatment, the cottage was thoroughly cleaned and disinfected.

Tablets containing 0.1 g. of quinacrine were obtained from Messrs. May and Baker. The children, all of whom were under 2 years of age, were given one-sixth of a tablet, and the infected nurse one tablet, three times a day for five days. As the drug is very bitter the tablets were not pulverized, but were mixed with the food at the end of a meal. A drink of milk was given immediately afterwards. The nurses were instructed to keep the children's bowels well open and to watch for toxic symptoms. These comprise persistent headaches, severe abdominal pain, cerebral excitement, and acute restlessness, and are best treated by the administration of purgatives, large doses of alkali, and plenty of sugar. The first course of treatment lasted from May 12 to May 17, 1941. Examination of the stools on May 19 showed that they were all free from *Giardia*. As none of the patients had suffered from toxaemia, and as the probable duration of the apparent cure was in doubt, it seemed wise to repeat the treatment. This was carried out between May 21 and May 26. Samples of faeces collected on the last day again proved negative.

The success of this treatment, as indicated by the disappearance of *Giardia* from the stools, seemed to warrant its application to the remainder of the children at the Grange. Accordingly 25 children, of whom 13 were known to be infected, and 13 adults, of whom 5 were known to be infected, received a first course of treatment between June 5 and June 10, and a second course between June 15 and June 20. Stools taken on June 11 after the first course and on June 24 after the second course all proved negative. Before and after the first course the nursery portion of the Grange was disinfected so far as possible in order to reduce the opportunity for reinfection. Apart from insomnia in some of the adults, and occasional slight yellow coloration of the skin and urine, no untoward effects were caused by the drug.

The stools of many of the patients were re-examined at intervals up to Feb., 1942. During this time only two of the previously positive children relapsed or became reinfected—it was impossible to say which. One showed a few *Giardia* in the stools in Aug., 1941, and the other a very scanty infection in Feb., 1942. Two fresh cases, however, were detected in children and one in a nurse whose stools had been repeatedly negative. These occurred in July and Aug., 1941, and in Feb., 1942. All five cases cleared up at once after a single course of quinacrine treatment. So far as the elimination of *Giardia* infection was concerned the treatment was undoubtedly successful. The failure to achieve complete sterilization may perhaps have been due to the presence of infection in two or three of the adults who were unwilling either to provide stools for examination or to undergo treatment.

Clinical Results of Treatment

Before treatment started, and again 8 to 9 months later, the children were physically examined, and blood counts were made on a number of those who were most heavily infected. At the first examination, 5 to 9 months after their admission, most of the 31 infants were fairly well nourished, but 26% had skin infections of one type or another, including eczema, and in 40% muscle tonus was poor. Many of them had diarrhoea or loose stools at the time, or gave a history of enteritis in the recent past. At the second examination their nutritional state and general well-being had improved; only 4% now had skin infections, and muscle tonus was good in all but 16%. Diarrhoea had ceased for several months and loose stools were unusual. We had hoped to find out whether the beneficial effect of treatment was reflected in the rate of growth, but we were unable to make use of the figures available because the weight and height of the infants were taken at irregular intervals, and the numbers falling into appropriate age periods were too small for comparison with normal standards. In the adults diarrhoea had likewise ceased, and those who had previously suffered from abdominal discomfort, weakness, giddiness, and anorexia now, appeared to be quite well again.

Before treatment the average number of red blood cells in 7 of the infected infants studied in April, 1941, was 4,700,000 per c.mm., and of white blood cells 8,100 per c.mm. After treatment the corresponding figures obtained in Feb., 1942, on the same infants were 4,800,000 per c.mm. and 11,000 per c.mm. respectively. These differences are of little importance. The haemoglobin content of the blood, on the other hand, showed a considerable rise. Before treatment the figures varied from 60 to 88%, with an average of 74%, and after treatment from 80 to 94%, with an average of 85%, thus showing an average increase of 11%. Before treatment some degree of hypochromasia, polychromasia, and basophilic stippling was common, whereas after treatment the red cells were normal except in one child in which they showed slight anisocytosis. A remarkable feature of the differential white cell counts in Feb., 1942, was the finding of a mild degree of eosinophilia, varying from 4 to 14%. Observations on two occasions for *Enterobius* made by the cellophane swab technique were negative, so that a helminthic infection seems improbable. What the explanation is must remain undecided, but it is thought worth while reporting this finding in case others meet with a similar degree of eosinophilia in *Giardia* infection treated with quinacrine.

Discussion

It is not our purpose here to discuss in detail the evidence for and against the pathogenicity for man of *Giardia lamblia.* Those wishing for fuller references should consult papers by Lyon and Swalm (1925), Véghelyi (1938), Manson-Bahr (1940), and McGrath, O'Farrell, and Boland (1940). Opinion is divided between those who regard this organism as a harmless parasite and those who believe that it may give rise to symptoms of disease.

So far as children are concerned one of the most careful of recent studies is that of Véghelyi (1938, 1940), who made observations on 92 infected and 92 control children aged 2 to 17 years at the children's clinic, Budapest. He found that in the infected subjects the occurrence of anorexia, headache, dizziness, abdominal pain, irregular bowel movement, and anaemia was much more frequent than in the controls. Of the infected children 86% were below average weight and 75% showed signs of disease. Studies in the laboratory revealed that fat absorption was defective, and that excretion of biliary pigment in the urine was much below normal. Véghelyi attributes this to the mechanical effect of the parasites in covering to a greater or less extent the wall of the intestine and rendering it impermeable. The resulting interference with absorption he regards as being sufficient to account for the anaemia and retardation of development. Great clinical improvement followed eradication of the organism by acetarsone.

Hartman and Kyser (1941), who described 100 cases of *Giardia* infection at the Mayo Clinic, all but 5 of the patients being over 14 years of age, found that 89% had symptoms of illness. The commonest complaints were diarrhoea and abdominal pain. In a small number of cases which were treated with atebrin and followed up, clinical cure resulted. Nutter, Rodaniche, and Palmer (1941), in a study of 14 infected adults, noted the following symptoms in order of frequency: diarrhoea, fatigue and weakness, abdominal pain and flatulence, blood in the stools, insomnia, dizziness, nervousness, and loss of weight. The symptoms disappeared after treatment with atebrin.

Our own observations support the conclusions of other recent workers in indicating that *Giardia* infection may not be without a detrimental effect on the health of the patient. It is difficult to estimate the exact part played by this organism in causing enteritis at the Grange, since other causes cannot be excluded with certainty. During the last two or three winters a disease, which for want of a better term we refer to as "non-specific enteritis," has been common in many parts of the country, giving rise to acute transient attacks of vomiting and diarrhoea. Opportunities for a thorough examination of cases have been few, but so far we have failed to find any evidence of bacterial or protozoal infection. This disease may have been responsible for some or all of the acute cases of enteritis at the Grange, though probably not for the chronic cases. The higher frequency of *Giardia* in the patients suffering from chronic diarrhoea than in those with normal stools is very suggestive; but too much weight should not be put on this finding alone, since there is presumably a greater chance of finding cysts in the faeces when the stools are loose than when they are normal. Taken, however, in conjunction with the clinical improvement after treatment, it does suggest fairly strongly that the presence of *Giardia* was more than a fortuitous association.

Undoubtedly one of the factors that has most influenced recent opinion in favour of regarding *Giardia* as potentially pathogenic is the disappearance of symptoms, even of long-standing diarrhoea, after treatment with one of the new specific remedies. Such an observation was not possible for a worker like Boeck (1927), who, on statistical grounds alone, was unable to satisfy himself that *Giardia* was more than a harmless parasite.

How infection was introduced into the Grange is not known. The matron who opened the nursery, and who shortly afterwards left, was suffering from enteritis on her arrival; she may have been responsible, but this can be no more than a surmise.

Summary and Conclusions

An outbreak of enteritis, much of it of a chronic type, affecting a high proportion of both children and adults in a residential nursery for evacuees is described.

Giardia lamblia was found in 71% of children and adults having loose stools at the time of examination and in only 32% of those with normal stools.

Giardia lamblia was found in 82% of children and adults with a history of intermittent or continual loose stools for some months and in only 25% of those without such a history.

Cure of the infection was quickly and successfully accomplished by the use of quinacrine, given in two 5-day courses.

The symptoms—chronic diarrhoea and some degree of anaemia in the children, and diarrhoea with giddiness, loss of energy, anorexia, headache, and epigastric discomfort in the adults—disappeared after treatment, and the general nutrition of the children improved.

The high frequency of *Giardia* in the stools of the patients with long-standing diarrhoea and the favourable effect of treatment suggest that this organism may have been responsible for the chronic enteritis observed in the nursery. Further observations, however, are necessary to establish the exact degree of pathogenicity of *Giardia* for man.

We should like to express our thanks to Dr. Cowan, Dr. Goodwin, Dr. Gordon, Lady Ismay, and Sister Houchin for their generous help in this investigation We are particularly indebted to Prof. Leiper of the London School of Hygiene and Tropical Medicine not only for his frequent advice but for showing us an advance copy of the report to the Medical Research Council on the incidence of protozoa and helminths in the faeces of certain groups of the population in this country which Miss Young made while working in his department

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F. Clifton and S. M Laird (*J R.A M C.*, 1941, 77, 318) record two cases of acute meningococcal conjunctivitis in soldiers aged 21 and 23. In both a diagnosis of gonococcal conjunctivitis had been made before admission to hospital, but the absence of any evidence of infection in the genito-urinary tract suggested that the correct diagnosis was one of meningococcal conjunctivitis. One patient had received sulphapyridine before cultures were made, but in the second case the diagnosis was confirmed by bacteriological examination. Neither case showed clinical evidence of involvement of the cerebral nervous system.

TIETZE'S DISEASE

(NON-SUPPURATIVE NON-SPECIFIC SWELLINGS OF RIB CARTILAGE)

BY

A. MORTON GILL, M.D., M.R.C.P.

R. ARDEN JONES, M.B.

AND

LEO POLLAK, M.D.Vienna

(From the Medical Division of an E.M.S. Hospital)

In 1921 Tietze described 4 patients aged from 28 to 50, 3 females and 1 male, who all showed the same clinical picture—viz., swellings of costal cartilages of insidious onset associated with little or no constitutional disturbance, spontaneously painful, and with a prolonged course characterized by fluctuations in the size and tenderness of the swellings. Though one case was followed for over a year, no signs of suppuration developed. The lesions were firm and were confined to the cartilages, which appeared to be expanded locally. The skin over them was normal and freely movable. In one case the intercostal space was filled by the mass. In two patients, aged 42 and 50, radiographs showed calcification of the cartilage, but this may have been coincidental.

In reporting these cases Tietze stressed his ignorance of their nature and the fact that, although he had encountered them all in a short space of time, he had not previously seen a similar condition and could find no reference to earlier descriptions of such cases. Following Tietze's paper, Harttung (1923) described a very similar case which he also had seen in 1921. Radiographs disclosed no changes, but biopsy of part of the diseased cartilage revealed calcification and fibrosis. He referred also to another case reported in 1921 at the Medical Society of Breslau by Froehlich, in which four rib cartilages were involved and which had developed during the course of one year. At the same meeting Kuettner, in the discussion on this case, mentioned several similar cases, in one of which biopsy showed small nodules consisting of fibroblasts and many giant cells.

No further references have been found in the literature since that time, except for a paper by two Japanese authors, Satani and Fujii (1937), who reported 9 cases of Tietze's disease occurring in under-nourished women. Radiographs showed in one case atrophy of the rib cartilage, and in another shortening of the rib and calcification of the cartilage; in all other cases radiology revealed no abnormality. Biopsy in these cases revealed fibrosis, ossification, and atrophy, there being neither granulation tissue nor pus.

During the last few months we have observed 5 young soldiers showing the syndrome described by Tietze, and owing to its rarity we have considered these cases worthy of record. That this condition should have been encountered so frequently in such a short period indicates that at present it is no longer so rare as the scarcity of references suggests. Personal communications tend to support this contention and confirm its former rarity.

Case Reports

Case 1. Aged 27.—Six days before admission the patient had noticed a tender swelling in the left upper chest, followed three days later by malaise, shivering, fever, cough, and pain in the left chest. Previous health good. On admission: temperature 102°; signs of bronchopneumonia at both bases. There was a visible swelling of the second left costal cartilage at the costo-chondral junction. This was of firm elastic consistency, and arose from the second cartilage, but its upper limits were ill-defined and extended upwards to become continuous with the first costal cartilage. It was tender on pressure, but not spontaneously painful. The overlying skin was normal. Radiographs showed no abnormality. With treatment, including sulphapyridine, the bronchopneumonia resolved, but the lump, though less tender and slightly smaller, remained four weeks after the onset. However, when last seen, some four weeks later, there remained only a slight thickening of the costo-chondral junction and there was no tenderness. *Investigations:* Blood W.R., negative; white cell count and differential, normal; B.S.R., normal; sputum, nothing significant; Widal, negative.

Case 2. Aged 24.—Admitted complaining of cough and pain in the left chest, the latter of two weeks' duration. A comrade had called his attention to a lump in the left upper chest at the time of onset of the pain. On admission he was afebrile, and presented the signs of chronic bronchitis and emphysema. A swelling was visible at the second left costo-chondral junction—firm, smooth, and tender on pressure. Spontaneous pain was not present. The overlying skin was normal. Three weeks later, when last seen, the lump was smaller and was no longer tender. *Investigations:* No material could be obtained on needling; culture, sterile; radiograph, negative; Widal, negative; white cell count and differential, normal; B.S.R., normal; sputum, pneumococci predominant; blood W.R., negative.

Case 3. Aged 21.—Developed bronchitis following appendicectomy, and, five days later, pain in the left chest. Temperature 99°. Six days after this he noticed a swelling of the chest, and on examination there was a visible prominence in the region of the seventh rib cartilage, extending about 2 in. along the costal margin and involving the sixth and eighth cartilages. The swelling was hard, and was confined to the cartilages, the intercostal spaces being normal. On discharge some three weeks later the tenderness had gone, but the swelling was still present. As in the previous cases, all investigations were negative.

Case 4. Aged 29.—He had noticed, ten days after pneumonia, a painful tender swelling in the right upper chest. This to a large extent subsided during the next two months, but a month later, following a common cold, it reappeared, and on admission to hospital a diffuse, smooth, firm, tender, ill-defined swelling was visible and palpable in the right upper chest, involving the first, second, and third costal cartilages and filling up the intercostal spaces. Laterally it extended to the anterior axillary line. The overlying skin was normal. There was no fever. This patient has been observed over a total period of nine months, during which time the pain and tenderness, and the size of the swelling, have altered only slightly, the condition remaining substantially unchanged to date. Occasionally there has been fever up to 99°. *Investigations:* B.S.R., 8 mm. in 1 hr. (Westergren); white cell count, normal; blood W.R., negative; Widal, negative; blood calcium, normal; radiographs showed soft-tissue shadow in the region of the swelling, but no bony abnormality; needle exploration, negative.

Biopsy of Case 4 (Mr. John E. Rowlands).—At operation an incision was made directly over the third right costal cartilage extending 4 in. laterally from the edge of the sternum. There was a spindle-shaped enlargement of the cartilage. The intercostal spaces above and below were encroached upon by this swelling, but were clearly definable from it. The tissue of the spaces was oedematous and abnormally vascular, but was not infiltrated by the tumour. The swelling was incised and a wedge-shaped piece removed. It had the appearance of normal cartilage.

Histology of Case 4 (Dr. A. M. Barrett).—The section showed an unmistakable resemblance to cartilage, the cells being enclosed in spaces in the typical cartilaginous matrix. Along one border (apparently the periphery of the nodule) the cells were flattened and small, and at the extreme edge here the appearance of the tissue approached that of collagenic fibrous tissue; elsewhere in the section the cells were for the most part much larger, and the matrix stained more deeply with haematoxylin. Here, too, the cells were not arranged so regularly in pairs, groups of 6 to 8 cells being frequent. A few rather wide blood spaces and more abundant smaller ones were present; also areas (apparently corresponding to the opaque streaks seen with the naked eye) having a fibrillar structure, and as the fibres stained deep red with van Gieson's stain they were presumably collagen fibres. There was no evidence of inflammation.

Conclusion.—The nodule was composed of cartilage, and on histological grounds alone it would be difficult to say that it was not a piece of normal costal cartilage. However, it would do equally well for a chondroma.

Case 5. Aged 19.—Developed rheumatic fever with pneumonia following tonsillectomy, and seven weeks later complained of pain in the second right costo-chondral junction, examination of which revealed a firm tender swelling in every way similar to those previously described. Ten days later the pain and tenderness had disappeared, but a slight enlargement of the costo-chondral junction persisted. As in the other cases, all investigations were negative.

Commentary

In an analysis of the relevant literature it is unnecessary to refer to the frequent accounts of osteomyelitis of ribs due to typhoid, tuberculosis, syphilis, or pyogenic infections, as in the cases here reported there was no evidence of any bone disease. With regard to conditions confined to rib cartilage, Staehelin (1940) remarks that little is to be found on this subject in the literature, and we have been unable to trace any reports in English of cases similar to the above.

It is evident that, clinically, the cases here recorded closely resemble those described by Tietze and subsequent authors, and it seems probable that they represent the same morbid entity. The association with respiratory tract infections has not previously been noted. In each case the swelling was noticed by the patient himself or by a friend, and clinically it could not be disregarded. No fever which could not be attributed to other causes was present, except in Case 4. In each instance the swelling persisted for some time after the respiratory infection had subsided, and we were unable to observe complete return to normality in any case before discharge from hospital; indeed, Case 4 still presents symptoms and signs nine months after the onset. Special investigations have failed to throw further light on the aetiology of the syndrome.

With regard to the morbid anatomy, in a description of the biopsy findings Tietze writes: "The histological examination shows chondral tissue, the irregular arrangement of which suggests neoplasm, but there are no signs of malignancy. I therefore removed the entire mass, which consisted of two cartilages and part of the sternum. To our surprise the cartilages were not abnormal; the soft tissues, perichondrium, muscles, fascia, and ligaments were thickened, but microscopically did not show any inflammatory changes. The cartilages showed histological changes, described above, and here and there calcium deposits and dissolution into fibres." The similarity of this description to the findings at biopsy in Case 4 of our series is striking.

In discussing the aetiology Tietze tentatively suggested that the condition represented a dystrophic change in the cartilage analogous to the bone disease of nutritional origin which was prevalent in Germany in the early 1920's; but there has been no evidence of malnutrition in our patients, all young soldiers of good physique.

We cannot throw any light on the pathology of these swellings. Tietze's cases were all observed at a time when nutritional conditions in Germany were at their lowest ebb. This does not entirely apply to our cases, since, although the national dietary has altered, it is agreed that evidence of general malnutrition is lacking. Nevertheless, qualitative changes of which we are ignorant may be of aetiological significance.

Summary

An account is given of a syndrome first described by Tietze in which non-suppurative non-specific swellings appear affecting rib cartilage, and 5 cases are added to the 16 already recorded. The association with respiratory tract infections has not previously been noted.

Thanks are due to Dr. F. R. Berridge for the radiological examinations and to Dr. O. Morrey for all other special investigations. Our thanks are also due to Mr. John E. Rowlands and to Dr. A. M. Barrett.

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D. Skinner and J. E. Edwards (*New Engl. J. Med.*, 1942, **226**, 8) record two cases of subacute bacterial endocarditis caused by an enterococcus in men aged 72 and 60. In the first case symptoms of endocarditis followed prostatectomy, and death took place seven months later. The necropsy showed typical vegetations on the mitral, aortic, and tricuspid valves. The organism (strain A) was recovered from the blood, vegetations, and an extracted tooth. In the second case the symptoms developed in a patient who had had cardiac decompensation for six years. The necropsy showed old rheumatic heart disease with vegetations on the mitral valve. The organism (strain O) was recovered from the blood before death and from the vegetations post mortem.

THE CHEMICAL LUMINESCENCE TEST FOR BLOOD

FORENSIC AND CLINICAL APPLICATIONS

BY

JOHN McGRATH, M.D., M.Sc.

(*Department of Medical Jurisprudence, University College, Dublin*)

Although it is now some years since Specht (1937) first suggested the use of chemical luminescence for the identification of suspect blood-stains, it would seem that no references to the method have as yet appeared in the English literature. This reaction has been of considerable practical value in many technically difficult medico-legal cases and merits description. Its forensic use has led to other applications, and the clinical adaptation now described is simple and very delicate, though it has the disadvantage that it must be observed in the dark.

Gleu and Pfannstiel (1936) described the preparation of 3-amino-phthalic-acid-hydrazide-hydrochloride, and indicated that the alkaline solution, with the addition of hydrogen peroxide or sodium peroxide, produced a typical chemical luminescence with haematin. This reaction is the basis of the luminescence test for blood. One of two solutions may be used; they yield identical results:

A.	3-amino-phthalic-acid-hydrazide-hydrochloride	1 g.
	Sodium peroxide	5 g
	Distilled water	1,000 ml.
B.	3-amino-phthalic-acid-hydrazide-hydrochloride	1 g.
	Sodium carbonate	50 g.
	Hydrogen peroxide (10 vol.)	50 ml.
	Distilled water	1,000 ml.

These solutions may show a trace of inherent luminescence. This is of no practical disadvantage, but may, if desired, be eliminated by the addition of a trace of indazolon-4-carboxylic acid. The solutions are effective when freshly prepared, and remain usable for years by the addition of about 10% of 20-vol. hydrogen peroxide to reactivate the quantity of stock solution required for a particular test.

Forensic Application

In medico-legal cases blood-stains are normally identified by close inspection; a chemical test such as the benzidine reaction to exclude negative stains; positive identification of blood spectroscopically and perhaps with the help of various microscopical preparations; determination of the source of the blood by means of the precipitin reaction; and, in suitable cases, possibly identification of the blood group. In a number of cases, however (and not infrequently those in which the evidence as to blood-stains may be of the utmost value), the stains may be obscured for various reasons and the discovery of their position and content may be attended with more or less difficulty. The stains may be small in amount; they may be mixed with mud or ashes, or other interfering substance; they may have been more or less cleaned away off, say, dark or dirty clothes, off the ground, carpet, or walls, or off a weapon, and traces only may have remained in crevices or cracks; they may have been irregularly distributed in small amounts or difficult to discover on the ground, on dark or rusty or soiled or painted objects, or in cellars or other places not easily susceptible to complete and thorough examination; they may have been changed by temperature, weather, and age. In still other instances the blood may be mixed with or simulated by other stains such as paint, oil, fruit juices, rust, etc. In these cases of difficulty the luminescence test is of especial value.

The solution is introduced into an all-glass pressure-spray designed to produce a fine mist from a watery solution. When this mist falls on a stain containing haematin the result is a marked bluish-white luminescence which is clearly visible in the dark. The luminescence persists for some minutes and can readily be photographed. Very fresh blood-stains, containing little haematin, show little luminescence; but the older the stain, and the greater the proportion of haematin consequently present, the more marked and clear is the light effect. The method we use is to spray the suitably arranged suspect articles in a dark-room, or, in a house, to arrange for the room or area to be darkened or to wait for night.

We have experimented with a very wide variety of substances, and have found the reaction to be specific. There is no reaction with serum, bile, sputum, pus, seminal stains, pleural fluid, earth, faeces, fresh or rotting vegetable material, various paints, oils, metals, wood, wax, shoe-polish, or various other substances. Very slight traces of blood-stains containing haematin, and not detectable to the naked eye, are readily apparent with the luminescence test. Nevertheless, in the present state of knowledge it is not suggested that this test should be used as a final specific test for blood. After the site and extent of the stain have been determined, it is essential to proceed through the complete routine examination.

The luminescence test has a special value in this respect—that after its application to detect the site of the blood-stain all of the further necessary tests may be applied to portions of the stain. The spray allowed to fall on the stain is preferably kept minimal in amount, and after marking or photographing the stain it is allowed to dry. The stain is then available for all the usual tests, and we have been unable to detect any difference in the reactions obtainable in stains which have been sprayed with the reagent and allowed to dry and those which have not been so treated. Nevertheless, as an additional safeguard, and to eliminate all possibility of error, we have in practice invariably adopted the precaution of running a control from a portion of the article which has been sprayed but which shows no evidence of staining.

Clinical Application

In the most direct and simple form of the test the fluid or suspension of the material suspected of containing blood is placed in a test-tube. A small amount of the activated stock solution is added, and the resultant fluorescence, if any, is observed in the dark. Faeces may be dried on a slide, and the test solution poured over it as with the benzidine reaction commonly employed.

A positive result depends on the formation of haematin from the blood originally present in the suspect material, and the greater the amount of haematin present the more marked is the reaction. The delicacy of the test in the presence of fresh blood may be enhanced in the following way: To the suspect fluid or suspension are added a few drops of NaOH solution (about 30%), the tube is shaken and haematin is thus formed; the addition of the test solution will then produce a marked reaction if blood is present. Warming increases the brilliance of the fluorescence but shortens the duration.

So employed, the test is remarkably delicate, and will show a clear positive reaction with blood in dilutions over one in a million.

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CARDIAC MASSAGE

AN EXPERIMENTAL STUDY

BY

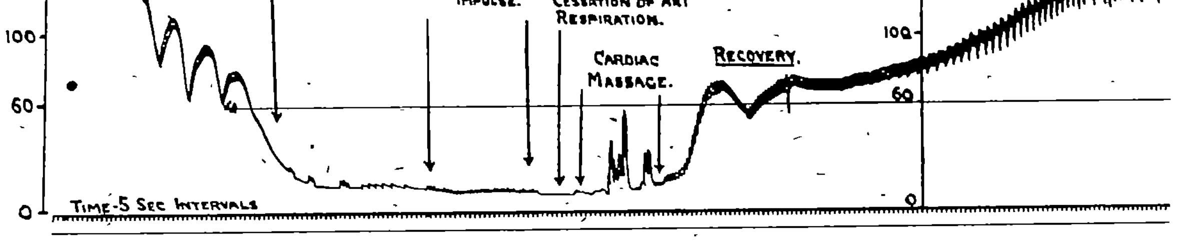
GEORGE A. POLLOCK, M.S., F.R.C.S.Ed.

(*From the Wilkie Surgical Research Laboratory, University of Edinburgh*)

In the treatment of collapse under anaesthesia Hamilton Bailey stressed the importance of early and prolonged cardiac massage in addition to artificial respiration; the present record demonstrates this from the experimental side.

During an experiment on haemorrhagic shock a cat collapsed from an overdose of ether, after the right carotid artery had been cannulated and the respiratory tambour adjusted, but before bleeding had been begun. Immediately before the collapse respirations were 8 a minute and the blood pressure was 150 mm. Hg. In 6½ minutes respiration had ceased and the blood pressure fell to 14 mm. Hg. Artificial respiration was given by means of a pump; while this was being carried out impulses transmitted to the heart from expansion and collapse of the lungs were registered as minor fluctuations in the blood-pressure tracing. When artificial respiration was stopped these transferred fluctuations also stopped, and there was no sign of either respiratory or cardiac recovery.

So certain was I the cat was dead that I was beginning to dismantle the apparatus, when I decided to try the effect of direct cardiac massage. Two minutes 40 seconds after breathing and heart had stopped, the heart was compressed regularly between the fingers of the left hand, which could be pushed up under the left costal margin, and the right hand, which pressed downwards on the left thoracic wall. After 40 seconds an irregular rhythm returned to the heart; this was registered as an irregular fluctuation on the blood-pressure tracing. Massage was continued for 1½ minutes, after which the heart began to beat regularly. The artificial-respiration pump was reconnected and the respiratory tambour adjusted. For one minute the heart maintained its recovery rate; but after the blood pressure had reached 74 mm. Hg it began to fall, as respiration had not been re-established. Artificial



respiration was begun 15 seconds later (or 1 minute 15 seconds after the heart had started to beat). The blood pressure fell for 15 to 20 seconds longer, to 54 mm. Hg, and then rose steadily. Artificial respiration was continued until, after 1 minute, voluntary spasmodic respiratory efforts began. Nine minutes after the first irregular cardiac contraction the blood pressure had risen to 132 mm. Hg, and there was a corresponding improvement in respiration and pulse pressure.

The tracing gives a graphic record of the sequence of events, and demonstrates in a striking manner the completeness of recovery that may be obtained in cases of severe collapse under anaesthesia when the appropriate treatment is used in time.

Medical Memoranda

Parturition with Fractured Femur

The following case, in which the Roger Anderson method of treating fractured femur was applied to facilitate delivery, seems to be worthy of record.

CASE REPORT

The patient, a normally developed woman aged 27, sustained a simple transverse fracture of the shaft of the right femur in the upper middle third on March 21, 1941. She was treated at first by skeletal traction on a Thomas splint. This overcame the shortening and angulation, but it was found impossible to correct by manipulation a posterior displacement of the distal fragment by nearly one diameter. There was very slow formation of callus. Open operation with onlay bone graft was performed on June 23, when soft-tissue interposition was found responsible for the difficulty in reduction and the delay in union. After this, immobilization in a plaster spica was continued for three months. The patient had had no menstrual period since Jan. 27, and when the plaster was removed she was obviously pregnant. After a period of exercises in bed she was allowed to walk in a calliper, union appearing satisfactory, but she unfortunately refractured the callus and graft shortly afterwards. On Nov. 6 the femur was immobilized by the Roger Anderson half-pin technique, using two half-pins above and two below the fracture, and incorporating the superior and inferior half-pin units in a plaster from groin to knee. This was very comfortable, and the patient was able to sit in a chair.

At this stage she was transferred to the maternity department, and was discovered to have a breech presentation with extended legs which could not be turned by external version. It was decided to let her go into labour, and to perform Caesarean section if there was any difficulty. The foetus was known to be small and the pelvis roomy.

On Dec. 3 she went into labour spontaneously by rupture of the membranes at 10 a.m. Pains began 6 hours later, and the breech was seen at the vulva two hours after that. Delivery was carried out in the lithotomy position, the injured leg being held by a nurse. In this position there was no difference from the delivery of a normal patient. The child was a healthy male of 5¼ lb. The puerperium was uneventful.

COMMENT

It would seem that the Roger Anderson method is extremely satisfactory in this complication of parturition, and in fact the only one which gives an absolutely free hand to the obstetrician. There is no reason why delivery should not be carried out in the lateral position if preferred, provided the leg in plaster is uppermost and is suitably held.

With the Roger Anderson apparatus not available, Mr. Norman Capener has recently suggested, and has successfully used, 6-in. carpenters' gimlets instead of the half-pin units. Two gimlets are inserted into the upper fragment so that they lie in two planes and engage in the opposite cortex of the bone. The lower fragment is held by one gimlet and a transfixing Steinmann pin at the lower end. These are all incorporated in plaster from the groin to just above the knee. This method gives a somewhat more bulky plaster; but there is absolute fixation of the fragments, and it has proved very successful.

I am indebted to Mr. Norman Capener for permission to publish the case, and to Mr A. L. Candler for allowing me to deal with the obstetric side.

G. BLUNDELL JONES, M.B., B.S.,
Resident Surgical Officer, Royal Devon and Exeter Hospital

Treatment of Plantar Warts

In common with the experience of observers elsewhere I have been struck by the increased number of children coming to my orthopaedic clinic in Rochdale with plantar warts. The treatment of these has in the past been very troublesome and rather unsatisfactory. The opinion has been hardening that these warts are due to an infective agent, the exact nature of which has not been ascertained. Having seen the good results obtained in the treatment of impetigo by covering the patches with elastoplast and leaving the plaster undisturbed for a week or more, I determined to try a similar treatment for these warts. As the infecting agent must be a much less virulent one than in the case of impetigo, I argued that the elastoplast must be left undisturbed for a much longer period in order to get the same effect. I accordingly began to treat plantar warts by covering them with elastoplast. The results have been uniformly good.

Since March, 1940, 17 cases have been seen; of these, 9 have been completely cured (for details, see Table) and 8 later cases are still under treatment. I have used the ordinary 2-in. elastoplast for the feet and 1-in. elastoplast for the toes. Wherever possible the elastoplast has been put right round the foot or toe and overlapped a little, as that makes the bandage more secure. The elastoplast is left undisturbed for at least 3 weeks (longer if possible), and the patients are instructed to keep the bandage dry and when a bath is being taken to keep the foot out of water. At the end of 3 weeks the bandage is removed, the foot cleansed with methylated ether, and a new bandage put on. This treatment is continued until the skin is normal. Quick results must not be expected, but in not one case have we failed to effect a cure.

	Sex	Age (years)	Position of Warts	No. of Applications	Duration of Treatment	Result
1	M	8	Heel of lt. foot, base of rt. gt. toe	4	9 weeks	Cured
2	F	11	Lt. heel	5	12 ,,	,,
3	M	13	Lt. heel, rt. heel, base of rt. gt. toe ..	6	14 ,,	,,
4	F	12	Base of rt. gt. toe ..	7	21 ,,	,,
5	F	13	Under right metatarsal heads	6	14 ,,	,,
6	M	13	Both heels ..	4	13 ,,	,,
7	F	11	Multiple warts under rt. heel	4	11 ,,	,,
8	F	11	Between 1st and 2nd toes rt. foot; on sole under lt. metatarsal heads	7	17 ,,	,,
9	M	9	Sole of lt. foot ..	4	13 ,,	,,

My impression is that the longer the elastoplast can be kept dry and left undisturbed the more rapid is the cure. This is confirmed in one or two of the cases in which holidays have intervened and patients have waited an extra week before coming for treatment. Every treatment is carried out at the clinic, and the patients are instructed not on any account to disturb the plaster. Each case is seen 2 to 3 weeks after the treatment is completed to make sure that there is no recurrence.

The treatment is carried out for me by my physiotherapist, Mrs. Fletcher, to whom I am indebted for her care both in the details of the treatment and in the keeping of records.

W. HIRST BATEMAN, M.B., Ch.B.

At the annual general meeting of the National Birthday Trust Fund the chairman, Sir Julien Cahn, reported that the Trust continued to maintain the headquarters at 57, Lower Belgrave Street, providing accommodation for the Queen's Institute of District Nursing and the College of Midwives. The Analgesics Appeal Fund had supplied 50 machines for administration of gas-and-air analgesia free of charge to hospitals and district nursing associations, etc., and 46 at a nominal charge of £5, 36 of them to district nursing associations. The Fund had also supplied 48 machines to emergency maternity hospitals, under a scheme approved by the Ministry of Health, at purely nominal cost to the local authorities concerned. Sir Julien also referred to the report upon the nutrition work of the National Birthday Trust Fund and Joint Committee of Midwives which Dr. Margaret Balfour would shortly complete, and to the Human Milk Bureau at Queen Charlotte's Hospital, a further activity of the Fund.

Reviews

GENETICS AND RACE BIOLOGY

Race, Reason and Rubbish. An Examination of the Biological Credentials of the Nazi Creed. By Gunnar Dahlberg, M.D., LL.D. Translated from the Swedish by Lancelot Hogben, F.R.S. (Pp. 240. 8s. 6d.) London: George Allen and Unwin.

The writings of Prof. Dahlberg are nothing if not robust. To anyone who likes his popular science served up without subtlety in the manner of the traditional sergeant-major this book should make a strong appeal. If, however, the fastidious avoid it altogether because of its ridiculous title, or abandon it after glancing at its earlier pages with their unattractive illustrations, they will be depriving themselves of one of the best and clearest of recent popularizations of genetics and race biology. The account of the principles of heredity is thoroughly plain and forceful, but the most skilful feat of exposition is the explanation in very simple language of the genetics of populations. This is, of course, the field in which Prof. Dahlberg has himself done so much important work. Much emphasis is naturally attached to his own conception of "isolates," which some prefer to treat under the more general headings of inbreeding and assortative mating. The fact that a few generations ago the choice of a mate by a human being was usually effectively limited to a relatively small group of persons, and the further fact that the average size of these isolates has greatly increased in recent times, have very significant consequences. To give a single example, Prof. Dahlberg advances an interesting speculation as to the increase in stature which has occurred in Western Europe in recent times. Thus, in Sweden the average height of recruits for military service has increased by 9 cm. during the course of a century. It is usual to ascribe this to improved standards of living, but, he points out, it is difficult to accept so simple a view, because the increase has been uniform whereas the improvement in standards of life was much more marked during the second half of the period; moreover, the famine years of the 'sixties were without effect on the figures. The increase might possibly be due, however, to continuous increase in the average size of isolates, provided that genes increasing stature tended more often to be dominant than recessive.

The subject of race is dealt with as trenchantly as the rest, and if few in this country are to-day in need of conversion, many will be glad to read such a lucid exposure of the myths which have had so harmful an effect in Germany. Occasionally, however, the arguments of the author appear tendentious. His contention that the effects of large-scale sterilization would be negligible is based on the assumption of the recessive transmission of undesirable characters; he does not consider the much more probable case of multifactorial inheritance with or without partial dominance. He minimizes the effects of differential fertility by concentrating all his arguments upon social classes and ignoring the undoubtedly large association between intelligence and infertility quite apart from questions of social class. Nevertheless, in spite of the imperfections which it displays so honestly upon its face, this able book deserves recommendation.

WOUND TREATMENT IN THE LAST WAR

Pathology and Treatment of War Wounds. Researches from the Inoculation Department, St. Mary's Hospital. By Sir Almroth E. Wright, M.D., F.R.S. (Pp. 208. 21s.) London: William Heinemann, Medical Books, Ltd.

This volume is a reprint in book form of ten papers published by Sir Almroth Wright during or shortly after the war of 1914-18. Two of these deal with gas gangrene, one with the acidosis of shock, and one with the phenomenon of "intertraction"; the remainder expound general principles of wound treatment with a view to combating sepsis, and describe the many ingenious forms of experiment on which the author's doctrines are based. A proposition fundamental to all this work is made on p. 8: here it is said of Metchnikoff's experiments on phagocytosis that because they were made *in vivo* they were made "under conditions which cannot be sufficiently simplified to give quite unambiguous answers. And we require for the elucidation of our problems, and for all detail work connected therewith, absolutely simple crucial experiments, such as can only be made *in vitro*." Whether these experiments, using perhaps a capillary tube and a drop of blood or serum and some bacteria, do in fact wholly reveal the processes at work in a wound in the living body may be questioned: the conditions may be simplified, but they are also in many ways different. That observations made in this way can altogether take the place of experiment in the living animal, or that their results are more significant, will not be generally accepted.

Much has happened since these papers were written, and of the principles they advocate some are still accepted and others have been superseded. The value of early excision and the futility of crude antiseptic applications need no emphasis nowadays, but antiseptics have come into their own again with local sulphonamide chemotherapy, and users of the Bunyan bag would not now accept even the strictures on hypochlorite treatment which it receives here. Hypertonic saline may perhaps have suffered undue neglect, as may the use of vaccines in persistent wound infection. We are grateful for this volume not so much for the lessons to be learned from it a quarter of a century after most of it was written as for the complete picture it gives of a historic controversy. As an exposition of a system of experiment and belief it would have been better rewritten, since as it stands there is naturally much repetition, and even illustrations recur, but we should then perhaps lose some of the vigorous and picturesque language of which the author is a master. As an exercise in polemics the last chapter is unrivalled: to tear one's opponent into little shreds with such magnificent freedom of expression must be highly satisfying, and is perhaps worthy of emulation in these too-polite times.

A STUDY OF THE BLOOD IN CANCER

A Study of the Blood in Cancer, with Special Reference to the Needs of the Tumour Clinic. By O. Cameron Gruner, M.D. (Pp. 100. 15s.) Montreal: Renouf Publishing Company; London: H. K. Lewis.

This book is a plea for the value to be obtained from detailed examination of the blood in the diagnosis of cancer. It is well produced, at a reasonable price, by subsidy from the Archibald Cancer Research Fund of McGill University, Montreal. Methods comprise studies of wet preparations, vitally stained preparations and ordinary blood smears, as well as certain special techniques. Observations are made in very great detail of all the cellular and plasmatic elements in the blood, using ordinary illumination, dark ground, polarized light, and ultra-violet light. The code for mononuclear cells of the blood alone contains 80 different possibilities. The possible data are so numerous that they can only be expressed as pictorial diagrams, patterns, or trends. There are unsuspected pitfalls, too, as in the demonstration that a meal which features pork will produce a blood picture indistinguishable from that of cancer, though of course normality reappears after eight or nine hours.

The author does not claim absolute certainty of diagnosis by these methods, but he does indicate a very high degree of probability. It would seem as though the degree of alteration of the blood picture is proportional to the degree of advancement of the disease. These results may interest people who are interested in the natural history of the blood or in the curious bypaths of cancer research. We doubt whether they have any value for the early diagnosis or treatment of cancer. It is evident that the author has a high "credulity index." The most remarkable expression of this is his opinion that in radi-aesthesia, a procedure akin to water-divining, we have "an absolute test (100% both ways) for the existence of malignant disease in the body." This suggests that radi-aesthesia can even make the distinction between cancer and pork. It is remarkable that claims to diagnose cancer infallibly should be made without any corroboration by experimental observations or statistical data.

BROMPTON REPORTS

Brompton Hospital Reports. A Collection of Papers recently published from the Hospital. Volume X, 1941. (Pp. 127. 5s. 7d., post free.) Copies obtainable from the Secretary of the Hospital, London, S.W.3.

A further collection of papers from the Brompton Hospital recently published in medical journals forms the tenth volume of the *Reports*. In fact one paper, on the persistence of lipiodol in the lungs after bronchography, has not previously appeared. F. H. Young and E. Gantz indicate the practical importance of the problems involved, and review past experimental work on this subject. Their own contribution is based, in the first instance, on pathological examination of lungs or lobes removed at operation from patients in whom bronchography had been carried out at some time or other before the operation. The duration of the retention of the oil appeared to depend on two factors: on the cellular activity of the phagocytes and on the speed with which fibrous tissue is developing. Experiments were carried out to determine whether decomposition of the oil took place under physical conditions that develop when the iodized oil is retained in the lungs—that is, exposed to air and moisture. No free iodine was detected, but some dissociation of the oil did occur, as was shown by the rise in acid value. Further experiments showed that, while the oil was not an adequate medium for bacterial culture, the addition of broth to it did provide a medium in which the bacterial growth was not inhibited by the oil. Thus infected material, if present, was probably conveyed by the oil to the terminal bronchi and alveoli. These investigations are being continued, and further results should be awaited with interest.

The papers previously published include three of particular interest in wartime: on drainage of the pleura, by R. C. Brock; on closed wounds of the chest, by J. G. Scadding; and on traumatic haemothorax, by C. Hoyle. There are also reprinted A. F. Foster-Carter's valuable paper on bronchial adenoma from the *Quarterly Journal of Medicine*, and some notes on the treatment of carcinoma of the bronchus with radon seeds by F. C. Ormerod.

Notes on Books

Part I of the *Fourth Supplement to the British Pharmaceutical Codex, 1934*, has been published by the Council of the Pharmaceutical Society by the Pharmaceutical Press, 17 Bloomsbury Square, W.C.1, at 4s. 6d. It contains amendments to the monographs in Parts I and II, amendments to some formulae in Part III, and amendments to appendices in Part IV.

Mr. **Nils L. Eckhoff** has completely revised the text of *Aids to Osteology* for its fourth edition and has introduced forty-two diagrammatic line drawings of bones to help the student in revision. As in the third edition, the nomenclature recommended by the Anatomical Society of Great Britain and Ireland is used throughout. This little book is one of Baillière, Tindall and Cox's Students' Aids Series and the price is 6s.

Dr. **Gordon Sears** has revised his *Vade Mecum of Medical Treatment* for a third edition (Edward Arnold and Co., 10s. 6d.), and it continues to give in a convenient form an outline of the treatment of the diseases most commonly met in general medical practice. References to chemotherapy have been brought up to date, the term "sulphonamide" being used for the whole group of drugs. Practical notes on the three main types—sulphanilamide, sulphapyridine, and sulphathiazole—are included in an appendix.

Preparations and Appliances

A LIGHT TRAILER AMBULANCE

Lieut.-Colonel J. L. Moir, M.B., Medical Officer, No. I Zone, Anglesey Home Guard, writes:

At my request Mr. Duerr of Bodorgan, a well-known inventor, undertook the designing of a light trailer ambulance, especially suitable for the use of the Home Guard in country districts. The chief features I asked him to incorporate were as follows: easily man-handled and towable by any light car; cheap and easy to produce in quantity; designed to exclude so far as possible the exhaust gases of the towing car; easily loaded and handled by two persons; some method of heating provided, and if possible provision for an attendant to travel in contact with the stretcher occupants. Mr. Duerr made a complete model to scale, and the following brief specification shows how well these ideals have been attained.

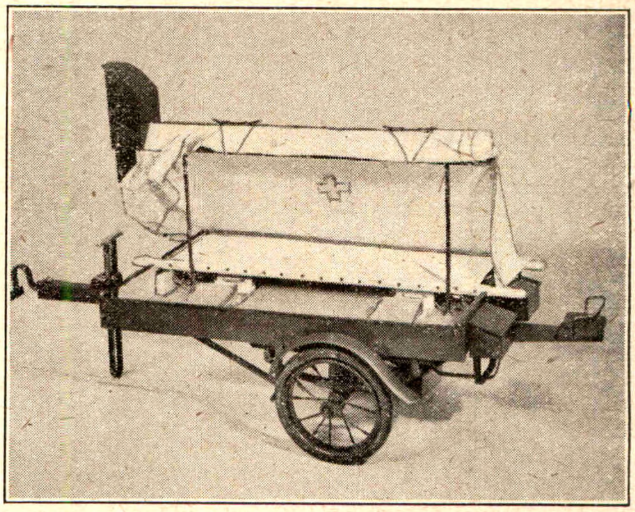
Ventilation and Heating.—Fresh air is drawn in at the highest point through a chute or cowl. It is conducted along the ridge of the ambulance and distributed through a series of holes to the interior to avoid strong draughts, thus creating a slight internal pressure which leaks out at the various small openings around the stretcher tray and prevents the admittance of exhaust fumes. Provision is made in the tray for four hot-water cans, two under each stretcher, holding about a gallon each.

Loading.—It is safe to say that two girls of ordinary physique can easily lift a loaded stretcher and place it into position without strain, because the top of the tray is only 30 inches off the ground and there is no sliding in from the rear to be done; all that is necessary is to lift the stretcher, step sideways, and lower into slots.

Brakes and Springing.—Owing to the extreme lightness of the ambulance, only parking brakes are necessary; these automatically come into operation when the leg of the towing beam is lowered and, acting directly on the tyres, they are most efficient. Very light and supple leaf springs are provided for the comfort of the occupants and are made fairly flat.

Wheels, Tyres, and Cover.—Motor-cycle type wire wheels with 26″ × 2½″ tyres are suggested. Any suitable canvas anti-gas or other cover may be used, fastened down by press studs and held up by cords and cleats.

Towing Attachment.—The object in providing the simple attachment shown on the model is to enable any local blacksmith to fit the swan-neck fitting to any car, either to the car frame or bumper bar. (One of the many more elaborate ball joints could be used instead.)



Attendant's Seat.—When it is desirable that the attendant should be in contact with the stretcher cases, a pillion seat is provided with foot rests under the tray. Contact is made by means of the "lightning fastener" down the centre of the canvas cover immediately in front of the attendant, the occupant's head being next to him. A bell communicating with the driver is available to the attendant and to the patients. An interior light run off a dry battery is to be fitted under the ridge board. Two sloping-lid first-aid boxes are fitted into the rear end of the ambulance within easy reach of the attendant. (A motor-cycle spring pillion seat, three or four inches deep and fitted with a back rest, could be used in place of the plain seat shown on the model. Two small windows might with advantage be fitted into the rear end of the canvas cover, to keep the occupants under continual observation.)

The photograph (by Jones-Owen of Bangor) shows the canvas cover lifted from one side with one stretcher in place; the other has been removed to show the two hot-water cans under each stretcher.

The main features of this "Duerr-Moir" ambulance are: (1) its extreme lightness and simplicity; (2) it can be used either as a trailer ambulance attached to any light car or as a hand ambulance detached from a car, to be used over fields and rough ground; (3) the simplicity of the heating and ventilating systems; (4) it is cheap to produce in large quantities; (5) the cost of upkeep is practically *nil*.

Comment or criticism is invited and the opinion of medical men practising in country districts would be especially welcomed.

That the use of metrazol in the treatment of psychoses may be the origin of spontaneous epileptic seizures in a patient not previously subject to them is the conclusion of E. Liebert (*J. Amer. med. Ass.*, 1942, **118**, 119). In 8 of his patients epileptic convulsions developed 3 to 24 months after the cessation of metrazol treatment. As these patients had been observed in hospital for many years, it was not difficult to establish the fact that this was a new phenomenon, and as, in addition, epilepsy is rare in cases of schizophrenia, Liebert believes that in his cases the seizures were the result of the treatment to which the patients had been subjected.

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SPHINCTER MECHANISM OF THE BILE DUCT

In the second part of his Hunterian Lecture published in our present issue Rear-Admiral Gordon-Taylor discusses the important question of the sphincter mechanism of the bile duct and raises many problems of great interest. Oddi's original investigations were carried out in 1887 and were based upon both anatomical and microscopical work, mainly in animals. Since that time the sphincter to which his name is given has been the object of varied and elaborate study and experimentation. Anatomists have demonstrated beyond question that a definite intrinsic sphincter exists at the terminal portion of the common bile duct, and Gordon-Taylor's review concludes that the muscle sheath of the duct is derived from the circular muscle coat of the duodenum. It will be remembered that the common bile duct runs obliquely for a distance of one or two centimetres through the duodenal wall in company with the pancreatic duct (of Wirsung), the two uniting at the ampulla of Vater into a common papilla projecting into the duodenum. In this passage through the duodenal wall the ducts are subject to extrinsic muscle influences, and constriction of the common duct may be brought about by this intestinal muscle—from which the intrinsic muscle of the sphincter is itself derived. Gordon-Taylor points out that the direction and arrangement of the fibres around and in the duct wall also enable them to act by retracting the papilla and partly by drawing together the duodenal villous processes, thereby preventing the outlet of bile into the intestine. Embryological and comparative anatomical researches also tend to confirm this conclusion—namely, that the sphincter mechanism of the ampulla is derived from the muscular coats of the duodenum and not from any distinct circular muscle of the duct itself. Whatever the exact origin, however, of this sphincter muscle, there can be little doubt as to its importance and its special functions in biliary control. The exact extent of nervous and hormonal control is uncertain, but that some reciprocal mechanism exists whereby gall-bladder contraction is related to sphincter relaxation is undoubted. If the sphincter mechanism is destroyed or put out of action the gall-bladder does not fill and bile flows directly into the intestine, so that one important function would appear to be that of aiding gall-bladder filling as well as regulating the flow of bile into the intestine. As Gordon-Taylor remarks, the ascending hepatic infections which may so often follow surgical interference with the normal bile-duct structure indicate another of its important functions—namely, the prevention of regurgitation of duodenal contents into the common bile duct.

Although experimental work involving incision and intubation of the bile duct is open to criticism, many reports of such investigations are available, and Bergh, reviewing this subject recently, confirms certain main points upon which agreement is fairly general. A fatty meal, for example, causes relaxation of the sphincter, while magnesium sulphate does the same with less regularity but with definite gall-bladder contraction. Morphine causes contraction of the sphincter—under the conditions of the investigations—while the presence of a stone causes irritability and tendency to spasm which may persist many weeks after its removal from the common bile duct. Such irritability and spasm may also be of significance in conditions other than biliary calculus. Ivy and others demonstrated in 1933 that painful sensations identical with biliary colic might be caused by spastic contraction of the sphincter of Oddi in man; and Westphal, Gleichmann, and Mann in their important book in 1931 described in detail various forms of dyskinesia of the gall-bladder. As long ago, however, as 1761 Morgagni had suspected that spasm of the bile duct might produce clinical disorders, and Oddi himself supported this proposition. We are still, however, uncertain of the true frequency of such "functional" gall-bladder conditions or of the exact details of the nervous control of the biliary apparatus. Mirizzi has attempted to investigate this subject by the slow injection, at operation, of 3 to 5 c.cm. of iodized poppy-seed oil into the cystic duct of man, followed by immediate radiography. He concludes, after some 800 examinations by this method, that increased sphincter spasm associated with and caused by a calculus leads to anatomical changes of biliary stagnation and muscular hypertrophy at the sphincter of Oddi. Cases of purely functional dystonia of the sphincter may also, in his opinion, show dilatation of the biliary tree, and in these cases reflux of lipiodol into the duct of Wirsung is a characteristic radiographic finding; this he suggests is due to an active (abnormal) biliary current and is not a purely passive phenomenon, and it is thus a condition of possibly high significance in the causation of pancreatitis.

How far variations in activity of the sphincter of Oddi in fact occur in health and disease it is difficult to say. Fatty meals may cause relaxation, but fresh olive oil may have no such effect, and similarly a carbohydrate meal exerts little influence (Bergh). To what extent its action is reflexly affected by the stomach, colon, or other distant organs is also uncertain. It seems clear, however, if only from the careful study of structure reported by Gordon-Taylor, that the regulation of biliary flow into the intestine—and hence of much of the digestive activities—must depend upon a delicately controlled intrinsic bile duct sphincter; it is thus not simply governed by the movements of the duodenal wall which allow bile to flow according to whether they are relaxed or contracting.

POST-WAR EPIDEMIC PROBLEMS

Dr. Melville D. Mackenzie, in common with many who were brought into close contact with the great human tragedy arising from the uncontrolled prevalence of epidemic disease, destitution, and famine in the years following the last war, has evidently given much thought to the medical and public health problems that are likely to call for urgent solution in Europe when fighting ceases. The results of his cogitations are published by the Royal Institute of International Affairs in a pamphlet entitled *Medical Relief in Europe: Questions for Immediate Study.*[1] He writes of some of the grim happenings in those post-war years as seen by himself, evidently in Russia; of some of the difficulties encountered by philanthropic organizations and Governmental agencies in providing adequate relief; of the lack of co-ordination of the many agencies engaged in the stupendous task of trying to control the spread of disease in the conditions then prevailing and of the loss of efficiency occasioned thereby; and of typhus fever, malaria, and malnutrition. He describes the remarkable development of international health work during the twenty years between the two world wars and makes suggestions regarding the resumption of that work after this one. The machinery for post-war medical relief is outlined.

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[1] Chatham House, 10, St. James's Square, London, S.W.1 (2s.)

Some of Dr. Mackenzie's statements and contentions may not command universal approval, but all will agree as to the necessity for setting up co-ordinating medical machinery before the war ends, so that no time may be lost in dealing with the most urgent problems that will arise. Dr. Mackenzie reminds us that during the three years following the last war more people died from famine and preventable disease than were killed in the war. It should not be forgotten that a still greater mortality was caused by the pandemic of so-called influenza that was ravaging the world when the Armistice was signed. That murderous pandemic flared up almost simultaneously in most parts of the world. Countries very remote from the scenes of actual fighting suffered most. Individuals in the prime of life paid a heavier toll than infants and the aged. Public health effort to control its spread proved lamentably inefficient. Reference is made to those happenings because they explain in part the fact that valuable time was lost in mobilizing international aid for the newly created States of Eastern Europe in their fight with devastating epidemics, chiefly typhus fever, the legacy of the war. It was influenza that occupied the attention of most public health administrations of the world during the winter of 1918-19 almost to the exclusion of all else: it was influenza that was the subject of the first post-war international medical conference, in Paris in March, 1919. Small wonder: no such epidemic had occurred within the memory of living man, and we were all sadly conscious of the limitations of preventive medicine in the face of such a catastrophe.

Dr. Mackenzie makes no reference to the work of the Typhus Commission, subsequently called the Epidemic Commission, of the League of Nations. That Commission was set up with the express purpose of co-ordinating international work in the post-war epidemic campaign, about which he has much to say. The Commission's contribution to the fight was by no means insignificant: it may claim to have done all that was humanly possible within the limits of the not inconsiderable sums that were placed at its disposal. The difficulties it encountered and the experience it gained might perhaps be turned to good account in making plans to cope with similar situations that are likely to arise when present hostilities cease. It is true that the Epidemic Commission, created in 1920 (there was then no Health Organization of the League of Nations), did not start field work till 1921. This delay was in one sense fortunate: the renewal of hostilities between Soviet Russia and Poland would have destroyed much of the first work it was planned to do had an earlier start been made.

Fortunately, in public health, as in other fields of human endeavour, events rarely justify one's worst forebodings. Forecasts of epidemic happenings are frequently wide of the mark. It would be foolish, however, to shut one's eyes to the probability of catastrophic happenings in the field of public health when hostilities cease. Dr. Mackenzie is concerned only with likely happenings in Europe. The possibilities in other parts of the world are perhaps even more disquieting. In the Far East plague, cholera, and small-pox, to name but three dread scourges, may well give rise to very serious trouble when normal commercial relationships are re-established. Malaria in many countries has only been kept under control by unceasing vigilance and effort; the relaxation of that control may have incalculable consequences. There can be no doubt about the need to set up co-ordinating international medical machinery before the war ends: the combined medical resources of the world may well be taxed. The growth of international medical work in the inter-war period simplifies considerably the approach to the problems confronting us. The Epidemiological Intelligence Service of the League of Nations continues to function in Geneva. Its *Weekly Epidemiological Record* still appears regularly: the amount of information this contains in present conditions is no small achievement. The machinery, experience, and contacts of the Health Organization of the League of Nations should prove of very great value in facing post-war epidemic problems.

INTESTINAL ANTISEPSIS

Sulphaguanidine, although introduced for the main purpose of treating bacillary dysentery, has also been used to reduce the bacterial population of the lower bowel as a safeguard before operations on the colon. Another drug has now been introduced for this purpose, and remarkable claims are made for it by E. J. Poth and F. L. Knotts.[1] Succinylsulphathiazole behaves like sulphaguanidine in being poorly absorbed from the alimentary tract; indeed only 5% of the amount administered appears in the urine. It is hence not surprising that full doses can be given without any untoward general effects. A high concentration of the drug thus persists in the intestinal contents, and is believed to exert its bacteriostatic action not directly—since succinylsulphathiazole has almost no *in vitro* action on bacteria—but by liberating sulphathiazole. That hydrolysis of the drug does occur in faeces can be shown by maintaining voided specimens at body temperature; in these the concentration of free sulphathiazole steadily rises. Whatever their exact mechanism, the effects reported are astonishing. In a patient "prepared" with succinylsulphathiazole the bowel at operation is found to be collapsed, the evolution of gas having ceased. It is possible in the dog so treated to cut through one-third of the circumference of the descending colon and, leaving it unsutured, to close the abdomen, without causing fatal peritonitis. The stools are "relatively odourless" and the numbers of living *Bact. coli* per gramme of moist faeces usually fall from 10,000,000 to less than 1,000. No other micro-organism was studied quantitatively; that anaerobes must be affected is deduced merely from the change in character of the intestinal contents, and *Strep. faecalis, Bact. aerogenes,* and *Proteus* are said to be resistant to the drug. It is also mentioned that dysentery bacilli are susceptible and typhoid and paratyphoid bacilli resistant. The effect on various elements in the normal flora of the lower bowel is clearly a matter calling for further study, and such a study is said to be in progress. Although it is not really known which of the numerous species found in the bowel can play an active part in producing peritonitis, it is incredible that the escape of intestinal contents should be rendered harmless merely by reducing its *Bact. coli* content. The bacteriostatic effect as indicated by this reduction was regularly achieved except in a few cases having either diarrhoea or obstinate constipation; either of these conditions, the former particularly, prevents the proper action of the drug. These authors have now treated with it 100 patients suffering from various specified bowel conditions; they record its effects only in 27 cases requiring operation on the lower bowel, in which its administration was designed to prevent post-operative peritonitis. Of these, 10 are described in detail and 4 are illustrated by diagrams of the complex resections and anastomoses which were necessary. Operations inevitably soiling the peritoneum were performed with apparent impunity, and freedom from post-operative distension was a further advantage secured. This form of medication will evidently become a necessary adjunct to colonic surgery, and succinylsulphathiazole appears from this account to be the drug of choice, but a close comparison of its effects with those to be obtained with sulphaguanidine, preferably by quantitative bacteriological methods, would establish its position more clearly.

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[1] *Arch. Surg.*, 1942, **44**, 208.

PROGNOSIS OF ACUTE HAEMORRHAGIC NEPHRITIS IN CHILDHOOD

Varying opinions on the ultimate outlook for children who have suffered from acute haemorrhagic nephritis have been expressed in the past twenty years. These discrepancies appear to depend essentially on the standards offered by the investigators, and the introduction of the "Addis count" some years ago was an attempt to reach agreement on what could be regarded as normal. This test turns upon examination of the deposit obtained after high-speed centrifugalization of the urine, and various workers have set out the upper limits for the calculated numbers of casts, white epithelial cells, and red blood cells after a drop of the deposit has been examined in a blood-counting chamber. G. E. Pittinos, J. D. Craig, and A. G. DeSanctis[1] report the use of this Addis count among other methods in the examination of 32 patients who had all suffered from acute haemorrhagic nephritis at an average time of about six years before the investigation, only 4 of the patients having had the acute illness less than two years before being examined. The group of 19 boys and 13 girls were subjected to the following procedure: physical examination; blood-pressure determination; analysis of the urine with an Addis count; complete blood count; chemical blood examination for urea, non-protein nitrogen, creatinine, cholesterol, serum albumin, and serum globulin; and a urea clearance test. All the children were found to be essentially normal physically, except one who had a raised blood pressure with no other abnormalities. Routine examination of the urine showed 6 children with albuminuria. Two of these were found to have high white cell counts by the Addis method, which were ascribed to pyuria rather than to nephritis, one showing an abnormal renal pelvis with an intravenous pyelogram. Two others with albuminuria were examined eight and ten months later and found to be normal. One patient had no abnormality apart from the albuminuria, and had two normal Addis counts eight months apart. The authors do not think that this patient should be classified as having residual kidney damage of what is termed "latent nephritis" type. The remaining patient with albuminuria did not return for further study and was therefore classified as having potential latent nephritis. Chemical examinations of the blood for retention of nitrogenous products were all negative. Urea clearance tests on all patients were normal, and there was no anaemia ascribable to the nephritis. Addis counts done on all the children were normal except for the two who were considered to have pyuria. These results would indicate that acute haemorrhagic nephritis in children has an excellent prognosis, for the Addis count introduces strict criteria of cure. The 32 patients who formed the subjects of this investigation were, however, drawn from 110 patients suffering from acute haemorrhagic nephritis in the Post-Graduate Hospital, New York, in the years 1928-39. Four patients died during the initial manifestations of their disease, and the attempt to establish contact with the remaining patients produced only the 32 who served for this follow-up study. The value of the report lies, therefore, not so much in any statistical deductions as to the ultimate prognosis in this disease as in the emphasis laid upon the need for standardizing the criteria of a healed kidney. It is suggested that every child who has suffered from acute haemorrhagic nephritis should be examined every three months up to and including two years after the acute attack. This examination should include physical overhaul, blood-pressure reading, and examination of the urine, and an Addis count at the end of two years. If in the course of the two-year period the slightest urinary abnormality is found the Addis count should be employed as a further check.

SIMMONDS'S DISEASE

Wasting and loss of strength are such important symptoms that the study of their rarer organic causes is of special interest. In this connexion Simmonds's disease is of particular significance because it brings into prominence the endocrine factors in cachexia and offers some key to the complex interaction of the ductless glands. First described by Simmonds in 1914, panhypopituitarism, or Simmonds's cachexia, has since received its fair share of attention in medical literature. It occurs most often in women between 30 and 40 years of age and in those who have borne several children. In some cases the condition follows infection or trauma, and in others it arises after severe post-partum haemorrhage. The disease usually begins with amenorrhoea, and wasting appears later, in some cases being very slight. Although loss of strength and alertness are the main symptoms, the hypogonadism and general lowering of metabolism, with loss of hair and retardation of growth, are characteristic. Most cases are fatal, but the course is slow, and the gradual wasting may in time lead to extreme emaciation. The cause of this disease is some destructive lesion of the anterior pituitary.

Non-fatal and minor degrees of the condition are difficult, if not impossible, to distinguish with certainty from other causes of wasting and weakness. Of these the one which has perhaps given rise to most difficulty is anorexia nervosa. Here the wasting is often extreme, though the weakness is much less in evidence. Indeed the typical patient with anorexia nervosa, usually a girl of from 15 to 25 years of age, may appear full of energy and be constantly on the go, while losing weight to an alarming extent as the weeks pass. In anorexia nervosa the periods also cease, blood pressure and basal metabolism fall, and the hair may be lost. In pituitary cachexia the patient wants to eat but cannot, whilst in anorexia nervosa the sufferer —often emotional or actually psychopathic—usually "wants" to lose weight and will not eat; in both conditions there is often found an undue sensitivity to insulin with a relatively low blood-sugar content. In a recent paper R. Fraser and P. Smith[1] have investigated the insulin sensitivity by means of an insulin-tolerance test, as well as the urinary excretion of steroids derived from the adrenal cortex and testis, in a number of cases of Simmonds's disease and similar clinical conditions. Though of necessity post-mortem confirmation of the diagnosis was not possible and the number of cases was small, the results suggest that by these tests a distinction between the various conditions may be made biochemically. Briefly put, the insulin-tolerance tests showed that the initial fall in blood sugar after insulin injection was followed, in cases of Simmonds's disease, by a longer delay in return to the previous fasting level than in normal individuals. In 3 out of 8 cases of anorexia, however, a similar delay, or "hypoglycaemic unresponsiveness," was also found, so this response is not confined to panhypopituitarism. The authors found that in all their cases of Simmonds's disease except one the urinary 17-ketosteroid assays were negative, while in the 4 cases of anorexia tested the assays varied from 2.7 to 14.7 mg. per 24 hours. Such investigations as these offer hope that further knowledge may be derived from the subtle reactions of the pituitary upon growth, the sex glands, and the adrenals; they also suggest methods of diagnostic value to the clinician.

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[1] *J. Amer. med. Ass.*, 1941, **117**, 1855.

[1] *Quart. J. Med.*, 1941, **10**, 297.

BLOOD FLOW TO LIMB MUSCLES

Studying by means of a segment plethysmograph the flow of blood to the muscles of the forearm and calf, Wilkins and Eichna[1] observed that warming the body led to an increased, and cooling to a decreased, flow. Stimuli known to cause vasoconstriction in the hands and feet had to be more intense to produce measurable changes in the forearm and calf. Immersion of the hand or foot in iced water was the most effective of such stimuli. On the other hand, certain emotional stimuli—such as mental arithmetic—which are known to cause vasoconstriction in the hands and feet resulted in an increased flow of blood to the forearm and calf. This reaction was of two types—early and delayed. All the reactions mentioned, except the delayed vasodilator response to certain emotional stimulation, depended upon an intact sympathetic nervous supply. There is evidence of a humoral mechanism, possibly adrenaline, in this reaction. Vasodilatation in the forearm and calf, due to exercise or after temporary arterial occlusion (reactive hyperaemia), was unaffected by sympathectomy. It was also shown that vasodilatation after arterial occlusion for five minutes was relatively complete, being unaffected by sympathectomy, warming the body, and by other stimuli known to cause vasodilatation. As this method is technically easy and its effect relatively complete, the authors recommend it for inducing experimental vasodilatation in the forearm and calf. The only thing which materially affected the degree of vasodilatation was a strong vasoconstrictor stimulus; weak vasoconstrictor stimuli had no effect. The flow of blood during reactive hyperaemia varied directly with the blood pressure, both in normal subjects and in hypertensives. Further, if the blood pressure of normal subjects was raised to levels comparable to that of the hypertensives, the flow of blood was of the same order in both groups. Conversely, when the blood pressure of hypertensives was lowered to normal levels the blood flow was like that in normal subjects. The authors think this is evidence against the view that in hypertensive subjects the vessels in the limbs are in a state of increased peripheral resistance which cannot be affected by physiological vasodilatation. Five patients with hyperthyroidism were also investigated. All showed an increased blood flow to forearm and calf, both under basal conditions and with reactive hyperaemia. There was little correlation between the volume flow and the basal metabolic rate.

While there is little exactly new in these observations, and although the method of measuring the blood flow to the muscles of the forearm and calf is not ideal, the work nevertheless represents a step in the right direction, and has an important bearing on the interpretation of the clinical tests usually employed in cases of peripheral vascular disease. Surgeons have long mistrusted predictions, based on skin-temperature reactions, that sympathectomy would be without benefit in certain cases of intermittent claudication. There has always been a need for measurement of blood flow to the muscles rather than to the skin, and this should heighten the value of preliminary testing.

CONFIDENTIAL DEATH CERTIFICATION

Civil registration has been carried out in the Province of Quebec since 1622. When the Province joined the Canadian registration area in vital statistics in 1925, no change was made in the civil registration system, and the collection of vital statistics was entrusted to the clergy. The old system, which was not designed for vital statistics, had defects when judged by modern requirements. The procedure regarding death registration was somewhat cumbersome. The undertaker was responsible for obtaining the death certificate, and he retained it until the interment, when he delivered it to the priest or minister, who made his returns at the end of the month. By this procedure the certificate was seen by a number of persons, and in a small community the disease from which a person died soon became known to all. This practice embarrassed the doctor who wanted to maintain his professional secret and yet desired to provide accurate information to the Ministry of Health as to the cause of death. In 1931 a number of physicians who had visited Europe suggested that the procedure should be modified by adopting the European system of a confidential medical certificate. The term "European system" is hardly accurate, because confidential death certification was not common in Europe, although it was established in Switzerland. The need for some modification in registration was emphasized in 1936-7, when an investigation was carried out on death certification. The inquiry covered 5,965 deaths, and visits were made to the doctor issuing the death certificate, and he was asked his actual opinion regarding each case, without reference to the statement he made on the official certificate. This inquiry revealed that 1,163 certificates, one-fifth of the whole, had been intentionally falsified, 322 were partially inaccurate, and 841 were completely untrue. The concealment of four causes of death comprised almost 90% of the false certificates: they were cancer 23.9%, heart diseases 22.5%, infectious diseases 20.7%, and tuberculosis 11.8%.

The situation was remedied in 1940 by adopting a system of confidential medical certificates.[1] The new certificate has a flap which covers the medical certificate proper and is sealed. Anyone opening the flap is liable to prosecution. On the face of the flap, which is a permit for burial, it is noted whether death was due to violence or infectious disease, so that the Public Health Acts dealing with these causes can be complied with. No conclusions regarding the possible alterations in the trend of the death rates can be attempted after so short a trial, but there has been an increase in some causes of death which in the past were the ones most often concealed. Besides the satisfaction that the new certificate has given the medical profession, the statements provide more explicit details and are easier to interpret and tabulate. One disadvantage is that the mucilage on the flap tends to stick and has given rise to loss of certificates: the author states that "in our office we have lost a few thousands." In view of this defect it seems that the death rate from specific causes must still be inaccurate, although an improvement has been obtained in proportional mortality.

Doubtless the innovation has improved the vital statistics of Quebec, but to the perhaps conservative Briton the method has no advantage over ours, and it does not seem likely that such a scheme would improve our vital statistics. Our control of local registration is more efficient than in Quebec, which is "on the somewhat benevolent basis of co-operation." The knowledge of one's family medical history is surely not generally undesirable, and for most life insurance policies it is a necessity if a penalty is to be avoided.

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[1] *Johns Hopk. Hosp Bull.*, 1941, **68**, 425, 450, 477, 512.

[1] Parrot, Paul, *Canad publ. Hlth J*, 1942, **33**, 114.

MAINLY ABOUT WOMEN*

BY

Sir ALFRED WEBB-JOHNSON, K.C.V.O., C.B.E., D.S.O., T.D.

President of the Royal College of Surgeons of England; Surgeon to the Middlesex Hospital

It is always a pleasure to me to visit the London School of Medicine for Women, for I have the greatest admiration for your achievements, and I have many personal links with members of your staff—past and present. Whenever I visit you I feel I am treading historical ground, for, though medical women are now such an essential part of our profession, that position has been attained only by the self-sacrificing efforts of your founders and the devoted determination of those who fought their way to general acceptance.

In the Apocrypha it is written: "Oh ye men, are not women strong?" Although this fact has been realized from such early times, and is borne in on us forcibly to-day, it is but yesterday that the rights of women have been recognized. Great women there have been throughout known history—great Queens—and some other words of the Apocrypha are applicable to them as well as to men: "Leaders of the people by their counsels, and by their knowledge of learning meet for the people, wise and eloquent in their instructions: all these were honoured in their generations, and were the glory of their times."

Seeds Sown in the 18th Century

I always think that the seeds of the general recognition of woman's true place in society were sown in the latter half of the eighteenth century, about the time that "gentlemen" were invented by George III and Beau Brummel made bathing fashionable. My mind naturally dwells much on this period, for it was the time of the foundation of scientific surgery. It was an age of intellectual giants—the time of Samuel Johnson; of Zoffany, Hogarth, Reynolds, and Gainsborough; of Burke, the elder and younger Pitt, and Gibbon; of Nelson and Cook; of Sheridan and David Garrick—it was the time of John and William Hunter and Edward Jenner. In this starry firmament a group of women of the period shone as a brilliant constellation.

Not unnaturally women found their earliest opportunities for distinction in the giving of pleasure, especially in the imitative and creative arts. There were great players like Mrs. Cibber, Peg Woffington, and Mrs. Siddons. Among the painters of the time a woman, Angelica Kauffmann, was one of the first of the Royal Academicians. But, to my mind, the brightest star was Fanny Burney. She vindicated the right of her sex to an equal share in the fair and noble province of letters. But though generally acclaimed, Fanny Burney still felt the disabilities of her sex. Her father's lack of interest was largely responsible for her selling the copyright of *Evelina* for £20. Her father's estimate of her worth was probably only typical of the general attitude towards women, and he thought he was doing her good service when he secured for her an appointment as lady-in-waiting to an exacting Queen, although it was clear that in that position she would have no time for writing. Johnson's estimate was probably coloured by a subconscious superiority complex, for he influenced her writing and ruined it. I am also drawn to Fanny Burney because she provides a slender link with surgery. Her patronymic was originally McBurney, a name familiar to you all; and she was a visitor at Hunter's house.

It was natural that women should find in the field of social reform their opportunity to take a larger part in the life of the community. The outstanding pioneer was Elizabeth Fry. Though she was the mother of eleven she found time to fight for and attain shelters for the homeless, and libraries for naval hospitals; and she was able to carry through her great work of prison reform and to bring about the foundation of charity organization societies. From Elizabeth Fry it was but a step to Florence Nightingale, and then to women's fight to enter the medical profession. The women's movement took full shape in the middle of the nineteenth century. Medical women and Florence Nightingale, as a great historian has said, did more than any others of their sex to bring about the new conception of the place of women in society, and to carry to a successful issue the movement for the general emancipation of women. Voices had been raised before. But it is not the one who first says a thing, but those who say it so long, so loudly, and so clearly that men are compelled to hear them—it is to them that the credit belongs.

In the fight for women's rights there have been mistakes, but, after all, as Milton said, error is but opinion in the making. Nothing great was ever achieved without enthusiasm, but too much attempted often leads to violent reaction. The history of the movement provides a striking example of the inevitable gradualness of change, and shows that besides a moving power there is also need for a steadying power. Improvement is then gradual and slow—but sure and lasting: "*Chi va piano va sano ed va lontano.*" No martyrdom has changed the known tendency of things. An era comes to an end. Time advances, facts accumulate, doubts arise, and conditions become ripe for a new epoch. The spirit of the age then makes straight the path of progress.

Times had changed now, for improvements in travel had made it possible for women to move more freely about the country. Before railways all but the wealthy had to "stay put." Boarding schools and visits to friends became commoner after railway travel was possible. The horizon was enlarged and possibilities of freedom and service were seen more clearly.

Two Pioneer Medical Women

The pioneers in women's fight to enter the medical profession in this country were Elizabeth Garrett and Sophia Jex-Blake. After a long struggle Elizabeth Garrett attained her personal ambition, and soon showed that a woman could be a reliable physician. I am glad to recall that, although my hospital does not admit women students, Elizabeth Garrett found some of her difficulties met by being allowed to attend classes at Middlesex. She used her feminine arts to get her way. And, why not? As a pretty girl once said to Max Beerbohm: "After all, women are a sex by themselves, so to speak." The assistance Elizabeth Garrett received at Middlesex was chequered and intermittent; but in spite of disappointments her debt to Middlesex and the medical staff was great, and, on the whole, she had happy memories of the hospital and always said that the training was invaluable to her. And so Elizabeth Garrett reached the *Medical Register*.

Sophia Jex-Blake was of a different type. She was determined to force the padlocked portals of the medical schools, and, when in the United States, was not prepared to graduate from a women's college. She failed to enter Harvard, however, in spite of the powerful support of Oliver Wendell Holmes and Brown-Séquard, and decided to seek medical education in her native land. She tried London and Cambridge without success, and then concentrated her attack on Edinburgh. Through strife, riot, and public protests she eventually attained her goal.

Elizabeth Garrett was an instance of an individual success, but Sophia Jex-Blake fought the battle not for herself alone but for all, and events moved rapidly. In 1874 your School was founded, largely owing to the efforts of Miss Jex-Blake. Two years later a new Medical Act allowed examining bodies to admit women, and in 1877 the Royal Free Hospital was secured for the clinical teaching of your students. London University opened its doors to women, and they lost no time in showing their worth: your brilliant alumna Mary Scharlieb passed her examinations in the first division, and was awarded gold medals and a scholarship. Women doctors had arrived. Throughout the struggle there was a good deal of mental confusion and many hard words. These, I hope, have been softened by the passage of time.

Women and the College of Surgeons

I come to you to-day, dressed in a little brief authority, representing a College which was slow to take advantage of the Medical Act of 1876; for it was not until 33 years later that our diplomas were granted to women. But, though the doors were slow to open, women have not been slow to enter, and now one in eleven of our Members and one in eighty of our Fellows are women.

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* Address at the London School of Medicine for Women, on the occasion of the presentation of prizes, July 24, 1942.

Women did not attain full rights in the College until the reign of George V, when the Charter of 1926 was applied for during the Presidency of my late friend and colleague Sir John Bland-Sutton. As the next Middlesex surgeon to be elected to this high office, it was my privilege to be the first President to welcome women Fellows and Members to the Buckston Browne Festival, the occasion being honoured by the attendance of our only lady Honorary Fellow, H.R.H. the Princess Royal.

The Charter of 1926 was a landmark in our history because it gave women Fellows the same privileges as men Fellows. They are now able to vote for the election of Members of Council; they may themselves be candidates for the Council, and they are eligible as Examiners, and for the offices of President and Vice-President.

Our College has good reason to be proud of its women Fellows and Members. Two of them have held Hunterian Professorships; one has been Arris and Gale Lecturer, and one has been awarded the John Hunter Medal and Triennial Prize. In addition, two women students have won the Hallett Prize in the Primary Fellowship, and three have won the Begley Studentship.

My personal links with women surgeons have been very happy ones. I was proud to call Dame Mary Scharlieb my friend. I am also proud to be Vice-President of the Marie Curie Hospital, to the excellent work of which I was glad to call attention in the Bradshaw Lecture on "Pride and Prejudice in the Treatment of Cancer." In the last war I took over the Château Mauriciens in Boulogne base from Louisa Garrett-Anderson and Flora Murray. Curiously enough, I turned it into a hospital for women, while they came home and founded a hospital for men—the hospital of splendid memory in Endell Street.

War seems to give women their greatest opportunities for proving their worth. Florence Nightingale found her opportunity in wartime. War again in 1914 brought a big opportunity, and maturity may be said to have been thrust upon you almost at the sword's point or the cannon's mouth. In this war you took an honoured place by acknowledged right.

The Future of Women in Medicine

And, now, what of the future? You are heirs to a great inheritance. Your place is assured though special lines of work may be reserved for you. In India, for example, there is still a special field of work for women. In the Simon Report we read: "The women's movement in India holds the key to progress, and the results it may achieve are incalculably great. It is not too much to say that India cannot reach the position to which she aspires in the world until her women play their due part as educated citizens."

In social medicine women can play a special part in working for what it is fashionable to call "positive health." In the Scriptures it is written: "They that are whole need not a physician, but they that are sick." Those who hold that view to-day are in a small minority, for members of the medical profession no longer regard themselves merely as agents in the recognition and treatment of diseases; they now want to know the cause of disease and how to prevent it. The sick and injured cannot be herded through "marshalling yards" as some organizers would have us believe. The family doctor will remain the backbone of medical practice. As Alexis Carrel emphasized: "Disease is a personal event. It consists of the individual himself. The patient is not limited by his outer covering. His surface is not his real frontier. A man may be more interested in his environment than in his own body. His position in the community, for example, may appear to be of more importance than life itself." Medicine is essentially a calling. It has been well said that a physician [illegible] surgeon may possess the science of Harvey or Hunter and the art of Sydenham and yet be lacking in those finer qualities of heart and head which count for so much in a profession so intimately linked with the humanities.

Many of you may be about to leave hospital. There you have seen the best that medical science has to give. I often recall what Sir Frederick Treves said to King Edward VII when his Sovereign thanked him for his life-saving attentions. Having in mind the splendid work of his great hospital—the London—he replied: "Sir, you have had as much care and skill in your illness as the humblest of your subjects."

I congratulate the prize-winners and venture on a few words of advice. Don't hurry out into full independent autonomous isolated work: knowledge and timber should not be much used until they are seasoned. Remember that your calling is an exacting one: to do your duty you must be well equipped; for, as Kipling said when speaking in the Royal College of Surgeons, "Is it any wonder that your calling should exact the utmost that man can give—full knowledge, exquisite judgment, and skill in the highest, to be put forth, not at any self-chosen moment, but daily at the need of others?" Remember also Francis Bacon's words: "I hold every man a debtor to his profession; for the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto." In spite of a busy life and hourly calls you must keep up to date and thus help to narrow the gap between experiment and practice—between the acquirement and application of new knowledge. In the war against disease, just as in military campaigns, a time lag may be fatal to success.

We are now all of one great army, concerned no longer with the place of women or the preserves of men, but with the practice of medicine and the war against disease. As members of a united profession we should bear in mind what Tennyson wrote in *The Princess*:

> "The woman's cause is man's: they rise or
> sink
> Together."

BEIT MEMORIAL FELLOWSHIPS

At a recent meeting of the Trustees of the Beit Memorial Fellowships for Medical Research Dr. A. N. Drury, F.R.S., was appointed to the Advisory Board in the place of Prof. A. J. Clark, F.R.S., whose untimely death in July, 1941, was so deeply regretted by all who had worked with him. The Trustees noted with pleasure the election this year of three past Fellows to the Fellowship of the Royal Society—namely, E. Hindle (Junior Fellow 1910–12 and Senior in Tropical Medicine 1927–33), F. M. Burnet (1926–7), and A. R. Todd (1935–6). Out of the 28 present Fellows there are now 14 seconded for whole-time war work.

The following elections were made, with permission for each Fellow to be seconded at any time for war duties:

Fourth Year Fellowship (£500 a year)—E. G. L. Bywaters, M.B., B.S.Lond. To continue his studies of crush injuries in relation to kidney function, at the British Postgraduate Medical School, London.

Junior Fellowships (£400 a year).—D. Herbert, M.A., Ph.D.Camb. To study the biochemistry of toxoids for active immunization against gas gangrene, at the Dun Biochemical Laboratory, Cambridge University. F. W Landgrebe, D.Sc.Aberd. To study the separation of posterior pituitary hormones and their clinical uses, at the Medical School, Aberdeen University.

The Maternity and Child Welfare Group of the Society of Medical Officers of Health, in a memorandum on planning for the future health services for mothers and children, points out that factors outside medicine influence maternity and child health, and therefore the provision of adequate food, housing, and financial aid are essential features of any satisfactory plans. A complete maternity and child welfare service—with ancillary services—should be available to all as part of a national salaried medical service organized on a regional basis, with the Health Centre as the local unit. The prevention and treatment of illness in children should be in the hands of doctors who have had a special postgraduate experience, and the present maternity and child welfare and school medical services should be amalgamated, so that one service provides for the child from birth to school-leaving age. There should be enough institutional accommodation for all women who require or prefer confinement in maternity hospitals, which should be separate units of general hospitals. The obstetric care and confinement of the mother should be carried out by a specialist obstetric service based on the maternity hospitals. For ante-natal purposes a minimum of 10 hospital beds per 1,000 persons in an area is required, in addition to hostel accommodation, which should be attached to maternity institutions, especially those serving rural areas. There should be short-period residential nurseries for children during the mother's "incapacity." The Group also recommended the organized teaching of "parentcraft" during adolescence.

Reports of Societies

TREATMENT OF MALARIA

At a meeting of the Royal Society of Tropical Medicine and Hygiene on July 23 Sir **RICKARD CHRISTOPHERS**, the president, gave a paper on the treatment of malaria, a subject, he said, of the greater importance because British troops are already operating in many malarious countries, and the indications are that sooner or later others will be added.

Nowadays, with powerful specific drugs, malaria was looked upon as a relatively mild disease, but in the absence of these drugs it would be seen again in its old grim shape, with infections whose fatal course the physician was unable to stop. The sheet-anchor was the specific drug, which up to ten years ago was quinine only. The cultivation of cinchona bark had unfortunately been concentrated in Java, and with Java now lost to the Allies the supply of quinine must be seriously curtailed. It was doubtful whether other cinchona alkaloids or various derivatives of the quinine type, such as hydroquinine, were available to meet what must now be an enormous demand for efficient substitutes, and it was necessary to turn to recently developed synthetic antimalarial drugs.

The first antimalarial compound ever to be produced was plasmochin, synthesized in 1924-6, and this was followed in 1932 by atebrin, probably the most powerful antimalarial at present known. Since then many compounds had been made in different countries, all more or less closely related to or identical with atebrin or plasmochin; thus quinacrine, acriquine, and mepacrine were respectively French, Russian, and British atebrin, and praequine, plasmocide, and pamaquin the corresponding equivalents of plasmochin. It was stated that biologically mepacrine, the British product, was indistinguishable from atebrin, and it seemed a pity to have changed the name.

Plasmochin could not be considered a satisfactory substitute for quinine in the treatment of the acute disease, nor, by itself, in the after-treatment or prophylaxis, but atebrin had come to be generally accepted as equally effective with quinine. With atebrin not more than 0.3 g. in the day was given, in three doses of 0.1 g. The toxicity did not seem to be great, but atebrin showed quite definitely some cumulative effect, and therefore the daily total was fairly well fixed. Usually in the acute attack atebrin was given for a period not exceeding 7 days, and if necessary repeated again after an interval. In prophylaxis the chief difference from quinine was in the avoidance of continued daily administration; this again was on account of the cumulative effect. Usually the dosage was rather cautious, say 0.2 g. on two successive days in the week or even at longer intervals. Atebrin was a powerful yellow dye, and its administration was liable to give rise to yellow coloration of the skin, but this was in no way related to jaundice and it had no disadvantage except the cosmetic one. It was supposed that atebrin did not, like quinine, precipitate blackwater, but it was perhaps early to be completely sure on that point.

One feature in which atebrin had a clear advantage over quinine was its suitability for intramuscular injection. The treatment of the ordinary case of malaria was best carried out by oral administration, but should there be any sign of cerebral or other pernicious manifestations parenteral administration was a matter of urgency. The intramuscular use of quinine in such circumstances was quite unjustified, as the necessary rapid absorption could not be expected. Intramuscular injection was in fact not so much used in pernicious malaria as in the treatment of cases of a chronic kind thought to be resistant. Actually the use of intramuscular quinine for such a purpose was largely the perquisite of the doctor babu or low-class practitioner, and in the opinion of many it amounted to malpractice. The results at best formed a necrotic mass in the tissues and at the worst led to tetanus or serious sloughing and other evils. With atebrin, however, it appeared to be accepted as the correct procedure, and Sir Rickard explained that the difference was due to the different hydrolysis—the splitting up of a proportion of the salt into the base and "free" acid—of the two drugs. With atebrin the hydrolysis was negligible, so that the sloughing of the tissues after injection was not experienced to anything like the degree that it was with quinine. He added that it was improbable that the last word in synthetic antimalarials had been said. Certain arsenical compounds had been shown to have a sterilizing effect on certain forms of malaria. Sulphonamide preparations might yet prove useful, and a compound of the synthalin type had also been found effective.

Dr. **WILLIAM HUGHES** of Lagos followed with a short note on the treatment of malaria in a hyperendemic zone. In the treatment of troops in such an area, he said, antilarval methods were out of the question. He would recommend nothing beyond the mosquito net and the maintenance dose of quinine, just as with the civilian. He favoured 5 grains daily as the routine treatment and 30 grains during the acute stage.

Prof. **WARRINGTON YORKE** said that in losing Java we had lost 90% or more of the world's supply of quinine, and if increasing numbers of our troops were operating in malarious countries and more and more of our ships calling at malarious ports, there would be a great demand for an adequate supply of the only practical substitute for quinine—namely, atebrin (or mepacrine)—and the conservation of the limited supplies of quinine remaining. If quinine was to be saved the economy must be in the large amounts used for prophylactic treatment. Prof. Yorke added that he had listened with surprise and consternation to the president's denunciation of the intramuscular use of quinine. When the president said that it was unjustifiable to treat serious cases with pernicious manifestations by means of intramuscular quinine because the necessary rapid absorption could not be expected, he parted company from him. He had found that one or two intramuscular injections of quinine bihydrochloride were invaluable, only it was urgently necessary to make certain that the patient would absorb some quinine very quickly. He agreed that it was by no means all absorbed, but enough was absorbed to produce the desired effect. He had never seen the terrifying results the president had depicted.

Major **ROWLAND HILL** said that under-treatment was the greatest fault in the present-day management of subtertian malaria in hyperendemic zones. Of atebrin he said that it was as non-toxic as any drug could be expected to be. He at least had never seen any toxic response. As an anti-relapse drug atebrin was far more satisfactory than quinine, and something between 4 and 7 standard-size tablets a week were helpful in preventing recrudescence.

Sir **PHILIP MANSON-BAHR** said that he believed quinine and atebrin went well together in subtertian malaria, but he could not agree that the intramuscular or intravenous administration of atebrin was anything like as efficacious as the same administrations of quinine.

Nova et Vetera

CLOSED TREATMENT OF FRACTURES

Dr. Robt. D. Campbell (Kirriemuir) writes:

I see that this question has arisen again—in the article by Dr. J. Trueta (May 16, p. 616). An experience of mine might, perhaps, take the paternity of this technique a little further back. In December, 1901, I was acting as "locum" in a district of the Island of Lewis. One day I received a message to go to a case of a broken leg. This involved a journey by land and sea-loch, occupying the greater part of the day; finishing with a climb up a hill-face in the dark to one of the "black" houses of that time. The patient was a boy of about 14. The leg, from knee to ankle, was enclosed in a thick casing, evidently composed largely of peat pulp. On breaking this off, there was the usual wound in the front, about the middle of the lower leg, where the sharp end of the fractured tibia had penetrated and then been retracted. The fracture was in a very good position. There had been a good deal of leakage, but this had been well absorbed by the peat casing. After spending the night at a shooting lodge, I took him by sea next day to Stornoway. The eeriness of the situation, the dim light and the peat reek, with the unwashed look of the people and the undertones of the Gaelic, made me ask myself if what we were witnessing was not the survival of a surgical procedure which might have come down even from Palaeolithic times. I wondered sometimes what would have happened to the leg if it had been left alone.

Correspondence

Social Medicine

SIR,—As a member of our local group committee, I have been much interested in the various discussions on this subject and also in the letters in your *Journal*. It seems to me that there is a confusion of ideas, especially among the consultants Surely the preventive side of medicine—such as housing, employment, diet, wages, sanitation, heredity, environment, etc.—is the concern of the M.O.H.s and the Ministry of Health. It is quite useless telling the busy general practitioner that he is to prevent his patients getting ill and to diagnose their complaints before they have any physical signs. The fact remains that they come to him ill, and he has to deal with them on the spot and help them immediately. It matters not if the doctor is a panel doctor, a paid State doctor, or a private doctor; his success will depend on his ability to deal with his patients clinically (of course Prof. Ryle is right to use this expression).

I personally don't think it matters a row of pins, from the patients' point of view, what type of practice the future scheme is made of. What does matter is that the members of our profession shall be the right type of man and woman, keen on medicine, with a good training, and, if possible, with compulsory house jobs and postgraduate work: and, may I add, with as little clerical work as possible.—I am, etc.,

Hampstead HAROLD VAN PRAAGH.

The Planning Commission's Report

SIR,—May I offer the following opinions on the Planning Commission's interim report?

1. The Commission is to be congratulated on its achievement.

2. The majority view (paras. 47, 48, 49), envisaging the suggested reorganization in hospital, consultant, public health, and other services and standard form of health centre, is well reasoned, sound, and acceptable.

3. A whole-time salaried medical service would be wholly bad for the profession and the public. It bristles with unpalatable features and would "flatten" two essential points in any good medical service: (*a*) the individual general practitioner's independence in medical (and other) thought; and (*b*) the spur to achievement given the practitioner by the knowledge that legitimate rewards—humanitarian, professional, financial—are only his in direct proportion to his efficiency and endeavour.

4. There is no need for a whole-time service (or for the third, half-and-half, scheme). All its good points, and much more besides, are encompassed by the scheme outlined in the majority view.

5. Many of the advocates of a whole-time State service seem intolerant when not dogmatic or fanatical. Obviously good points against whole-time service, such as free choice of doctor and bureaucratic stultification, cannot be dismissed as "bogies" or "resuscitated platitudes." With gentler thought it can be realized that the community, "who want a complete medical service" (Dr. A. R. Fox, July 11, p. 53), will get a complete service in the scheme envisaged in the majority view—a scheme in which the profession loses little or nothing, gains a lot, and is spared a great deal. "No one can be so short-sighted as to imagine that the end of the whole scheme will not be a whole-time salaried medical service. . . . Let us have something new: it has to come anyway" (Dr. G. G. Airey, July 11, p. 52). What is to be gleaned from these and similar statements? Such obsessed authors should realize that there is nothing inevitable about a whole-time salaried service; on the contrary, many of us have found that the majority of our colleagues view it with disfavour if not with abhorrence. They might also consider the letter by the serving officer in the *Supplement* of July 18 (p. 6), which drops an authoritative hint on what a State service can be like, and advances a plea "which I am sure will be echoed by the great majority of doctors who, like me, are temporarily with the Forces, to put on the brake, strongly, and stop this precipitous rush towards State medicine." The lay press teems with evidence of the extravagance and inadequacy of State control, and of the frustration forced on the individual by what the late Lord Chief Justice Hewart called "the new tyranny"—bureaucracy.

6. Dr. T. D. Culbert's belief (July 18, p. 79) that "since a capitation fee is retained the major evil of the present panel scheme is retained—namely, the inability of the doctor to act justly, according to his lights, towards his patient for fear of offending him and losing financially by a transfer"—cannot be supported when one reads in the report (para. 69) that the capitation fee is but one of the three parts of which a doctor's remuneration would consist, and that another would be a basic salary.

7. In 13 years of general practice in all manner of communities I have frequently deplored the present system, but nevertheless feel convinced that State medicine would be a most unhappy blunder, and would indeed point the lack of "the necessary will and the necessary perseverance." To a G.P. the majority-view proposals seem almost too good to be true, giving maximum benefit and minimum tears to patient and doctor, with one notable exception.

8. As Dr. Culbert's letter notes: "Close liaison between the general practitioner and the hospital is not envisaged nor is the need for it stressed enough." Here is a real deficiency, and this deeply important point forms the subject of the admirable article by Mr. Staveley Gough and Dr. Duffus (*Supplement*, July 18, p. 5), which should be read by all interested as a most constructive complement to the Commission's report. We recognize that the medical efficiency of any scheme rests on the efficiency of the family doctor. Create the "general practitioner hospital unit"—i.e., set aside hospital wards for the treatment of cases by general practitioners, with the freedom for the latter to seek specialist help when necessary, as at any other time—then would many patients be given an additional very real benefit; the G.P. would be afforded continuity of treatment, and G.P. prestige and standard would be raised.—I am, etc.,

Englefield Green, Surrey N. MORTIMER VALLELY.

Use of the Term "Orthopaedic"

SIR,—In suggesting that orthopaedic surgeons should confine their activities to "the treatment of deformities" Brigadier Max Page (July 18, p. 79) is approaching the subject from the point of view of a surgeon who finds part of the orthopaedic field attractive, and would like to put up a fence on the far side of it to keep the orthopaedic surgeon out! If, however, we approach the subject from the interests of the patient and of the general practitioner, it is clear that there is great advantage in giving the orthopaedic surgeon free access to treat injuries of bones and joints, and the opportunity of teaching pre- and post-graduate students in this field.

Sir Robert Jones said, when delivering the Lady Jones Lecture on crippling due to fractures before the University of Liverpool in May, 1925[1]:

> "It will, I think, be generally agreed that the teaching of the proper treatment of fractures can only be effective when based on experience, not of mechanical detail alone, but also of the principles which relate to deformity. Every fracture should be looked upon as a potential deformity. Some of these deformities develop in very insidious ways. They may be traced to omissions or commissions, or both. They may arise during treatment or when treatment is discarded. The least obvious frequently prove the most disabling
> The surgeon called upon to teach should possess the experience enabling him to visualize all such difficulties and dangers which are sure to encompass the practitioner in after-years.
>
> "Team work and segregation in many fields of surgical endeavour saved the lives of patients and the reputation of surgery. This became evident in fractures more than in any other branch of work. I have no hesitation in saying that greater progress was made in the treatment of fractures during the four years of war than had occurred during a generation in our big teaching hospitals.
>
> ". . . there is no mind so comprehensive that it can keep pace with all the requirements of modern surgery."

These are the carefully chosen words of a great surgeon, a very wise, considerate, and open-hearted man. It is surely right that there should be team work among surgeons. Some should confine themselves to the study and the treatment of the ills and accidents of the locomotor system. These men become more and more expert in the treatment of fractures.

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[1] *British Medical Journal*, May 16, 1925

Could anything be more illogical than an attempt to exclude a surgeon from the treatment of fractures because he has given up abdominal surgery!

The training and experience of an orthopaedic surgeon involve close study of the biology and reactions of the locomotor system. These possess characteristic differences from those of the viscera. These two systems differ widely in their function in reaction to injury and inflammation, in the methods which will restore function, and in the relative speed (or lack of speed) in their response. There is a difference, too, in that after a well-chosen and well-executed operation on the viscera the surgeon's work is often largely done, whereas the locomotor system commonly demands long and watchful rehabilitation. The good orthopaedic surgeon must combine the mechanical aptitude and craftsmanship of the engineer with the understanding, the gentleness, and the patience which living tissues need.

So to limit the field of orthopaedic surgery that it would fail to attract young men of first-class ability would be disastrous for all those crippled or threatened with physical disablement; for *unless orthopaedic surgery is very good it is very little good!* Well knowing this, Sir Robert Jones,[2] having outlined the orthopaedic field much as it is now widely accepted, says:

> "This definition admittedly covers a large area of surgery, and for this reason will attract the very best of our young surgeons. These are the men whom we specially desire to attract in order that they may devote themselves to a very intricate branch of work, bristling with problems which require solution, and demanding the highest operative skill."

To the orthopaedic surgeon a difficult fracture is a fascinating problem, to most other surgeons a confounded nuisance! Max Page is indeed an exception; he has given proof of his continued interest in orthopaedic work and has been welcome. His present attitude is unlike him, and his proposal is indefensible.—I am, etc.,

Oxford. G. R. GIRDLESTONE.

SIR,—It would appear that Brigadier Max Page in pleading for a more restricted use of the term "orthopaedic" has changed his views. On Oct. 1, 1935, when he gave his presidential address before the Section of Orthopaedics of the Royal Society of Medicine (*Proc. roy. Soc. Med.*, **29**, 63) he said, "Orthopaedics has so expanded that it may now *properly* be considered as that section of general surgery which deals with *any* disorder of the locomotor system." (Italics mine.) I cannot get up much enthusiasm about these definitions, but if we must have one then I am quite prepared to subscribe to Brigadier Page's. His letter gives one the impression that what he really fears is that the orthopaedic surgeons are using the term "orthopaedics" in such a way as to deny to surgeons who are not so labelled the right to treat disorders of the locomotor system. There is ample evidence that this is not so; two examples will suffice: Mr. Hey Groves has been President of the British Orthopaedic Association, Mr. Max Page President of the Orthopaedic Section of the R.S.M.—I am, etc.,

Oxford. H. J. SEDDON.

SIR,—Brigadier Max Page states that according to the O.E.D. the word "orthopaedic" became current in this country about 1840. The term really began to make its way with the founding of the Royal Orthopaedic Hospital in Bloomsbury Square in that year. The founder of the hospital was W. J. Little, a physician to the London Hospital, who has been regarded as the father of orthopaedic surgery in England. He performed the first tenotomy for the cure of deformity in London in 1837, and some years later described spastic paraplegia in infants, a disease to which his name was subsequently attached. But the originator of the word "orthopaedic" was Nicholas André, professor of medicine of the Royal College in Paris. In 1741 he published a work in two volumes entitled *Orthopaedia; or, The Art of Correcting and Preventing Deformities in Children*, which was translated into English. André coined the term from two Greek words, "orthos," which signifies straight, free from deformity, and "paedion," a child. His own comment was, "Out of these two words I have compounded that of orthopaedia to express in one term the design I propose, which is to teach the different methods of preventing and correcting the deformities of children."

On strict etymological grounds the word "orthopaedia" was sufficiently expressive to convey what André implied, but in actual practice the choice was not particularly happy, for there was perpetual confusion in many minds as to the meaning of the word. Apart from the general public, members of the profession with some Latin and less Greek readily assumed that it meant to make the foot straight and no more. But gradually that misconception largely disappeared. Again, in the process of time, like so many other words, "orthopaedic" has expanded its meaning so that it embraces the surgery of bones, joints, and muscles. It is surprising to be told that in America the scope of orthopaedic surgery is in dispute. That country is about the most progressive in this branch of surgery, and a perusal of the *Journal of Bone and Joint Surgery*, a significant title of the official periodical of the two great American orthopaedic societies, should leave no doubt about the meaning of the term to transatlantic orthopaedic surgeons.

Brigadier Max Page fears that if the term "orthopaedic" is to include injuries and diseases of the locomotor system, then their treatment will be restricted to orthopaedic surgeons. That would not be so. For any surgeon who has had the necessary training should be able to engage in this work whether he be a general or an orthopaedic surgeon. But if, as he suggests, the term should be restricted to the treatment of deformities, then there would be a real danger of the orthopaedic surgeon finding himself confined to the cure of deformity. No orthopaedic surgeon that I know would accept such a retrograde conception of his work. The fault is not with the orthopaedic surgeon but with the choosing of a term at once restrictive in its root meaning and expecting it to stand for a branch of surgery more expansive than an eighteenth century physician could possibly have dreamt about or intended. There are many branches of surgery, and some have emerged in our own day—e.g., thoracic surgery and neurosurgery. They are a tribute to the progress of surgery and they are special, requiring a training and a technique of their own. If we are to avoid looseness of nomenclature we must first begin by asking: "What is general surgery"?—I am, etc.,

London, W.1. ARTHUR ROCYN JONES.

Complacency in Anaesthetics?

SIR,—In a leading article (July 18, p. 73) you refer to the prevailing interest in anaesthesia and to the correspondence to which it so frequently gives rise. A 29-years experience in teaching students and the administration of a general anaesthetic on more than 20,000 occasions cannot but result in the forming of some definite impressions and opinions which may be of some interest and possibly of some value to others Briefly they may be stated as follows:

1. The administration of anaesthetics is an art. Idiosyncrasy to the drugs which we employ is common and a measured dosage system is not successful.

2. A drug can be introduced directly into the circulation to produce an *uncontrollable* state of coma, but this procedure does not appear to be a desirable one, nor does it call for the exercise of the art of the anaesthetist.

3. When complete relaxation of the abdominal muscles is required a deep anaesthesia *without cyanosis* must be obtained. For this purpose a potent anaesthetic agent is required. The best we have is ether. There are degrees of deep anaesthesia, and these can only be recognized if the administrator has a full view of the patient's face and eyes. Complete control over his jaw and upper respiratory passages is also necessary. A closely fitting face-piece is thus undesirable. The mask and drop-bottle form the ideal method for these cases, the mask being something more than a "rag" and the bottle being one that will deliver a steady drop at any desired rate.

4. Machines are of great use for operations requiring a lighter type of anaesthesia, and a machine of some kind is absolutely necessary when remote control of the anaesthesia is required.

5. Ether convulsions are not mentioned in Hewitt's *Anaesthetics and their Administration* (1912) or in Buxton's *Anaesthetics* (1941). Their occurrence dates from the intro-

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[2] Cameron Lecture on "The Necessity of Orthopaedic Training," delivered at the University of Edinburgh, Jan 14, 1921 *British Medical Journal*, Feb. 5, 1921

duction and general use of machines, and the attempt by means of these machines to give gas–oxygen–ether when a deep anaesthesia is required. Convulsions are a terminal symptom in asphyxia and probably due to oxygen starvation of the brain cells. Cyanosis is not a true indication of the degree of anoxaemia present, and anoxaemia may exist in the case of an anaemic patient without obvious cyanosis. Abdominal relaxation cannot be obtained with a weak anaesthetic agent without producing a degree of anoxaemia, and this condition persisting may give rise to convulsions. Do administrators always remember that their patient requires at least 250 to 300 c.cm. of oxygen per minute? Under no circumstances should a patient be deprived of his full supply of oxygen. I have never seen a case of ether convulsions.

6. Since entirely discarding chloroform in 1916 *as an agent for the induction of full anaesthesia,* I have had no anaesthetic deaths. Grave emergencies rarely occur, and it is many years since I had occasion to perform artificial respiration.

A death rate on the table of between 1.3 and 1.8 per 1,000; or a record such as that described by Mr. Hamilton Bailey, accepted with complacency, must, in the minds of many of us, give rise to a sense of wonder.—I am, etc.,

Dundee. ARTHUR MILLS.

Anaesthetic Death in the Surgery

SIR,—The following experience in a general practitioner's consulting room will, I feel sure, be interesting to your readers.

A girl aged 8 years was brought into my surgery one night about two months ago with a severe supracondylar fracture of the right humerus. As the nearest hospital was over 7 miles away, and the shock produced in sending her there was taken into consideration, I decided to reduce the fracture in my surgery. I accordingly administered an ether–chloroform mixture (3 to 1), open mask method, and with the assistance of a nurse, to whom I handed the mask after the child was apparently under, I reduced the fracture. This had barely been done when my attention was called to the child. She had stopped breathing and was practically pulseless. I promptly began artificial respiration for about one minute, then told the nurse to carry on while I went to open a cupboard for the purpose of giving an injection. This delay took about 1½ minutes. I injected 2 c.cm. anacardone into the right deltoid, then again took over the artificial respiration from the nurse. After half a minute I gave this up and decided to massage the heart. I dug my left hand under the costal cartilages and placed my right hand over the praecordium and did a cardiac massage for a quarter of a minute. The sense of relief when the child took her first breath can be imagined.

It would be interesting to know what the consensus of opinion is with regard to general practitioners accepting a responsibility of this type, which seemed justified in the circumstances. Death in a surgery and death in a hospital under these conditions are regarded quite differently by the layman. The one spells ruin for the G.P.; the other is a natural event in a hospital fully staffed.—I am, etc.,

Maltby. A. H. BARTLEY.

Trichlorethylene as General Anaesthetic

SIR,—In view of the increasing use of trichlorethylene as a general anaesthetic we feel that the following case will not only be of interest but may perhaps serve as a warning too.

The patient, a woman of 25 with a nodular goitre showing no toxic symptoms, was chosen as a suitable case for trilene anaesthesia. Her electrocardiogram showed no abnormality, the pulse rate was 72, B.P. 115/75, and her Goetsch test for sensitivity to adrenaline was negative. She had the routine premedication for a thyroidectomy, which consisted of 30 grains of chloral by the mouth the night before operation, a further 30 grains of chloral 4 hours before operation, and omnopon 1/4 grain with scopolamine 1/125 grain hypodermically 1½ hours before operation.

She came down to the theatre quite calm and drowsy. After local infiltration of the thyroid area with 120 c.cm. of 0.5% procaine and 1:150,000 adrenaline, general anaesthesia was induced by 100% oxygen passed first over and then through trilene in a Boyle's bottle. Blind nasal intubation was performed after a few moments, and the patient's condition seemed to be satisfactory; she was breathing quietly and regularly and was a good colour. Her blood pressure taken immediately after intubation, however, showed that her heart was fibrillating at a rate of about 140 beats per minute. The systolic pressure was 140, the diastolic varied from 80 to 110. Her colour remained good. The trilene was discontinued immediately, 100% oxygen only being administered and the pulse continuously observed. After about 5 minutes the fibrillation was replaced by a series of coupled beats, quite forcible in character, the rate slowly decreasing. This continued for 40 minutes. Anaesthesia was continued under nitrous oxide and oxygen, using a high percentage of oxygen. When the operation was completed the pulse had become quite regular at 80 beats per minute and the B.P. was 140/90. She was returned to the ward in good condition and has made an uneventful recovery. An electrocardiogram taken 5 days later shows no organic change except some loss of ventricular tone.

The most probable cause of this patient's fibrillation seems to us to be the trilene. We have never seen a case of fibrillation during an operation in a case of non-toxic goitre with a negative Goetsch test, and we do not think the adrenaline is a likely cause in this case. The close resemblance chemically between chloroform and trichlorethylene should, on theoretical grounds at least, make us be on the look-out for abnormal cardiac rhythms. Dr. Langton Hewer,[1] in his recent review, suggests that there is no evidence of this drug having any marked toxic action on the heart, and an examination of the literature supports this view. Nevertheless we feel it is of value to record this case.—We are, etc.,

K. G. LLOYD-WILLIAMS.
Royal Free Hospital, W.C.1. DAVID HEWSPEAR.

Treatment of Scabies

SIR,—My attention has been drawn to the leading article on scabies (July 11, p. 44) in which some misconception as to the value of treatment by benzyl benzoate has crept in.

You state that benzyl benzoate is liable to cause an intractable scrotal dermatitis. It would be interesting to know what evidence there is for this statement. So far I have not seen it recorded, and from my own personal experience in a considerable number of cases I have not come across it. It has, of course, been recorded by several observers in the case of derris and rotenone preparations. There is some truth in the statement that the spirit soap preparation of benzyl benzoate gives rise to smarting when applied to the skin, especially when there is much secondary infection. This difficulty has, however, been overcome without loss of efficiency by the introduction of a benzyl benzoate emulsion. This emulsion has the further advantage of obviating the use of spirit and soap, both of which are at the moment in short supply.

While there is no doubt that the efficacy of the classical method of treating scabies by sulphur ointment has been amply proved, it has the disadvantage of being messy and, unless properly controlled, is liable to give rise to dermatitis. At the present time, when supplies of soft paraffin for the ointment and soap to wash the clothes are limited, this method is not, for economic reasons, well suited for treatment on a large scale.

The Advisory Committee on Scabies of the Ministry of Health, in the light of work done by K. Mellanby and others, has come to the conclusion that the preparation of choice is a 25% emulsion of benzyl benzoate prepared in accordance with the instructions in the *National War Formulary.* It is necessary to add that this treatment cannot be carried out satisfactorily by the patient himself, but must be applied by someone who has been given full instructions as to the application. This recommendation was accepted by the Ministry of Health and is repeated in the Ministry's revised *Memorandum on Scabies* which will appear shortly.

I may add that the Executive Committee of the British Association of Dermatology, after consultation with representatives of the Society of Medical Officers of Health, has come to a similar conclusion.—I am, etc.,

A. M. H. GRAY,
London, W.1. Chairman, Advisory Committee on Scabies

SIR,—I notice the opinion is expressed in your leading article of July 11 (p. 44) that sulphur ointment, properly applied, is the most effective and the easiest treatment available. This has always been the treatment advocated here, and it has met with considerable success. I agree with you when you say that the whole solution of the problem appears to be in the direction of more accurate diagnosis and not only inspection but treatment of contacts. I would like to add that it is desirable to master one method in detail rather than experiment with the most recently advertised remedy. You evidently consider benzyl benzoate a second best to sulphur, although a memorandum of the Ministry of Health dated April 30, 1942, describes a 25% emulsion as the preparation of choice.

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[1] Hewer, Langton, *Proc. roy. Soc. Med.*, June, 1942, p. 466.

Two quite unnecessary instructions are commonly given to patients, doubtless copied from one book to another and from one set of directions to another. The first is to put on clean underclothes after the initial bath, and the second is to take a daily bath while under treatment. Since the essence of the sulphur method consists in thorough saturation with sulphur ointment for three or four days, and since baths of themselves do not cure scabies, there is no advantage, but rather the contrary, in taking them between the initial hot bath and the final hot one preceding terminal disinfection. Seeing that sulphur ointment treatment is admittedly somewhat messy, and bearing in mind that fomites do not carry infection to any extent and that in any case the underclothes will become saturated with sulphur ointment, there is no point in putting on clean underclothes after the initial bath as is commonly directed. Our routine directions run as follows:

Scabies is a contagious disease spreading readily from one person to another by contact and to a less extent by infected clothing and bedding. It is due to the itch mite burrowing in the skin and breeding there. The mite is very small and barely visible to a person with good eyesight. Cure is simple and certain if the following instructions are strictly followed, but it is most important to treat all affected members of a household at the same time and equally thoroughly, otherwise infection will persist and symptoms will return. The chief symptoms are itching spots on the hands, wrists, arms, legs, and elsewhere. The itching is worse at night or when the patient is warm.

Read Carefully

1st day.—Scrub yourself thoroughly in a hot bath with soap (preferably soft soap) and a nail brush. Cut finger- and toe-nails short. Dry yourself and while still warm apply the sulphur ointment well everywhere except face and scalp. Pay particular attention to skin between fingers and toes. Continue to use the same day and night clothes and bedding. The towel used must be boiled or placed in weak disinfectant and laundered.

2nd day }
3rd day } Once each day apply thoroughly fresh ointment over the old, rubbing well in. Do not bathe or change
4th day } clothing.

5th day.—Take a hot bath, preferably with a small handful of soda crystals in it. Wash off all the ointment. Put on clean clothes. All clothes and bedding used during treatment must now be disinfected.

Do not expect all itching to stop at once. Do not repeat treatment without medical advice. If itching spots return seek medical advice. It is most important to watch all members of the household for itching spots, and to make certain that all infected persons in the house are properly treated. Treatment, advice, and disinfection by the public health department are free.

—I am, etc.,

G. F. B. PAGE.

Exeter.

SIR,—I should like to be permitted to criticize under the following heads your leading article on the subject of scabies:

1. "Reproduction probably takes place both sexually and parthenogenetically." At the risk of displaying abysmal ignorance, I should like to ask for chapter and verse for this statement, as I have not previously encountered it.

2. "It appears that no substance has yet been tried which is superior to the old stand-by—the 10% sulphur ointment of the *B.P.*—or to the polysulphide preparation known as 'Marcussen's ointment' or 'kathiolan.'" This was certainly not my deduction from the paper of Mellanby, Johnson, and Barclay.

3. "The only other sarcopticide which gives results in any way comparable is benzyl benzoate, of which a 20% emulsion in soft soap and spirit appears to be quite satisfactory. There is, however, a serious objection to this application in that it is liable to cause an intractable scrotal dermatitis. . . . Moreover, it is not very suitable . . . for it always causes a certain amount of stinging, and if applied to a raw area . . . is extremely painful." It is evident that the pain and stinging are chiefly caused by the spirit, and the dermatitis by wartime soft soap. Both of these objections are very largely overcome by using aqueous emulsion of benzyl benzoate. The writer of your article has chosen for special mention the type of benzyl benzoate preparation which could give rise to objection, and has omitted the types which are nearly painless, and safe as well as effective. Personally, I find that aqueous benzyl benzoate emulsion is effective, safe, clean, easy to apply, and acceptable to patients, and am glad to find that it is held in good repute by those who should know.

4. I find myself in agreement with your remarks about the standard of diagnosis, and have to record that it took me many months to learn what I was looking for.

5. I regret that you have omitted to make reference to a standard of cure which is generally applicable to clinical as opposed to research practice. Personally, as the result of observation, I consider any sign of the disease within three months of treatment as a relapse, and am not prepared to accept a cure under that period. To me, therefore, series of cases which show a follow-up of only a few days are valueless, and indeed dangerous in that they tend to perpetuate a false idea of the value of various medicaments.—I am, etc.,

I. C. MONRO,
Medical Officer of Health.

Elgin.

⁂ The writer of the article on scabies got the impression that the acarus reproduced parthenogenetically from an article by Prof. P. A. Buxton in which it was stated that the pairing of *S. scabiei* has not been observed. On rereading the article (*B.M.J.*, Sept. 20, 1941) he admits he was wrong in drawing the inference of parthenogenesis from this statement.—ED., *B.M.J.*

Treatment of Malaria in England

SIR,—I have read with considerable interest the article on the diagnosis and treatment of malaria in England by Prof. Warrington Yorke (July 18, p. 61). There are one or two points in the suggested treatment which need comment. First, Prof. Yorke suggests the sulphate of quinine for the "ordinary" case. I am inclined to prefer the bihydrochloride, as it is more easily absorbed and is less of a gastric irritant. Furthermore, it can be combined with acid. hydrobromic. dil. to lessen the effects of "quinism," and with liq. arsenic. hydrochlor., a useful adjunct in malaria. Quinine should be prescribed with special reference to the cycle of the parasites and not in the stereotyped "t.d.s." manner. The ordinary "benign" attack usually starts at about 2 o'clock every third afternoon, which means that the parasites begin to invade the blood stream at about this time. It was therefore my custom to get into the circulation as much quinine as possible before the parasites began their "invasion." I accordingly gave the required doses at 6 a.m., 10 a.m., and 2 p.m.

In his treatment of the more severe types of malaria, Prof. Yorke suggests intravenous quinine in 1/2 to 1 pint of 3% saline. Intravenous quinine is admittedly the only remedy, but 20 c.cm. of distilled water or saline is all that is necessary, particularly in general practice. It is considered advisable to add a minim or two of 1 in 1,000 adrenaline chloride solution when giving intravenous quinine. Organic arsenic intravenously seems to help in chronic or resistant cases. An occasional injection is all that is necessary.—I am, etc.,

London, W.1. E. S. FENNELL.

Recommendations of Radium Commission

SIR,—The recommendations of the Radium Commissioners outlined in your issue of July 11 (p. 48) call for certain comments. The first concerns the status of the Commissioners themselves. On this point the Cancer Act is quite clear. The initiative in implementing the Act rests solely with the county councils, who, after consultation with the staffs of the local hospitals and with local organizations of registered medical practitioners, shall submit their arrangements for the approval of the Minister. The Radium Commissioners are not mentioned from beginning to end.

On Feb. 13, 1939, during the third reading of the Cancer Bill, on the proposal of the Minister of Health, Dr. Walter Elliot, a provision whereby local authorities must consult the Radium Commissioners was deleted and replaced by another provision whereby the Minister was to be advised by a subcommittee of the Medical Advisory Committee. It was understood that local authorities might, if they wished, consult the Radium Commissioners, but only informally. Dr. Elliot expressed the hope that this plan would meet the fear of some Members that radium was given too prominent a place in the Bill, and that local authorities were going to be placed under a technical commission. The fears of these Members were well founded. Dr. Elliot no doubt meant what he said, but he was evidently not binding his successors; for the Commissioners, so far from being relegated to the background as was the intention of Parliament, continue to dominate the situation, urging the country to get on with the job and telling us how to do it.

Among other things, they recommend that each centre should be under a whole-time director and that the radiotherapist (who may or may not be the director) should be in full charge of all radium and *x*-ray therapy. This means that those of us who use *x* rays only would be faced with the alternative either of subordinating ourselves to men less experienced in *x*-ray therapy than ourselves or of going out of business altogether, losing our practices and our main interest in life. No doubt the Commissioners regard me and those like me as obstacles to the cure of cancer, so much dead wood to be removed before everything in the garden is made lovely.

Some of us began *x*-ray therapy long before the Commissioners were thought of. For many years we have instructed and examined for the diplomas most of the younger radiologists in the country. For many years the patients from one of the Commission's own radium centres in another town have been sent to me because the Commissioners failed to provide *x*-ray therapy, being apparently unaware of its necessity. Most radium centres, having failed to obtain the results they expected from radium, have come to rely more and more on *x* rays, and some of them have sought my advice regarding technique. Even after the fiasco of the Erlangen school in the early 'twenties a few of us retained our faith in *x*-ray therapy. It was we who, through years of scepticism, discouragement, and sometimes scorn, rescued and nursed it, believing that the craze for radium, then in full swing, was not destined to last. Events have proved that we were right; for, except in a few situations, radium treatment must, in relation to the magnitude of its promise, be accounted one of the major disappointments of medicine. We backed the right horse, the Radium Commissioners backed the wrong one. They backed our horse when the race was over and now they calmly propose to relieve us of our winnings.

It is, of course, essential to ensure that radium is, within its limited sphere of action, only administered on scientific principles, but this end can be achieved without penalizing those of us who bore the burden and heat of the day in proving to the Commissioners and others the superior merits and wider applicability of *x* rays. Whether it is in the public interest that those of us who showed a sounder instinct than the Radium Commissioners should now be prevented by them from continuing our work I leave it to your readers to judge. In my opinion, where there is so much to learn, every shade of thought and line of inquiry should be allowed to develop unfettered by artificial restrictions.—I am, etc.,

Cambridge FF. ROBERTS.

District Nursing Service

SIR,—Lord Horder, writing as Chairman of Council, Greater London Provident Scheme for District Nursing (July 25, p. 109), must surely be referring to London only when he says that "much too little use is made by doctors with panel practices of the facilities afforded by the district nursing service."

B.M.A. figures for 1937 show that out of 26,520 general practitioners 17,787 were engaged in panel or "mixed" practices. Figures for 1938 show that out of a population of 46,200,200 there were 19,959,000 entitled to National Health Insurance benefit. It is generally accepted that the latter, with their dependants, account for over 90% of the population. This being so, it would appear that the bulk, if not the whole, of the district nursing services is concerned with panel patients and their dependants, and if the district nurse is a busy person it may well be because her services are made use of by the panel doctor. Where her services are not fully used by a particular panel doctor it has to be remembered that there are degrees of competence in nurses as well as in doctors; sometimes, perhaps, she is not always to be relied upon and the doctor is wise to insist upon seeing the patient himself. Lord Horder instances a case of cellulitis, but we do not know what this means. Perhaps the patient was very ill and should have been in bed; or perhaps it was a mild cellulitis of the finger and the doctor wished to trust to no judgment but his own as to the course that the infection was taking; or perhaps it was discharging pus and perhaps the nurse was in attendance upon one of this same doctor's midwifery cases.

I venture to suggest that Lord Horder's reproof, while no doubt justified in certain instances, is altogether too general, and that the panel practitioner above all others has the most reason to hold in high regard the services provided by district nurses, without whose help he could hardly sustain his work.—I am, etc.,

Buntingford, Herts ALAN WIGFIELD.

Urethral Instrumentation

SIR,—I should like to endorse Dr. Vincent Norman's restrained and convincing reply (July 18, p. 80) to Mr. Gordon Bohn's letter on urethral instrumentation.

Mr. Bohn's letter (July 4, p. 25) is an example of the tendency among some specialists to treat the G.P. with contemptuous tolerance, and though the tendency is confined for the most part to the lesser lights and to the less experienced among the specialists, this attitude of mind appears to wax and wane from time to time. To-day it appears to be increasing, and that it should be so is all the more unfortunate when so much is being written and discussed concerning the medical service of the future.

In an article entitled "The G.P. as the Basis of the Medical Service of the Future," which appears in the *Supplement* of July 18, the following observation occurs: "That the G.P. service should be given such a position that it will not fail to attract men of a calibre reasonably equal to that of the specialist." But what is this calibre? Surely the calibre of the specialist is as variable in worth as is the calibre of the G.P. The far-sighted, expert, and experienced specialist understands and appreciates the worth of the G.P. as fully as the fighter pilot appreciates the worth of his ground staff, but to those who cannot attain such a state of mind, may I suggest that they should assimilate the following facts: (1) that the specialist is much more often the product of his unusual opportunity than of his unusual intelligence and skill; (2) that though the specialist may inveigh against the occasional errors of the G.P., the G.P. has to take the largest share in, and to continue to treat, the consequences of the no less frequent errors of the specialist; (3) that the G.P. has to be competent and knowledgeable about many things to earn a living, but that the specialist has usually to be competent in a much smaller and more highly paid field.

It is, I believe, this last paragraph which explains the attitude of some of the specialists towards the G.P. The specialist, because his scope is small and his earnings large, in some cases tends to become insular and arrogant in his views, and, as Dr. Norman observes, "offers evidence of the fatuous and narrow outlook of the one-specialty man."—I am, etc.,

Hampstead, N.W. H. J. S. MORTON.

SIR,—The teaching of urethral instrumentation advocated by Mr. Clifford Morson (June 20, p. 771) is in my opinion most important, and in elderly persons the relief obtained by the catheter for retention of urine due to obstruction caused by prostatic enlargement is immediate and safe. The acute discomfort and pain of a distended bladder is immediately relieved, and it is only by the passing of the catheter that the nature of the cause can be clearly discovered, as no local or rectal examination can make the cause obvious, but a suprapubic palpation will always be necessary and should not be overlooked. I am not referring to organic nervous disease or atony of the bladder, but to retention due to enlarged prostate. I have seen the rubber catheter (normally No. 8 or No. 9) used for years without any unfavourable symptom, and I can speak from personal experience and from the history of other sufferers from prostatic enlargement. I have never seen any haemorrhage from the kidney or bladder, but I have known of ruptures of the bladder walls from over-distension, when the outflow of urine is hampered by obstruction and when a catheter would afford relief.

I do not refer to spasm of the sphincter or to obstruction associated with prostrating diseases of the nervous system. During catheterization the contraction of the detrusor muscle keeps the bladder wall continuously in contact with the urine until it is completely voided. There is consequently no negative pressure (through the gradual emptying by the catheter) which can favour haemorrhage. The relief to the sufferer is immediate and is most gratifying.—I am, etc.,

London, W.8. F.R.C.S.

Epididymitis after Acute Gonorrhoea

SIR,—Lieut.-Col. T. E. Osmond's letter (April 18, p. 507) calls for a reply.

The patient had a right epididymitis. In my opinion this is invariably caused by spread along the right vas from the right seminal vesicle. In the tests of cure and investigation no mention is made of having obtained any sample of secretion from the seminal vesicles, though prostatic beads were free from pus. How much prostatic and vesicular massage was given is not stated, but if adequate drainage was not obtained from the right seminal vesicle relapse was to be expected.

The difficulty in obtaining a specimen from the seminal vesicle is considerable, and the fact that four different venereologists, all experienced medical officers, did not obtain it does not mean that this was not the focus of infection.—I am, etc.,

Capetown. F. W. F. PURCELL.

Active Rehabilitation by C.S.M.M.G. Masseuses

SIR,—Mr. G. O. Tippett has drawn attention in his letter to the truly magnificent work of the R.A.F. orthopaedic centres. The treatment of injuries by active methods—i.e., the maintenance of function during fixation, rather than the restoration of function after fixation—is a basic orthopaedic principle. The organized practice of this principle has been of slow but steady growth. It has, however, received impetus during the war because the expansion of hospital services has given greater opportunity to segregate cases of injury of certain types, and to create a new and better organization to deal with them. It is greatly to the credit of the orthopaedic representatives at the several Ministries that they have taken advantage of these opportunities.

Although Mr. Tippett noticed that the medical officers at the R.A.F. centre he visited were personally teaching and helping their patients, he seems to have failed to appreciate fully the significance of this. Rather, seeking to cast out the mote from his brother's eye before considering the beam in his own, he has tried to lay on members of the C.S.M.M.G. the blame for deficiencies at the hospitals with which he is associated. If he really imagines that chartered masseuses can only give massage and faradism to an injured limb, he is sadly out of date. Members of the Chartered Society are required by its ethical code to work only to the instructions of a qualified doctor. If that doctor (or surgeon) fails to prescribe modern methods of treatment he has only himself to blame; and if he has not the facilities he must blame the organization for which he works, not the C.S.M.M.G. The syllabus of the Chartered Society has been modified to lay emphasis on modern methods of rehabilitation, and post-graduate courses organized by the society are in progress.

There is a first-rate organization for the rehabilitation of the injured at many hospitals of the War Office, the B.R.C.S., the Ministry of Health, and the Ministry of Pensions, as well as the R.A.F. It is true that many other hospitals are backward in this respect, but it is up to us, as orthopaedic surgeons, to overhaul our methods and reorganize our departments. I find chartered masseuses are the keenest and most co-operative people with whom I am associated. I can assure Mr. Tippett that if he will make the effort necessary to introduce modern methods where he works, his masseuses will not let him down.—I am, etc.,

PHILIP WILES, M.S., F.R.C.S.,
London, W.1. Vice-Chairman of Council, C.S.M.M.G.

SIR,—It is astonishing to read in Mr. G. O. Tippett's letter (July 18, p. 81) that "the best effort a masseuse of the C.S.M.M.G. can do is her routine stock-in-trade of massage and faradism to the injured limb." The Chartered Society examines candidates trained in the latest methods of rehabilitation, and the masseuses are fully alive to the scope of modern rehabilitation, which includes heat, massage, galvanism, faradism, diathermy, short wave, ultra-violet light, hydrotherapy, and rehabilitation exercise plus occupational therapy and games.

I feel sure that Mr. Tippett would be surprised if he made excursions from his narrow sphere where patients "lie in plaster and physically rot in bed or loaf about on a stick." I would suggest that he visits the Sector Hospitals and London and provincial teaching hospitals, where he would find departments and wards equipped with suspension sling apparatus, either the standard metal unit or the makeshift Balkan beam unit and modifications; he would find the patients treated from the earliest possible moment in recumbency by progressive active weightless exercise, graded up to active resistance exercise and games, with certain hours allocated to occupational therapy, orthopaedic and diversional in type.

I feel that Mr. Tippett and others must be unaware of the progress in rehabilitation exercise which has been taking place since this war broke out, and also the good results obtained not only in fracture cases, but in spondylitis, peripheral neuritis, poliomyelitis, and rheumatoid arthritis cases, apart from multiple injuries sustained in air raids. The C.S.M.M.G. masseuse has a high ideal and a good training in modern methods, and cannot be blamed if the hospital is unable to afford the necessary ropes, slings, springs, etc., required for modern rehabilitation; no doubt some civilian hospitals may be restricted through lack of funds and the masseuse's efforts appear feeble. It is up to the physicians and surgeons to make full use of the trained C.S.M.M.G. masseuse and "go to it"; the C.S.M.M.G. masseuse and Chartered Society have gone to it!—I am, etc.,

London. N. I. LANCKENAU.

Body Mechanics

SIR,—The theories advanced by the authors of *Body Mechanics in Health and Disease*, which was reviewed in your issue of July 25 (p. 99), are similar to those propounded by Andrew Taylor Still, the original osteopath, 80 years ago, and which have had attention drawn to them since by many others, including myself. Still's conceptions have been disregarded or strenuously denied by the medical profession: now that they are put forward, however, by those with accepted medical qualifications who have been careful not to use the word "osteopathy," these theories are apparently to be given kindly encouragement by the medical profession.

On account of the unfortunate antagonism between the medical and the osteopathic professions—and there are faults on both sides, no doubt—valuable time, experience, and personnel have been, and are continuing to be, wasted. Is it not possible, even at this late stage, for this misunderstanding to be resolved?—I am, etc.,

London, W.1 GEORGE MACDONALD.

Diarrhoea and Vomiting

SIR,—Your annotation under the above heading (July 25, p. 102) prompts me to send you some views I have been forming on the subject in the course of investigations made into the nature of epidemics.

Diarrhoea and vomiting, in an epidemic form, may be more common in infants than older people, but they are of frequent occurrence in the latter and of particular importance as heralding what is to occur in the following winter. Diarrhoea and vomiting are the most common initial signs and symptoms of infections from within, caused by the developmental forms of the *B. coli communis*, resident in the intestinal tract. Although any one of these forms may be the causative micro-organism, the most active are those belonging to the *Proteus*, *Salmonella*, and dysentery groups; and these and the other micro-organisms ring greater changes in infants than in older people, because the former have had less time to develop an immunity against them.

These signs and symptoms are the initial ones of infections from within, because, owing to the micro-organisms residing in the large intestine, the portal system is the one to be first involved on their becoming active; and thus an explanation is afforded for their incidence in the summer months being a prelude of what is to happen in the winter months. Diarrhoea and vomiting are most common between June and October, because heat augments the other climatic factors which govern infections from within to account for their developing cyclically. An annual cycle is to be detected where the nadir and zenith of the host's resistance are found to occur most commonly in the months of July and January. The chemico-physical changes which the protein in the plasma (wherein resides the host's resistance) undergoes at the hands of climate are the second factor governing infections from within. The micro-organisms in the colon come third, because their activity is determined by the state in which the host's resistance happens to be. Diarrhoea and vomiting have been more common this summer than for some years past; consequently I venture to predict that we will not be so free from influenza next winter as we have been in the last few winters.—I am, etc.,

London, W.1. J. E. R. McDONAGH.

A Depression–Hyposexual–Alopecia Syndrome

SIR,—This interesting case (July 18, p. 67) has unfortunately not been fully investigated. No mention is made of the physical condition apart from the loss of hair, nor of any investigations regarding metabolism (B.M.R., blood sugar, blood cholesterol, blood morphology, etc.), the condition of the pituitary fossa, and other items indispensable for an endocrine diagnosis. Not even the blood pressure or the result of a urinary routine examination has been recorded.

The syndrome itself is not unknown to the endocrinologist. It can occur either as the result of a pituitary (or pituitary-diencephalic) disturbance, representing a beginning or mild form of Simmonds's disease, or it can be of thyroid origin and represent a beginning or masked myxoedema. In both conditions complete loss of hair has been observed, loss of sexual function and mental depression being well-known symptoms of either of them. The onset after vaccination is slightly more suggestive of a lesion affecting the pituitary or the base of the brain, but hypothyroid conditions can occur after any infectious disease.

A proper examination of the patient would probably throw enough light on the nature of his condition to avoid its being regarded as a new endocrine syndrome.—I am, etc.,

London, W.1. H. UCKO.

Saving Cotton-wool and Using Sawdust

SIR,—I was much interested in the article on the use of sawdust as a dressing by Mr. Fitzwilliams because I have used this dressing. I was particularly impressed with its value in a case of psoas abscess with which I had to deal many years ago. A profuse discharge of pus was absorbed by and diffused through the sawdust, and the surrounding skin was kept dry.

A full account of the method of its use will be found in *A Surgical Handbook* by Caird and Cathcart, a book full of wise counsel and in much request during my student days in Edinburgh. I found, as Mr. Cathcart taught, that sawdust from pitch-pine was the most satisfactory.—I am, etc.,

Bushey, Herts. THOMAS FENTEM, M.D.

SIR,—In view of Mr. Fitzwilliams's statement (July 25, p. 105) that one of the reasons for using cotton-wool is its absorbent qualities for septic wounds or where there is discharge the following should prove of interest.

To investigate the properties of various dressings as aids to drainage the following experiment was performed. Lengths of gauze, home-made plaster, and "cellona," 1½ inches wide and eight layers thick, were marked at one-inch intervals. The ends were placed into a bowl containing either citrated blood or coloured water, and the transmission of the fluid noted at various time intervals. The actual figures are not quoted because they varied so much with each experiment, but constant comparative results were obtained. These were: (1) that the transmissibility of the gauze was the most rapid up to six to ten hours, when it was overtaken by the home-made plaster, and that "cellona" in the 24-hour period remained inferior to both; (2) that the transmissibility was more rapid at the start and gradually diminished with increase in the time period; (3) that the transmissibility increased when the materials were dependent. Various other substances were tried, such as jaconet, felt, and bandage, all of which showed no tendency to transmit. Brown wool merely floated on the surface of the fluid. White wool deserves special mention because it is so frequently stated to be a satisfactory dressing owing to its absorbent qualities, but the experiment showed that only the portion submerged in the fluid absorbed and became weighted, and that there was no transmission whatsoever above the fluid level. As a close dressing, therefore, it is useless, as only that part in actual contact with the discharge is absorbent. Since there is no direct transmission it will only serve to retain the discharge in proximity to the wound and macerate the skin. This has been repeatedly noted clinically. When wool is used it should be employed only as an external covering, and should be separated from the wound by a pad of gauze several layers thick.

Hence rather than an economic alternative to cotton-wool, sawdust is a better dressing as it absorbs and transmits well.—I am, etc.,

G. MARIANI,
Senior House-surgeon,
Radcliffe Infirmary, Oxford. Accident Service.

Obituary

F. DAWTREY DREWITT, D.M., F.R.C.P.

The death of Dr. Frederic Dawtrey Drewitt on July 29 takes from us a physician and naturalist of wide culture and most kindly disposition, a connoisseur of beautiful and interesting things, who was held in affection by friends, old and young, throughout a very long life. Born on February 29, 1848, he was educated at Winchester, at Christ Church, Oxford (where he won second-class honours in Natural Science), and at St. George's Hospital. He qualified M.R.C.S. in 1876 and took the M.R.C.P. in 1879. At Oxford he graduated M.A. and B.M. in 1878 and D.M. in 1883. He was elected F.R.C.P. in 1888. After house-physicianships at St. George's and at Great Ormond Street he held the post of physician to the Victoria Hospital for Children, Chelsea, from 1881 to 1897. At the West London Hospital he was assistant physician and later physician from 1882 to 1902, and then served for many years on its board of management. In an address in 1907 H. H. Clutton wrote: "Attention was first called in England to adolescent or late rickets by Dr. F. G. D. Drewitt, who showed a boy aged 10 years at the old Pathological Society of London in November, 1880. The boy was in the Great Ormond Street Hospital under the late Dr. W. B. Cheadle, and died two years later, when a post-mortem, made by Sir Thomas Barlow and Dr. P. Abercrombie, showed that the case was one of true rickets."

Dawtrey Drewitt was a lifelong student of Nature. He spent thousands of happy hours watching birds and naming wild flowers, or sketching in the open at home and abroad. He had served on the committee of the British Ornithologists' Union, and for many years on the Councils of the Zoological Society, the Society for Promotion of Nature Reserves, and the National Trust for Places of Interest or Beauty. Until 1941 he represented the Royal College of Physicians on the committee of management of the Chelsea Physic Garden, which he frequently visited as its vice-chairman, and his pleasant little book *The Romance of the Apothecaries' Garden in Chelsea* went into a third edition. He also wrote books on *Bombay in the Days of George IV*; and on the *Latin Names of Common Flowers: Their Pronunciation and History*, and a second edition of his *Life of Edward Jenner* appeared in 1933. His sensitive eye and delicate touch were revealed in many water-colour sketches and etchings, some of them shown publicly at the Royal Academy, and in more recent years at medical art exhibitions. At the age of 94 his handwriting was a miracle of shapeliness and legibility.

His well-stored mind, his lively interest in the world around him, and his charm of manner and appearance made Drewitt a welcome companion at the Savile Club (which he had joined in 1877), at the United University Club, at the dining club of the Royal College of Physicians, and at the periodical dinners of the Lucretian Club, which he attended until well past the age of 90. His sixtieth year of membership of the Savile was celebrated by a dinner party given in his honour in the club house. He bore the disabilities of old age with gentle good humour, and the bombardments of London could not shake his spirit. Though very frail and lonely towards the end he never complained or expected others to put themselves out for him.

MARK RONALD TAYLOR, M.R.C.S.

The death took place at Formby in Lancashire on July 22 of Dr. Mark Ronald Taylor, who was for many years before his retirement a regional medical officer of the Ministry of Health.

He was born in 1871 the son of Thomas Taylor, a surgeon of Bocking, in Essex, who had qualified in 1841, so that between them father and son completed a hundred years' continuous service in the medical profession. Mark Taylor received his education at Rossall and St. Bartholomew's. He qualified in 1894 and started practice at Helston, where for ten years he was also medical officer of health. In 1915 he moved to Acton and was surgeon to Acton Hospital. Both in Cornwall and in Middlesex he was a prominent member of the Insurance and Panel Committees and the Medical Service Subcommittee, and in 1920 he was appointed one of the first batch of whole-time regional medical officers of the Ministry of Health, being stationed for seven years at Norwich and afterwards at Southampton.

For the ten years 1904 to 1913 Dr. Taylor was honorary secretary of the West Cornwall Division of the B.M.A., and, for a while, of East Cornwall too, while that Division was being pulled together. During his term of office he initiated two reforms which eventually affected the whole county. One of these was the placing of the district nursing service on a proper basis. At that time many districts seemed to make their own rules, with the result that some nurses prescribed and dispensed, and some even attended fractures and serious eye troubles without reference to any doctor. In consultation with two other prominent members of the Association, Taylor drew up a set of rules which were adopted, and two medical men were co-opted on to the committee of the District Nursing Association. The other matter was his successful resistance to the suggestion that doctors should give courses of Red Cross lectures for nothing. Taylor was a valiant fighter, and in the West of England, where he was practising at the time and represented his Division, the fight over the National Health Insurance Bill was long and bitter.

In recent years, after his retirement, Taylor went to live near Liverpool, where he continued to do some part-time work for the Ministry, and, until his last illness, served on Medical Boards. He was a keen naturalist and an ardent angler, inventing a number of gadgets which increased the scientific interest in fish and fishing. He was also an earnest student of folklore, and wrote much on the subject. While in Norwich he collected material for a good-sized book on East Anglian folklore, medicine, and magic, but never published it.

GEORGE KEPPIE PATERSON, M.B., F.R.C.P.Ed.

Edinburgh has lost a venerable figure by the death of Dr. G. Keppie Paterson, who had been for more than half a century associated with the Livingstone Dispensary in the Cowgate, of which he was consulting obstetrician and physician for maternity welfare at the time of his death.

George Keppie Paterson was born in 1861, and took his M.B., C.M.Ed. with honours in 1882. Afterwards he studied in Berlin and Vienna. For ten years he was assistant to Sir Alexander Simpson, the holder of the chair of midwifery and diseases of women in Edinburgh University. He acquired an extensive general practice which he carried on until a few years ago. He became in 1891 a member of the Royal College of Physicians of Edinburgh and in 1895 a Fellow. He was one of the oldest members of the British Medical Association, his membership extending over 58 years. In 1903 he became hon. secretary of the old Edinburgh North-East Division, an appointment he held until 1911, and then, for a further ten years, he was hon. secretary of the new Edinburgh and Leith Division, of which in 1924-6 he was chairman. In 1930-1 he was president of the Edinburgh Branch.

One of Dr. Paterson's greatest interests was medical missions. He had travelled extensively in North Africa, Egypt, Palestine, and the West Indies. He joined the Edinburgh Medical Missionary Society in 1890, and was for several years its hon. treasurer and vice-president. It was an abiding joy to him that his professional services during almost the whole of his career should be given to an institution which bore the name of Scotland's greatest medical missionary. Dr. Paterson was a man of high culture and greatly respected in his city. One of his keenest interests was in music, and he even ran a choir in his dispensary.

PROFESSOR MARFAN

Prof. Antonin Bernard Jean Marfan, the eminent Paris paediatrician, whose death without mention of the date is reported by the *Schweizer Medizinische Wochenschrift* of May 9, was born at Castelnaudary in the Aude Department of France on June 23, 1858. He received his medical education at Toulouse and Paris, where he qualified in 1887, and five years later obtained the coveted post of Médecin des Hôpitaux. In 1914, when he was elected a member of the Académie de Médecine, he became the first occupant of a chair of infantile hygiene, and held this post until his retirement in 1928. For many years he was physician to the well-known Hôpital des Enfants Malades in the Rue de Sèvres with special charge of the diphtheria block. His literary output was considerable and of a high order. His principal work was a treatise on lactation which went through four editions and may be regarded as a classic. He was also the author of a monograph on diphtheria, a series of volumes on diseases of infants, and shorter works on periodic vomiting with acetonaemia, puncture of the pericardium by the epigastric route, and diagnosis of sore throat. Besides being founder and editor of the quarterly journal *Le Nourrisson* he was co-editor of the *System of Medicine* with Charcot, Bouchard, and Brissaud, and of the *Treatise of Children's Diseases* with J. Comby. He was well known in this country, where he was elected an Honorary Fellow of the Royal Society of Medicine in 1934.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY—*Part II*. G. K. F. Cohen, R. McK. Crichton, T. Culloty, F. Freund, Maria E. Grossman, H. T. Halper, H. R. C. Hay, C. J. C. G. Hodson, D. A. Jennings, M. B. Leitch, J. McM. Mennell, D. J. Mitchell, R. G. Moffat, J. Y. Rabinowitch, Katharina Rosenkranz, A. W. Simmins, J. H. Smitham, Lilian H. Walter.

At a Congregation held on June 20 the following medical degrees were conferred:

M.D.—*G. L. Robinson, *G. O. Richardson, *E. F. Aubert, H. J. V. Morton, R. W. Mason, D. J. Watterson, E. J. C. Topham.

* By proxy

UNIVERSITY OF LONDON

F. G. Young, D.Sc., Ph.D., has been appointed to the University Chair of Biochemistry tenable at St. Thomas's Hospital Medical School. B. W. Windeyer, M.B., B.S.Syd., F.R.C.S.Ed., F.F.R., has been appointed to the University Chair of Radiology tenable at Middlesex Hospital Medical School. Alexander Lawson, Ph.D., B.Sc., has been appointed to the University Readership in Organic Chemistry tenable at the London (R.F.H.) School of Medicine for Women.

WESTMINSTER HOSPITAL MEDICAL SCHOOL

An examination for two entrance scholarships in anatomy and physiology will be held on Sept. 9 and 10. Particulars may be had from the Secretary, Westminster Hospital Medical School, 17, Horseferry Road, S.W.1.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a quarterly meeting of the Council held in the College House on July 25, with the President, Sir William Fletcher Shaw, in the chair, the following officers were elected to take office in October:

President: Sir William Fletcher Shaw. *Vice-Presidents:* Mr. William Gough and Mr. C. G. Lowry. *Honorary Treasurer:* Mr. J. P. Hedley. *Honorary Secretary:* Mr. G. F. Gibberd. *Honorary Librarian:* Wing-Cmdr. F. W. Roques, R.A.F.V.R. *Honorary Curator of Museum:* Mr. Aleck W. Bourne.

L. C. L. Averill (New Zealand) was admitted *in absentia* to the Fellowship of the College.

The following candidates were elected to the Membership:

H. Agar, Muriel Boycott, J. W. D. Buttery, Marie H. Calverley, T. A. Gillie, I. MacG. Jackson, W. J. McCord, Mary K. Lawlor, H. M. Wolff, J. F. B. Wyper.

Medical Notes in Parliament

Health of the Factory Worker

Mr. **ERNEST BEVIN**, on July 22, presented the estimates for the Ministry of Labour. He recalled the transfer of the Factory Department and its administration from the Home Office to the Ministry of Labour and National Service in June, 1940. Factory inspection and welfare could not be separated from the mobilization and use of man-power. The transfer placed long and valuable experience at the disposal of the Ministry when dealing with the problems of the movement of workers and the physical strain of war conditions. He was happy to say that notwithstanding the bombing of homes and of factories, the health of the population had stood up to the strain. He regretted that the accident rate in factories had increased owing to recruitment of inexperienced workers and expansion of dangerous industries. The Ministry had given attention to problems of skin disease arising out of the war, and, all things considered, the percentage rate was low. Removal to other occupations of workers who were prone to such disease and sick-bays in hostels for immediate treatment had helped to keep it under control.

During the last two years medical supervision and nursing services in the factory had been intensified, and as a result absenteeism had been reduced. Co-ordination between the works doctor and the general practitioner shortened illnesses. Works doctors were valuable in organizing first-aid arrangements and keeping them efficient. They could look after workers who were exposed to special risks, and they performed a great educational service. They attended to the special problems affecting juveniles. The number of doctors employed whole-time increased during the last 2 years from 35 to 150, and part-time doctors from 70 to 550. The Ministry set to work to organize this part-time service for the smaller factories, but was handicapped by the call-up of doctors for the Services. He hoped this work would not be allowed to die at the end of the war. It was additional to the statutory work of the examining factory surgeons and to less comprehensive services in many other factories. He was studying how the certifying surgeons and the examining factory surgeons could be brought more fully into the picture as integral parts of the industrial health services. The technique developed in industrial medicine could be of tremendous value to the medical services of the country as a whole. The Ministry had sought to expand the factory nursing service rapidly and had provided short courses of instruction in conjunction with the Royal College of Nursing. The training continued after the nurses had gone to the works, with the aid of the medical people employed. Hours of work in factories were a vexed problem. After Dunkirk there appeared a danger that the Factory Acts administration would break down. But now man-power had been so mobilized that he was considering the tightening up of hours at an early date.

Tuberculosis Related to Black-out Conditions

Mr. **ELLIS SMITH** cited a report of the British Medical Association on the health of industrial workers. He said that in too many cases the milk supply to workers engaged in dangerous processes had been stopped. He hoped the lessons of the investigation into silicosis among anthracite workers would be applied to the pottery and asbestos industries. He asked for a national scheme of rehabilitation to be established as soon as possible. Mr. **MCNEIL** said Mr. Bevin had power to place a medical man within any factory as a servant of the Crown if he did so within the terms of the inspectorate. Figures published that week showed that in Glasgow the rise in tuberculosis was almost confined to the industrial workers. For commercial and professional workers who had not to undertake night-shifts in black-out conditions the figures were almost stable. Mr. **LEWIS JONES** complained that the report of the Chief Inspector of Factories did not relate the accidents to the number of people employed.

Doctors' "Notes"

Mr. **SIMMONDS** remarked that whereas there was normally in the winter and spring maximum absenteeism due to bad health, in a number of factories this year absenteeism had been continuing into the summer. In some, absenteeism in June was worse than in any of the spring months. Either the workers were suffering from industrial fatigue resulting from the winter or else there was, now the weather was better, more pressure on the doctors to certify that workers were in need of a rest. Many doctors were now shockingly overworked, and some were not as careful as they ought to be in issuing certificates for absence. Tightening up was essential if production was to be maintained.

Dr. **HADEN GUEST** said Mr. Simmonds should supply details of his allegations to the Ministry of Labour. Dr. Guest believed they could not be substantiated. He hoped that medical supervision in factories would be increased and extended, and that still more stress would be laid on the preventive side of the doctor's work. Works doctors should consult weekly with representatives of the employees on matters affecting well-being and health. He wondered whether the committee under Sir Geoffrey Shakespeare could give a special medical quota for works.

Sir **GEOFFREY** intervened to say the problem had been considered by the Priority Committee and efforts were being made to meet the demands of the Ministry of Labour.

Dr. **GUEST** said the position could also be improved by employment of women doctors. It should be possible to get some of the retired or semi-retired older medical men and women back for this kind of work. Was it possible for panel doctors who were in attendance on the workers in a district to attend to the preventive side of medicine in the factories? Mr. **HIGGS** produced specimens of doctors' "notes." One, which stated "is unable to follow her employment owing to her aunt's illness," had been accepted by the timekeeper. These doctors' "notes" were issued far too liberally.

Mr. **TOMLINSON**, replying to the debate, said the British Medical Association and the Trades Union Congress both felt that industrial health work was on the right lines. Asked about discoloration of workers in contact with certain powders, he said the scientific resources of the Allies had been brought in to find a solution. They might find something which would turn girl workers a healthy tan instead of a dirty yellow. The Ministry had failed to determine what were the detrimental effects of black-out on the worker, but believed they were more psychological than physical.

Parliamentary Health and Housing Committee

Lieut.-Gen. Alexander Hood, Director-General of Army Medical Services, on July 21 attended a meeting of the Parliamentary Conservative Health and Housing Committee under the chairmanship of Sir Francis Fremantle. General Hood gave an encouraging account of health conditions in the Armies both at home and abroad, but said increased vigilance would be necessary during the coming winter when hutments and billets would have to accommodate increasing numbers. With advisory bodies to keep it in touch with civilian practice, his Department was now organized on a basis that ensured a complete medical service for the troops.

Mr. Hugh Linstead was elected deputy secretary of the committee to assist Capt. G. S. Elliston, who has been hon. secretary of the committee since 1931.

Compulsory Vaccination and Inoculation

Asked on July 23 by Sir **WALDRON SMITHERS** to take the necessary powers to make vaccination against small-pox and injections against other infectious and epidemic diseases compulsory, Mr. **BROWN** declined to do so. He said that recent occurrences had not afforded any justification for such a change of policy, but he would continue to do all in his power to encourage immunization against certain infectious diseases, either as a routine or when special circumstances called for such action.

Appeal Tribunals

Sir **WALTER WOMERSLEY** announced on July 23 that at present it was not possible to set up tribunals to deal with all the appeals that would be made on war pensions. He was taking full advantage of the arrangement under which cases of serious doubt or difficulty on a medical question could be referred to an independent expert nominated by the President of one of the Royal Colleges. In no case had he rejected the opinion expressed by one of these experts. The medical referees were independent of his Department and were under no pressure from him. Appeal tribunals would be set up as soon as practicable without waiting for the end of the war if doctors should become available. Possibly medical personnel might be spared from the Army.

Deaths from Pernicious Anaemia

Mr **BROWN** stated in the House of Commons that the number of deaths from pernicious anaemia registered in England and Wales in 1939 was 1,922; in 1940, 2,167; and in 1941, 2,422. The figures for 1939 were corrected to agree with the 1940 classification of deaths and differed from those published in the Registrar-General's *Statistical Review*, Part I, Table 6.

M.R.C.: Tuberculosis Report

The report of the Tuberculosis Committee of the Medical Research Council is almost complete. It will contain interim recommendations on the steps to be taken forthwith. They will deal with the increased incidence among children under 5 years of age and inmates of mental hospitals.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Temp. Surg. Lieut. **Cameron Fraser**, R.N.V.R., who, in the *Journal* of May 30, was reported missing, is now posted as "Missing, Presumed Killed" in H.M.S. *Neptune* in an Admiralty Casualty List published on July 17. He was educated at the Anderson and St. Mungo's Colleges, Glasgow, and took the L.D.S. in 1938 and the Scottish triple qualification as a medical practitioner two years later. He entered the R.N.V.R. as prob. temp. surg. lieut. in March, 1941. His home was at Lhanbryde, Morayshire. He was a member of the B.M.A.

Temp. Surg. Lieut. **Eric Beresford Riding**, R.N.V.R., is reported "Missing, Presumed Killed" in H.M.S. *Neptune* in an Admiralty Casualty List published on July 17. He was educated at the University of Liverpool and graduated M.B., Ch.B. in 1938. After holding a post at the David Lewis Northern Hospital, Liverpool, he took an appointment as ship surgeon with the Holt Line in September, 1939, and entered the R.N.V.R. as prob. temp. surg. lieut. in February, 1941. His home was at Ormskirk. He was a member of the B.M.A.

Wounded.—War Subs. Capt. J. McD. Dougan, M.C., R.A.M.C.

Missing.—Capt. J. A. Falk, R.A.M.C., Major A. C. Glendinning, I.M.S., Capt. W. O. James, R.A.M.C., Col. G. P. Kidd, M.C., R.A.M.C., Major J. Parkes, R.A.M.C., Capt. N. C. Rogers, R.A.M.C., attached R.T.R.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral **Arthur Richard Harrie Skey**, R.N. (retired), of Fareham, Hants, died in the Royal Naval Hospital, Haslar, on July 15. He was educated at Bart's, took the M.R.C.S., L.R.C.P. in 1896, and the M.B., B.S.Lond. in the same year. Entering the Navy soon after, he attained the rank of surgeon rear-admiral on July 1, 1927. He served in the war of 1914-18, receiving the medals.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the numbers of notifications of scarlet fever and dysentery increased by 261 and 43, while the incidence of whooping-cough, diphtheria, measles, and acute pneumonia declined by 95, 76, 311, and 109 respectively when compared with the preceding week.

The 1,558 cases of scarlet fever constituted the largest weekly total since 1940. An increased incidence was common throughout the country and no large fluctuations were reported. The largest increases were those of London 29, Lancashire 23, Middlesex 22, and Somerset 21.

An outbreak of dysentery in Derbyshire with 86 cases was responsible for the increase in this disease. The distribution of the cases in the county was Staveley U.D. 32, Bolsover U.D. 4, Clowne R.D. 43, Chesterfield R.D. 6, Blackwell R.D. 1. Only 4 further cases were reported from the outbreak in Cumberland, Penrith M.B., making a total of 166 cases in four weeks. Of the 17 cases notified in London, 9 were in the borough of Wandsworth. The largest totals in the other administrative areas were those of Buckinghamshire, Aylesbury M.B. 5; Norfolk, Norwich C.B. 6; Staffordshire, Brownhills U.D. 9; Denbighshire, Wrexham R.D. 7; Pembrokeshire, Pembroke M.B. 8.

The notifications of acute poliomyelitis, 16 cases, were 11 more than in the preceding week. The cases were distributed through eleven counties, the only multiple cases occurring in Durham, Consett U.D. 2, and Warwickshire, Nuneaton M.B. 4.

For *Scotland* the feature of the returns was the increase in the incidence of dysentery; an outbreak involving 28 cases was reported from Banff County.

Small-pox

The number of fatal cases in the Glasgow epidemic rose to 8 with a death on July 29. No further cases have been reported for some days and the raising of the ban on hospital visitors is being considered. A case of small-pox has been reported in the London borough of Westminster. The patient was a Glasgow contact.

Returns for the Week Ending July 25

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,516, whooping-cough 1,125, diphtheria 710, measles 6,817, pneumonia 479, cerebrospinal fever 89, acute poliomyelitis 12, dysentery 101, paratyphoid 11, typhoid 10.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	83	5	25	2	8	184	7	37	2	7
Deaths		1	3				4	6		
Diphtheria	692	35	150	34	10	773	31	161	22	25
Deaths	8		2	—	1	21		3	2	2
Dysentery	198	17	63	—	—	68	3	35	5	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	2	—	—	3	—	—	1	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						318	6	24	5	1
Deaths						3	—	—	—	—
Erysipelas		—	44	4	4		—	43	10	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years ..				103						
Deaths	37	3	2	9	6	41	3	11	13	1
Measles	7,050	747	241	61	143	5,368	153	49	155	4
Deaths	7	1	2	—	2	8	—	1	3	—
Ophthalmia neonatorum	106	8	15		—	99	4	19		1
Deaths										
Paratyphoid fever ..	6	—	1							
Deaths	1	—	—		—					
Pneumonia, influenzal*	516	22	3	3	7	531	23	3	2	2
Deaths (from influenza)	10	1	—	—	1	6	13	1	—	3
Pneumonia, primary ..			129	19				119	21	
Deaths		—		4	8		—		9	—
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute ..	16	—	3	1	—	—	—	6	2	1
Deaths		—	—				—	—		
Puerperal fever ..	—	—	17	2	1	2	2	8	3	—
Deaths		—					—			
Puerperal pyrexia ..	155	12	7	—	4	127	8	31	2	—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever ..	1,558	88	244	60	18	732	30	99	59	16
Deaths	—	—	—	1	—	3	1	—	—	—
Small-pox	1	—	5		—	—	—	—		—
Deaths	—	—	—	—		—	—	—	—	—
Typhoid fever			1	13	4					
Deaths			—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,295	131	15	76	3	4,840	259	55	40	7
Deaths	13	3	1	3	—	26	4	6	1	—
Deaths (0–1 year) ..	286	25	40	24	16	268	25	62	32	10
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths) ..	3,558	484	524	161	112	4,018	521	565	186	112
Annual death rate (per 1,000 persons living)			11 8	10·7	†			12 3	12 3	†
Live births	5,895	695	789	390	284	4,833	368	864	334	226
Annual rate per 1,000 persons living ..			16·3	26 0	†			17·6	22·2	†
Stillbirths	233	20	41			183	13	35		
Rate per 1,000 total births (including stillborn)								39		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

New regulations issued by the Ministry of Health, to be known as the Public Health (Tuberculosis) Regulations, 1942, require medical officers of health to supply local offices of the Ministry of Labour with certain particulars of any women called before medical boards who are suffering or have suffered from tuberculosis. The procedure to be followed, which is different in some respects from that laid down for men, is set out in Circular 2648, which accompanies the regulations.

The minutes of the meeting of the Bombay Medical Council held under the presidency of Major-General R. H. Candy, C.I.E., K.H.S., on February 23 have been received in this country. This was the last meeting before the expiry of the term of the present council members at which General Candy presided, and a resolution was carried with acclamation placing on record the Council's high appreciation of the valuable services rendered by him as president, of the cordial manner in which he had conducted its deliberations, and of the courtesy, great ability, and zeal shown by him in handling the Council's affairs.

Sir Arthur J. Hall, M.D., F.R.C.P., having resigned the post of honorary consultant physician at Rampton State Institution, near Retford, Nottinghamshire, the Board of Control, with the approval of the Minister of Health, has appointed Dr. C. Gray Imrie, F.R.C.P., as his successor.

Prof. J. W. H. Eyre, M.D., has been elected President of the Royal Institute of Public Health and Hygiene in succession to the late Sir Thomas Oliver. He was senior vice-president and one of the founders in 1903 of the Institute of Hygiene, which amalgamated in 1937 with the Royal Institute of Public Health to form the present Institute.

The May issue of the *Boletin de la Oficina Sanitaria Panamericana*, which is dedicated to the eighth Pan-American Congress of the Child, contains articles on infant mortality in Costa Rica, the Child Health Department in El Salvador, infant protection in Mexico, physical education in Chile, and child nutrition in Latin America.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE NO.—B.M A. and *B.M J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Adder Bites

Prof. RENDLE SHORT (Bristol) writes in reply to Dr. Walker: No doubt many rural practitioners have seen a number of cases of this accident and can give a better account of it than I. In a recent case under my care, in a child who was bitten on the foot, the leg was very swollen and blue up to the groin for about three weeks, but the child did not seem much distressed. The bite had been excised and the wound treated with permanganate crystals within a few hours of the accident. A medical student who used to hunt adders in Somerset told me that he had been bitten on several occasions, and that after the first the bite gave very little trouble. I believe this is a well-known fact.

Coltsfoot

Dr. CONOR MAGUIRE writes from Claremorris: In reply to "Tussilago" (July 4, p. 30), William Woodville, M.D., *Medical Botany*, 1810, says: "The leaves have always been of great fame as possessing demulcent and pectoral virtues, useful in pulmonary consumption, coughs, asthma, and in various catarrhal symptoms. A valuable medicine in scrofula. It may be used as tea or given in the way of infusion, to which liquorice root or honey may be a useful addition. Smoking of the plant is recommended by Dioscorides, Galen, Pliny, and Boyle." He does not give any information about the curing of the plant.

LETTERS, NOTES, ETC.

Treatment of Scabies

Dr. E. M. BROCKBANK writes: In the 1914-18 war Manchester doctors serving with the Russian A.M.C. found that scabies was being regularly treated there by unguentum Wilkinsonii. This was a preparation in the Manchester Infirmary Pharmacopoeia of 1896 of Dr. A. T. Wilkinson (now consulting physician to the Infirmary). It consisted of equal parts of the *B.P.* sulphur, ammoniated mercury, and zinc oxide ointments, all of which then had benzoated lard as a base. The lard was looked upon as an effective constituent of the mixture. The benzoin prevented the lard from going rancid, and the 3% of it may have had some helpful antiseptic action. In Russia the ointment was applied three times in a week after preliminary soap and hot water preparation. In view of the more or less unsuccessful remedies now being used, it might be worth while giving the old-established one another trial in the present epidemic

Disinfecting Thermometers, etc.

Dr. WILLIAM SCOTLAND (Birmingham) writes: During over twenty years' experience of assistants and locumtenents in general practice I find that almost invariably thermometers are sterilized by soaking in a suitable solution, but are then *popped back into their soiled cases* So also with syringes: the actual syringe is carefully boiled but is put back into a soiled case. My routine advice is to carry half a dozen thermometers, soak them in a suitable antiseptic solution overnight, and boil the cases in the morning. Thus a soiled thermometer need never be used on any patient. Syringes *and their cases* should be boiled. As for ear, nose, and throat diagnostic sets, the specula rest in a velvet-lined nest. This shows that the manufacturers have little idea of the needs of the G.P. They do not appreciate that these portable sets are used as such in the patients' homes, and that there is frequently neither the time nor the convenience for sterilization immediately after use. There ought to be a boilable metal case to hold these parts, and a spare case to hold soiled ones until they can be disinfected at the surgery. I have advised more than one maker to redesign his "jewel case" on these lines, but with no result. So far as I am aware there is not one such on the market. All this is exceedingly elementary and very obvious, but unfortunately the obvious is too often missed.

We have recently received the price list of the medical products issued by British Drug Houses Ltd. (Graham Street, City Road, N.1). The products are arranged in alphabetical order, and the name of each product is followed by a description, indications for use, administration and dosage, modes of issue, and price to the medical profession. We are asked to state that the list will be sent, post paid, on request to any medical man.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for August 6, 1842:

"On the night of June 27, 1839, W.D., Esq., banker, in Douglas, aged fifty-two, was suddenly attacked with total blindness. He sent for me about two, a.m., of the 28th, when I found him sitting up in bed, straining and rolling about his eyes in search of the light. The pupils of both eyes were much dilated, and looked darker and more brilliant than usual. He felt no pain, except a slight uneasiness across the eyes and forehead, and along the nose. Upon a lighted candle being held close to the eye, he said he was sensible of nothing but 'total darkness' Skin cool and natural, pulse not accelerated, but rather full; tongue white and loaded; manner composed, and mind collected. . . . I immediately took upwards of a pound of blood from the arm, administered six grains of calomel and six of scammony, and directed the patient to use a hot mustard bath for the lower extremities as soon as possible, and a stimulating application of tincture of camphor and sulphuric aether to the forehead and temples. Six hours afterwards, when his bowels had been evacuated by the purgative, an emetic mixture, containing the tartarised antimony and ipecacuanha, was exhibited, which, being slow in operating, a teaspoonful of powdered mustard was administered with excellent effect. At mid-day, 28th of June, ten leeches were applied to the temples, and the calomel and scammony were repeated soon after, with directions to assist their operation by a dose of castor oil in the evening if necessary. By these means the primae viae were well cleared out the first day of the attack; and as my patient complained much of thirst and nausea, and foulness of the mouth and palate, effervescing draughts, made of the volatile alkali and citric acid, were prescribed to be taken every hour, in order to obviate the necessity of loading the stomach with much liquid, and to mitigate the febrile heat of the surface, which set in towards evening of the first day." Passages from an article by Henry Oswald, F.A.S E., etc., on "A Case of Amaurosis successfully treated."

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THE ROLE OF RENIN IN EXPERIMENTAL HYPERTENSION

BY

B. A. HOUSSAY

AND

E. BRAUN-MENENDEZ

(From the Institute of Physiology, Faculty of Medical Sciences, University of Buenos Aires)

In 1934 Goldblatt and others discovered that partial constriction of the main renal artery produces a marked and permanent hypertension in the dog. The renal experimental hypertension caused by this or other methods in laboratory animals is similar in many respects to human essential hypertension. It is not due to excretory insufficiency of the kidney or to an increase of blood volume or cardiac output, nor is it produced through a nervous mechanism. Houssay and Fasciolo (1937a, 1937b) have shown that renal ischaemia results in hypertension through a humoral mechanism. The ischaemic kidneys of dogs with chronic hypertension were grafted into the neck of normal or nephrectomized dogs. The arterial pressure of the recipient dog rose from 30 to 80 mm. Hg in 5 to 10 minutes, while grafting a normal kidney had no such effect. The citrated plasma obtained from the veins of these ischaemic kidneys produced vasoconstriction when perfused through a Läwen-Trendelenburg preparation; normal plasma had no vasoconstrictor action (Houssay and Taquini, 1938).

Braun-Menendez and Fasciolo (1939a, 1939b) made the observation that acute partial ischaemia of the kidneys produced the same effects as chronic ischaemia: (1) if the artery of a normal kidney grafted into the neck of a dog was constricted a slight but definite increase in blood pressure was produced; (2) the blood of acutely ischaemic kidneys when injected intravenously into anaesthetized dogs produced greater increases in blood pressure than control blood; and (3) it had a vasoconstrictor action on the Läwen-Trendelenburg preparation. Braun-Menendez, Fasciolo, Leloir, and Muñoz (1939) prepared extracts from the venous blood of these kidneys and discovered a pressor substance which was named "hypertensin." They found that this substance could also be prepared *in vitro* by incubating at 37° C. blood plasma or serum with renin, a protein which is present in extracts of kidney (Braun-Menendez, Fasciolo, Leloir, and Muñoz, 1940a). It was also shown that renin is secreted by the ischaemic kidney and hypertensin is formed subsequently in the venous blood.

Our present knowledge on the mechanism of renal hypertension might be summarized as follows: The ischaemic kidney secretes renin. This protein is an enzyme which acts on a blood globulin (hypertensinogen) and gives rise to a substance (hypertensin) that has a direct vasoconstrictor action. Another enzyme, hypertensinase, which destroys hypertensin, is present in blood and tissues.

Some Properties of Renin.—In 1898 Tigerstedt and Bergman discovered that kidney extracts contained a pressor substance —renin. This substance is a protein, probably a globulin, and is inactivated by heat at 60° C. Its intravenous injection produces in the dog a gradual rise in blood pressure which lasts 10 to 30 minutes, depending on the dose. Consecutive injections of large doses at short intervals produce each time a smaller response. This phenomenon is called "tachyphylaxis," and was originally described by Tigerstedt and Bergman. Renin by itself is neither vasoconstrictor nor vasopressor; these properties are due to the hypertensin formed by the action of renin on hypertensinogen.

Methods for the Estimation of Renin.—Two general methods can be used for the detection and estimation of renin. The first consists in comparing the rise in blood pressure caused by the injection of an extract or body fluid containing renin with that of a standard solution of renin. The second is based on the formation of hypertensin when renin is mixed with hypertensinogen. The hypertensin formed can be tested for its vasoconstrictor (Page, 1940) or pressor action (Leloir, Muñoz, Braun-Menendez, and Fasciolo, 1940b). The latter method (Leloir and others 1940a, 1940b), more reliable, has been used almost exclusively in our laboratory. This method is specific for renin, very sensitive, and quantitative within the limits of a bio-assay method. A unit of renin is the amount which, incubated for 2 hours at 37° C. with an excess of hypertensinogen, forms 0.5 unit of hypertensin. Applying these methods, it has been shown that renin is liberated:

1. By Totally Ischaemic Kidneys.—The re-establishment of the renal circulation of the kidney *in situ* after total ischaemia lasting 2 to 6 hours causes a rise in arterial pressure similar to that produced by an injection of renin. The venous blood of these kidneys has pressor and vasoconstrictor properties. Using the quantitative method of Leloir and his colleagues, it has been shown (Taquini and Braun-Menendez, 1941) that very large amounts of renin may be liberated by the kidney under these conditions.

2. By Ischaemic Kidneys of Hypertensive Dogs.—If the ischaemic kidney of a hypertensive dog is grafted into the neck of a normal dog a rise in blood pressure is produced similar to that produced by the injection of a small amount of renin (Fasciolo, Houssay, and Taquini, 1938). The venous blood of these kidneys has vasoconstrictor properties (Fasciolo, Houssay, and Taquini, 1938). Using the quantitative method of Leloir and his colleagues, renin was estimated in the renal venous blood of kidneys transplanted under the skin (Dell'Oro and Braun-Menendez, to be published). No renin was present in normal conditions, but after constriction of the renal artery, and coincident with the increase of blood pressure, variable amounts of renin (from 0.8 to 1.2 units per 12 c.cm. of plasma) were found in the renal venous blood and in the femoral blood of these dogs. All these results justify the conclusion that the ischaemic kidneys of dogs with experimental hypertension secrete renin into the blood.

3. By Kidneys in Acute Partial Ischaemia.—It has already been mentioned that a few minutes after partial constriction of the renal arteries renin can be detected in the venous blood of these kidneys.

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Secretion of Renin by the Normal Kidney.—Apart from ischaemia due to constriction of the renal artery, are there other conditions which result in the secretion of renin by the kidney? Huidobro and Braun-Menendez (investigations to be published) have shown that hypotension due to haemorrhage or shock causes the liberation of renin by the intact kidney of normal anaesthetized dogs. Renin was detected and estimated in the systemic blood of these dogs. The inference is drawn that the kidney participates in the regulation of arterial blood pressure. When the blood pressure decreases the normal kidney secretes renin, which through the formation of hypertensin tends to the restoration of normal blood pressure. Renin appears to be a substance which the body uses to maintain homeostasis. Collins and Hamilton (1942) and Sapirstein, Ogden, and Southard (1941) have arrived independently at the same conclusions.

Formation and Mode of Action of Hypertensin

Enzymatic Action of Renin (Munoz et al., 1940)

The formation of hypertensin *in vitro* or *in vivo* is the result of an enzymatic reaction in which the substrate is a blood globulin that we have called "hypertensinogen," and the enzyme is renin. This affirmation is based on the following facts: (1) Renin is a protein: its activity is destroyed by heating (60° to 80° C.) and delayed or abolished at low temperatures. (2) The reaction between renin and hypertensinogen has a temperature optimum of 37° to 45° C. and a *p*H optimum of 7.5 to 8.5. (3) The yield of hypertensin is proportional to the amount of globulins. (4) If the amount of renin exceeds the optimum the maximum yield of hypertensin is not surpassed if 10 to 20 times more renin is used. (5) The time necessary for obtaining the maximum yield of hypertensin, or, in other words, the velocity of the reaction, depends on the amount of renin. (6) Hypertensinogen disappears in the reaction while renin does not.

This is the evidence which supports our assertion that renin is an enzyme. As the substrate on which renin acts is a protein, and the product of reaction is, as we shall see, probably a polypeptide, it is reasonable to classify renin as a proteolytic enzyme.

Specificity of Renin

Renin may be defined as the substance contained in kidney extracts which, when incubated with blood globulins, gives rise to hypertensin. Extracts of other organs—liver, spleen, placenta, etc.—do not contain renin. Recently Croxatto and Croxatto (1941) demonstrated that by the action of pepsin on hypertensinogen a vasoconstrictor and pressor substance is formed, the properties of which resemble those of hypertensin. These results, which have been confirmed by ourselves and by Helmer and Page (1942), constitute strong indirect evidence in favour of the enzymatic action of renin.

Renin has been found in human kidneys and in the kidneys of every mammal which has been investigated—ox, horse, dog, pig, sheep, goat, rat, rabbit, guinea-pig, etc. The incubation of renin from these animals with plasma from any of them gives rise to the formation of hypertensin. But no hypertensin is formed when any of those renins is incubated with human plasma. On the other hand, human renin is active on the plasma of any of those animals and also on human plasma. This peculiar specificity of renin led to the prediction that no pressor response should be obtained in man when pig's renin, for instance, is injected intravenously, while human renin should be active (Fasciolo, Leloir, Muñoz, and Braun-Menendez, 1940a). This prediction was verified by experiments (Battro and others, 1940). Bean (1942) found no renin in the kidneys of the species of fishes and amphibians studied by him. He found renin in the kidneys of fowl and duck which acted exclusively on blood belonging to the same class.

Hypertensinogen

Hypertensinogen, the substrate of renin in the reaction which leads to the formation of hypertensin, can be prepared from blood plasma or serum by fractional precipitation with ammonium sulphate or potassium phosphate. It is a globulin, probably a euglobulin, and is inactivated by heat at 60° C.

Attempts to obtain hypertensinogen from other sources than blood serum have failed: liver, spleen, thymus, testes, lungs, heart or skeletal muscle, milk and egg proteins, haemoglobin, serum albumin, and some vegetable proteins did not yield hypertensin when incubated with renin (Muñoz, Braun-Menendez, Fasciolo, and Leloir, 1940). Hypertensinogen can be estimated in blood samples by the maximum amount of hypertensin it produces. A unit of hypertensinogen is that which gives rise to one unit of hypertensin under the conditions outlined.

Hypertensin

This substance, which was discovered in the venous blood of ischaemic kidneys, is the product of the enzymatic reaction between renin and hypertensinogen.

In 1938 Kohlstaedt, Helmer, and Page showed that purified preparations of renin produced no vasoconstriction when perfused with Ringer's solution through a dog's tail or rabbit's ear, but that the vasoconstrictor activity could be restored by the addition of a protein-like substance contained in blood. They designated this substance renin-activator to connote that renin was inactive as a vasoconstrictor substance without it. Subsequently they found (Page and Helmer, 1940) that from the interaction of these two substances a new substance resulted with potent vasoconstrictor and pressor actions which they called "angiotonin." It is interesting how, coming in two different ways—the Indianapolis group via the purification of renin, and that of Buenos Aires via isolation of the active substance in the venous blood of ischaemic kidneys—both groups arrived independently and simultaneously at the discovery of the substance which results from the interaction of renin and blood.

Hypertensin is very soluble in water, insoluble in ether, thermostable, and acid-resistant. In NaOH 0.15 at 100° C. it is destroyed in 10 minutes. Kept in the cold store and free from contamination, hypertensin, dried or in solution, is stable. It can be salted out by ammonium sulphate. It dialyses through cellophane. It is inactivated by incubation with pepsin and trypsin. Although Page and Helmer report that the biuret reaction is negative, the inactivation by pepsin would indicate that it is a polypeptide. Some of its chemical and physical properties (velocity of diffusion) and its proteic origin are in favour of this idea. We have not been able to obtain a pure product, and this has compelled us to adopt an arbitrary unit in order to compare the pressor action of different solutions of hypertensin. A unit of hypertensin is the amount necessary, when given intravenously, to raise the arterial pressure of a 10-kg. chloralosed dog an average of 30 mm. Hg. A standard solution was prepared which has 1 unit per c.cm.

Hypertensin does not cause tachyphylaxis. When the dose is increased the rises in pressure in mm. Hg increase as the square root of the units injected, according to the formula $X = St\sqrt{y}$, in which X and St are the blood-pressure increases in mm. Hg obtained by the unknown and by 1 c.cm. of the standard solution respectively, and y the units of hypertensin contained in the unknown (Braun-Menendez, Fasciolo, Leloir, and Muñoz, 1940b).

The Pressor Action of Renin

There is strong evidence that the action of renin *in vivo* is due to the hypertensin formed by its action on hypertensinogen:

(1) The perfusion of renin in Ringer's solution through a vascular system does not produce vasoconstriction; but if mixed with blood globulins and perfused after short incubation, marked vasoconstriction results, due to the hypertensin formed. (2) The prolonged pressor action of injected renin may be explained by the continuous formation of hypertensin: a similar pressor effect is produced by the continuous intravenous infusion of hypertensin. (3) When renin does not form hypertensin *in vitro* it has no pressor action *in vivo*. For instance, pig renin, which does not give rise to hypertensin when incubated with human serum, does not produce a pressure increase when injected intravenously into human beings. (4) The pressor action of renin is greater when the concentration of hypertensinogen in blood is increased (dogs nephrectomized 48 hours previously) and smaller when decreased (adrenal insufficiency) or exhausted (by repeated injections of renin). (5) The pharmacological actions of renin and hypertensin are identical when injected into the animal, and are influenced in the same way by diverse drugs: no change of action by

Fourneau 933, cocaine, atropine, ergotamine, etc.; potentiation by veritol or ephetonine (Braun-Menendez, Fasciolo, Leloir, and Muñoz, 1940b).

The pressor action which renin exerts through the formation of hypertensin is perhaps not the exclusive mechanism in renal hypertension. It is very possible that other phenomena play their part. Perhaps also, after hypertension is initiated by renin, some changes occur in the body which contribute to maintain the elevated blood pressure, or vice versa.

Treatment of Renal Hypertension

The better understanding of the mechanism of renal hypertension may give us some indications as to the possibilities of a specific treatment. This should aim at (Muñoz, Braun-Menendez, Fasciolo, and Leloir, 1940): (A) suppressing or diminishing the secretion of renin; (B) destroying the renin secreted by the ischaemic kidney or inhibiting its reaction with blood globulins; (C) diminishing the amount of hypertensinogen; and (D) preventing the action of hypertensin by increasing the amount or the activity of hypertensinase or by some other mechanism.

(A) *Suppression or Diminution of the Secretion of Renin.*—In Goldblatt dogs, release of the constriction of the renal artery, removal of the clamp, or nephrectomy results in a drop to normal of the elevated blood pressure. In man the existence of hypertension with unilateral renal disease has been recognized. In many of these cases excision of the diseased kidney resulted in a return of blood pressure to normal with disappearance of other symptoms and complications. The development of collateral circulation in the ischaemic kidneys of Goldblatt dogs—whether spontaneous or promoted by decapsulation and implantation of omentum or spleen—results in a drop to normal of the elevated blood pressure. The promotion of collateral circulation has also been attempted in man by grafts of omentum or muscle in renal tissue with varying results.

(B) *Destroying the Renin secreted by the Ischaemic Kidney.*—It has been shown, first by Fasciolo (1938) and then by others, that the normal kidney exerts some sort of protective action against hypertension of renal origin. Grollman, Williams, and Harrison (1940) on a basis of indirect evidence believed that this action was due to an antipressor substance secreted by the normal kidney. They injected extracts of kidney to hypertensive rats and dogs, and obtained a decline in blood pressure. These extracts were active even on oral administration. Page and co-workers (1941) have also prepared different kinds of extracts of kidney, muscle, and lung which, when injected into dogs or rats with experimental hypertension, caused the blood pressure to fall to normal levels. They have obtained the same results in human beings with malignant hypertension. These studies are very important and promising, but for the moment it cannot be stated whether those extracts contain specific neutralizing or antipressor substances or whether their benefit arises from the introduction of non-specific foreign elements into the body. The attempts of Wakerlin and Johnson (1941) to neutralize the action of renin by immunological means have apparently been unsuccessful. Schroeder and Adams (1941) reduced the blood pressure of hypertensive human beings, rats, and dogs by the injection of tyrosinase. They reported that this enzyme inactivates renin *in vitro* in the presence of catechol and hypertensin in the presence of serum. Further evidence is necessary to judge these results.

(C) *Diminution of the Amount of Hypertensinogen.*—Very little, if anything, is known about the exact nature of hypertensinogen, its site of formation, etc. It is nevertheless theoretically possible to lower the blood pressure in renal hypertension by diminishing the amount of hypertensinogen. For the moment we know of only one way to obtain this result—that is, by the injection of large amounts of renin.

(D) *Increase of the Amount of Hypertensinase.*—Serum, plasma, or red cells, and extracts of many organs (kidney, liver, spleen, etc.) are active in destroying hypertensin, owing to the presence of a substance which we have designated "hypertensinase." This substance is destroyed by heating and has a *p*H optimum between 7.5 and 8.5. It can therefore be considered as an enzyme. Its action is not suppressed by anaerobiosis, cyanide, octyl alcohol, chloroform, thymol, toluol, fluoride, iodo-acetate, pyrogallol, etc. It is precipitated with ammonium sulphate between 0.3 and 0.6 saturation. It is inactivated in 20 minutes at 25° C. at *p*H 3.9. A unit of hypertensinase is the amount which destroys 0.5 unit of hypertensin in 4 hours in a volume of 10 c.cm. with an initial concentration of 1 unit of hypertensin (Fasciolo, Leloir, Muñoz, and Braun-Menendez, 1940b). Fasciolo and others (1940a, 1940b) have studied the distribution of hypertensinase in saline extracts of different organs. The highest content was found in the kidney and intestinal mucosa, the lowest in plasma or serum. Haemolysed blood cells contain a large amount of hypertensinase. We have made some preliminary essays injecting kidney and liver extracts rich in hypertensinase into hypertensive dogs. The results, though promising, have not been very clear. The fact that hypertensinase is a most unstable substance renders difficult its isolation in tissue extracts. These difficulties have hampered progress in this direction. Page now ascribes the antipressor action of his renal extracts to the presence in them of hypertensinase.

Conclusion

We believe that the therapeutic problem of renal hypertension has not yet been solved; but we are confident that the solution will be attained by a patient and thorough investigation of the underlying mechanisms which are involved in the production of renal experimental and human hypertension. In spite of the enormous progress of the past few years we still know very little about them. Let us hope that in the near future research will give medicine a new and powerful weapon to fight arterial hypertension, this most death-dealing malady to-day.

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H. D. Hahn (*Amer. J. Syph. Gon. ven. Dis.*, 1941, **25**, 200) reviews the literature of second infection in congenital syphilis, and comes to the conclusion that up till now no indisputable second infection in a congenital syphilitic patient has been reported. He records, however, two personal cases of reinfection in adequately treated congenital syphilis. In the first case there were thirteen years of clinical and serological negativity between the congenital and the acquired infection. In the second, though the serological test for syphilis never became entirely negative, there were at least eight years of clinical negativity, including a negative cerebrospinal fluid between the congenital and the acquired infection.

THE DISINFECTANT ACTION OF PHENOL AND OF ALCOHOL IN T.A.B.C. VACCINE*

BY

JOHN C. CRUICKSHANK, M.B., Ch.B. D.T.M., Dip.Bact.

BETTY C. HOBBS, B.Sc., Ph.D., Dip.Bact.

ALLAN M. McFARLAN, M.A., M.B., B.Ch.

AND

IRENE MAIER

The substitution by Felix (1941) of alcohol for phenol in T.A.B.C. vaccine in order to prevent destruction of the Vi antigen represents a considerable advance in the method of prophylactic inoculation against enteric fever. The alcohol, which was employed in a 22.5% or 25% concentration, was intended to fulfil the double purpose of preserving the activity of the Vi antigen and of guarding against infection by virtue of its antiseptic properties. Doubts, however, were soon raised as to its efficiency in this latter respect. Since Felix in his study of the bactericidal action of this substance worked with only one organism, *Staph. aureus*, and since he gave no protocols of any of his experiments, it was felt that the only satisfactory way of allaying these doubts was to carry out a series of observations in which the destructive effect of different strengths of alcohol on different organisms was compared with that of 0.5% phenol.

Technique

Four constituent laboratories of the Emergency Public Health Laboratory Service took part in these trials. Bottles containing 25 ml. of the following T.A.B.C. vaccines were distributed to each laboratory: (*a*) 0.5% phenol, Batch 18, Oct., 1940, prepared by the Lister Institute; (*b*) 22.5% alcohol, Batch A1, Sept., 1940, prepared by the Lister Institute; (*c*) 25% alcohol, Batch AA4, May, 1940, prepared by Dr. Felix.

The experiments were carried out during the summer and autumn of 1941. Observations were made on *Staph. aureus, Bact. coli, Ps. pyocyanea*, and, in three laboratories, on the spores of *B. subtilis* and *Cl. sporogenes*. With a few exceptions different strains of these organisms were used by different laboratories. The general plan of the experiments was as follows. The three species of non-sporing organisms were grown overnight on agar; the growth was washed off with quarter-strength Ringer solution and standardized by opacity. Equal amounts of suspension were then inoculated into each of the three vaccines. The mixtures were left at laboratory temperature, and samples were withdrawn at intervals and counted by the roll-tube or plate method. Tests with the sporing organisms were made in a similar manner, except that spore suspensions were used in which there were very few vegetative bacteria, or in which the vegetative bacteria had been killed by heat.

The technique used in the individual laboratories differed, however, in several respects. In one laboratory 10-ml. quantities of each vaccine were transferred to fresh sterile bottles and an inoculum of 0.1 ml. was added by a micrometer syringe; the exact quantity of the vaccine was thus known, and the dilution of the disinfectant was only 1%. In other laboratories the amount of vaccine in each bottle was not measured, so that minor variations from the supposed 25 ml. were almost certainly present, and the inoculum, which was added by a pipette or syringe, ranged from 0.25 to 0.5 ml., thus leading to a maximum dilution of the disinfectant of 2%. In three laboratories a viable count was made on the inoculum itself; in one laboratory the initial count was made on the vaccine immediately after the addition of the inoculum. The number of organisms inoculated varied from a few thousand to several millions per ml. of vaccine. The subsequent counts were made at different times in different laboratories. In one laboratory one count was made after 2 hours and another after 24 hours; in the others several counts were made within the first few hours and one after 24 hours. The temperature to which the organisms were exposed varied in different laboratories.

Assessment of Results

With so many variations in technique in different laboratories analysis of the results obtained presented great difficulty. Reproduction of the individual protocols is impossible by reason of space. Preliminary examination of the data showed that in many of the experiments the number of the counts was too few or their distribution too uneven to justify comparison by means of the reaction velocity constant, or by the method recently advocated by Withell (1942) of estimating the time taken to destroy 50% of the organisms. On the whole the best method seemed to be to work out the geometric mean of each series of counts. In doing this the initial count and the final count, if all three vaccines were sterile, were omitted, and the arithmetic mean of the logarithms of the remaining counts was calculated. Table I illustrates the use of this method.

TABLE I.—*Exposure of Ps. pyocyanea to Alcohol and to Phenol, showing Number of Organisms surviving after Different Times. Inoculum was 7,900 Organisms per ml. (Experiment 18 of Table II.)*

Time in Minutes	25% Alcohol		0·5% Phenol		22 5% Alcohol	
	Nos.	Log. of Nos.	Nos.	Log. of Nos.	Nos.	Log. of Nos.
20	2,280	3·3579	6,500	3·8129	3,740	3·5729
40	372	2·5705	5,000	3·6990	2,240	3·3502
80	12	1·0792	2,500	3·3979	1,660	3·2201
135	3	0·4771	160	2·2041	1,460	3·1644
255	0	0·0000	0	0·0000	672	2·8274
390	0	0·0000	0	0·0000	56	1·7482
Total		7·4847		13·1139		17·8832
A.M. of logs		1·2475		2·1857		2·9805
G.M.	18		153		956	

A.M. = Arithmetic mean. G.M. = Geometric mean. The 22·5% alcohol suspension was sterile after 24 hours

The true sterilization time was not available, but the time at which the first sterile count was recorded was used as a rough index for comparing the activity of the three disinfectants in any one experiment.

Results

In none of the laboratories was evidence obtained to show that the strengths of the two disinfectants used had any destructive effect on the spores of *B. subtilis* or *Cl. sporogenes* within 24 hours. No further description of the results is therefore called for.

Twenty comparative experiments were made on *Staph. aureus, Bact. coli*, and *Ps. pyocyanea*. An illustrative protocol has already been given in Table I. A summary of all the experiments is provided by Table II. It will be seen that except for experiments 6 and 19, in which two or all three of the vaccines were sterile at the time of the first count, the geometric mean was least in the 25% and greatest in the 22.5% alcoholized vaccine, the count in the 0.5% phenolized vaccine occupying an intermediate position. Similarly in all the experiments in which the results could be compared, the 25% alcoholized vaccine became sterile first and the 22.5% alcoholized vaccine last. There seems, therefore, no reason to doubt the order of bactericidal potency of these three substances, though our data are not complete enough to enable us to state how much superior 25% alcohol is to 0.5% phenol, or 0.5% phenol is to 22.5% alcohol.

It will, however, be noted that even with very large inocula —far greater than would be likely to occur in practice as the result of using an imperfectly sterilized needle with which to withdraw vaccine from the bottle—there were only three experiments with the 22.5% alcoholized vaccine in which organisms were alive at the end of 24 hours. In experiments 4 and 11 the numbers of surviving organisms were 79 and 19 per ml. respectively. In experiment 8, with an inoculum of 9,000,000 per ml., the 24-hour count in the 22.5% alcoholized vaccine was 198,000 and in the 0.5% phenolized vaccine 9,800 per ml. In experiment 5 a 24-hour count was not made, but as the count at 7½ hours was only 8 per ml. there is every reason to believe that the vaccine would have been sterile within 24 hours.

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* A report to the Medical Research Council from the Emergency Public Health Laboratories at Exeter, Cardiff, Oxford, and Ipswich.

With small inocula it is probable that sterility would be achieved with 22.5% alcohol in a time not very much longer than with 0.5% phenol. This supposition is supported by the finding of Dr. Carruthers at Cambridge that, with an initial inoculum of 80 to 150 organisms per ml., *Staph. aureus, Bact. coli,* and *Ps. pyocyanea* were destroyed by 25% alcohol within 15 minutes, by 0.5% phenol within 2 hours, and by 22.5% alcohol within 4 hours.

Laboratory C performed control experiments by inoculating along with each set of three vaccines a fourth bottle of heat-killed T.A.B.C. vaccine containing no disinfectant. In seven experiments the counts of the control vaccine at 2 and 24 hours did not differ from that of the inoculum by more than was to be expected from the sampling error of the technique, showing that no multiplication of the organisms had occurred. Even without any disinfectant, therefore, T.A.B.C. vaccine does not constitute a favourable medium for bacterial growth. The function of the added disinfectant is merely to deal with any organisms that may gain access to the bottle as the result of contamination. That 22.5% alcohol is capable of fulfilling this function there seems no reason to doubt.

Discussion

The experiments just described were undertaken in order to solve a specific practical problem, not to make an academic study of the reaction velocity and other constants of alcohol. For this reason only their general plan was laid down, each laboratory being left a considerable margin of freedom to decide on the detailed conduct of the experiments. That the four laboratories placed the three disinfectant solutions tested in the same order of potency is therefore all the more convincing.

The failure of alcohol to bring about any appreciable destruction of spores is in conformity with the observations of previous workers (for references see Coulthard and Sykes, 1936). Similarly, 0.5% phenol is known to be without effect on spores (Chick, 1908). Our results with spores therefore call for no comment.

With vegetative organisms, 22.5% and 25% alcohol and 0.5% phenol all proved to be moderately bactericidal. The order of potency, as determined by the four different laboratories using three different species of organism, was uniformly consistent, 25% alcohol proving the most and 22.5% alcohol proving the least bactericidal. The difference in killing power between the two strengths of alcohol was remarkable. It has been demonstrated by Minervini (1898) that the most germicidal concentration of alcohol is between 50% and 70%. Above and below this level its effect is less. Judging from the findings of Tilley (1939) that in the 26% to 34% range a decrease of 2% in concentration approximately doubled the time necessary for sterilization of *Bact. typhosum,* and from our observations that a fall from 25% to 22.5% produced an even greater effect, it seems clear that the slope of the curve depicting the germicidal potency of alcohol in the 20% to 35% range of concentration must be fairly steep.

So far as it is permissible to compare the rate of destruction of *Staph. aureus, Bact. coli,* and *Ps. pyocyanea,* our results showed little difference in the behaviour of these three organisms. Lockemann, Bär, and Totzeck (1941), on the other hand, found that *Staph. aureus* was considerably more resistant to all strengths of alcohol than either *Bact. coli* or *Ps. pyocyanea.*

Table II.—*Exposure of Different Vegetative Organisms to Alcohol and to Phenol*

Organism	No.	Laboratory	Approximate Temperature °C.	Inoculum : Organisms per ml. Vaccine	Geometric Means of Viable Counts per ml. Vaccine				*Time of First Sterile Sample in Hours		
					No. of Counts	25% Alcohol	0·5% Phenol	22·5% Alcohol	25% Alcohol	0·5% Phenol	22·5% Alcohol
Staph. aureus	1	D	25–6	1,000	4	7	18	400	4	4	24
	2	D	23–5	1,500	5	21	40	214	4	4	24
	3	D	22–3	1,500	5	7	11	200	2	2	24
	4	A	20–2	7,100	6	304	1,235	5,811	7	24	>24
	5	B	—	13,000	6	10	86	380	2	4·5	>7·5
	6	C	23	232,000	1	0	0	50,500	2	2	24
	7	C	21–3	3,300,000	1	30	2,900	760,000	24	24	24
	8	C	23	9,000,000	2	202	278,000	1,235,000	24	>24	>24
Bact. coli	9	B	—	1,300	3	0	1	19	0·5	1	4
	10	D	22–3	3,000	4	3	5	868	1	2	24
	11	D	20–1	3,500	6	15	22	573	4	4	>24
	12	A	20–2	10,400	7	215	493	2,938	5	7·5	24
	13	C	21	298,000	1	0	1,010	1,030	2	24	24
	14	C	23	4,200,000	1	0	410	69,000	2	24	24
Ps pyocyanea	15	D	22–3	1,000	1	0	19	104	0·5	1	1
	16	B	—	1,500	3	1	3	70	0·5	0·5	2
	17	D	20–1	2,500	3	21	126	538	4	4	4
	18	A	20–2	7,900	6	18	153	956	4	4	24
	19	C	21–3	189,000	1	0	0	0	2	2	2
	20	C	21–3	11,700,000	1	63	2,400	57,000	24	24	24

Note.—Owing to the differences in the size of the inoculum and other conditions the figures should be compared only horizontally. It should also be noted that the times given in the last three columns are not true "sterilization times."

Summary

Four laboratories carried out experiments in which the disinfectant action of 22.5% and 25% alcohol was compared with that of 0.5% phenol in T.A.B.C. vaccine.

A few observations made on the spores of *B. subtilis* and *Cl. sporogenes* failed to reveal any bactericidal activity of the three vaccines.

Eight experiments were carried out with *Staph. aureus,* six with *Bact. coli,* and six with *Ps. pyocyanea,* in which known numbers of organisms were inoculated into each of the three vaccines and in which the survivors were estimated at varying intervals of time by the roll-tube or plate method of counting.

In every experiment in which the figures were suitable for comparison it was found that the organisms perished most rapidly in the 25% and least rapidly in the 22.5% alcoholized vaccine, the 0.5% phenolized vaccine occupying an intermediate position in this respect.

Reasons are given for believing that 22.5% alcohol is only slightly inferior to 0.5% phenol in its germicidal potency, and that it is capable of destroying within a few hours vegetative bacteria that may gain access to T.A.B.C. vaccine by contamination.

There is no ground for the fear that the 22.5% alcohol used in Felix's new vaccine is likely to prove inefficient as a preservative.

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The Board of Education have recently issued a circular (1594) on the use of raw vegetables in school meals. They list the vegetables which can be used, briefly describe methods of preparing them, and give a few simple and useful recipes.

A MATERNITY SERVICE SCHEME*

BY

DAME LOUISE McILROY, M.D., F.R.C.P., F.R.C.O.G.

In opening a discussion on maternity services the starting-point must be the welfare of the patient and her wishes in the matter. A maternity service scheme must fit in with the general plan of a composite State medical or health service. With the establishment of the Royal College of Obstetricians and Gynaecologists, obstetrics takes its place on an equal footing with medicine and surgery and is not merely a special branch. It has had close collaboration with the public health services. The introduction of ante-natal care has given a much wider scope for the practice of preventive medicine, and teaching has expanded beyond the abnormalities of the bony pelvis and the positions of the foetus. The obstetrician now works in collaboration with the orthopaedic surgeon, the paediatrician, the cardiologist, and the tuberculosis specialist. The help of the pathologist and the radiologist is often required for accurate diagnosis, and much more time is now expended upon the clinical examination of the patient than formerly.

Social services also play a large part in the practice of midwifery. Institutional expenditure in other directions could be reduced if we could reduce or eliminate the blindness due to ophthalmia of the newborn. Mental deficiency due to injuries at birth could be lessened to some extent; also tuberculosis, if there were more provision for prolonged residence in sanatoria and facilities for childbirth in these institutions. With more efficient post-natal care the crippling effects of child-bearing upon women would also be lessened. Ante-natal care would lower the neonatal death rate due to prematurity, birth injuries, and malnutrition.

The Economic Aspect

The economic aspect of maternity practice is of the utmost importance to the State. In my opinion, infant welfare should be under the direction of the paediatricians after the first month of life. Gynaecology cannot be separated from obstetrics, as treatment is required for post-natal complications.

Much of the organization of the maternity services has been haphazard and lacking in co-ordination. This to some extent has been inevitable. New ideas and methods had to be tried out by voluntary organizations and proved of value before public funds could be utilized for anything approaching an experiment. Legislative reforms have brought about great advances in midwifery, such as the various Midwives Acts. Local authorities were given permission to make use of public funds for maternity and child welfare work. It might have been better if in some cases these powers had been made compulsory. The Local Government Act of 1929 made a great advance in the establishment of maternity beds in municipal and county hospitals. The London County Council is an outstanding example of this improvement. It is more satisfactory to have a maternity department in a large general hospital than in isolated units, with the exception of small maternity homes linked up with larger hospitals. In a general hospital auxiliary services are easily obtainable for consultative work, and there is economy of staff and equipment.

Defects in Present Maternity Services

In building up a scheme it is well to find out what is essential, what is deficient in existing schemes, and what should be avoided. In some areas under a keen medical officer of health the arrangements are excellent and the work with the local practitioners is harmonious. In others the standard of efficiency is low. Neonatal mortality on the whole has been very little reduced during the first twenty-four hours of life. For this the obstetrician must bear the responsibility. The chief defects in our present maternity services are the limited number of beds in industrial areas. Ante-natal and post-natal beds especially are very inadequate. Emergency cases in rural areas may have to be sent long distances because no beds are available and general hospitals may have little provision for maternity cases.

In the future it is probable that domiciliary midwifery will be still further reduced owing to the difficulties of housing and home service. Flats are unsuitable and are noisy, and women should not have their confinements in slum dwellings.

Rest from household cares and good nursing have a highly beneficial effect upon the nerves of women. These conditions are supplied by hospitals and local maternity homes. Since the war, residents in evacuation areas often are forced to have their confinements in overcrowded homes, as the local maternity homes are booked up for patients coming from cities and towns in more dangerous areas. Convalescent homes are also an important part of a scheme for maternity services, for ante-natal as well as for post-natal cases. Patients are sent out of hospital too soon in some cases owing to pressure upon the beds for childbirth.

Ante-natal clinics in connexion with maternity hospital staffs are satisfactory, as there is continuity of supervision throughout pregnancy and childbirth. In country and municipal ante-natal clinics, however, the assistant medical officer may have had little clinical experience of midwifery, his special qualification being the possession of a diploma in public health. The chances of promotion in such a service, for women especially, are small owing to lack of special training in administrative methods. Local authorities, however, are beginning to recognize this difficulty and to insist upon a diploma in midwifery. If complications arise during pregnancy the patient is sent either to hospital or to a local practitioner who may not be very much interested in her condition as she preferred to attend the clinic at the outset of the pregnancy. In cases where a midwife is in attendance at the confinement a local doctor is called in if any complication arises, and, with no personal knowledge of the patient's previous condition, he may criticize the treatment at the clinic. If the patient is seen later at the post-natal clinic, criticism may be made of the methods employed at childbirth. Midwives who do not work with a recognized team of practitioners serving on a midwifery rota find it not always possible to get help in an emergency, and delay may be serious for the patient concerned.

The fault lies in this practice of dual responsibility and absence of continuity of supervision. This may be illustrated by the proverb, "Never swap horses while crossing a stream."

In some areas, especially when at a distance from towns, the local practitioners should be chosen as a team because of their competence to practise midwifery, and consultative clinics and services should be available. Facilities for hospital treatment should be readily obtainable. The patient should not be discharged from the supervision of the doctor and midwife until four weeks after the confinement. This would to some extent reduce the difficulties which are met with in breast-feeding.

Voluntary and Municipal Hospitals

We owe a great debt of gratitude to voluntary organizations and hospitals in midwifery practice. I am glad that Mr. Ernest Brown—the Minister of Health—intends to retain these institutions in a general scheme for medical services. Voluntary contributions will be difficult to obtain after the war, and financial assistance will have to be given by the State if the voluntary hospitals are to retain their individuality. This may mean a loss of administrative control and independence, but the hospitals will gain by being included in the general scheme and given a definite position therein.

This will do away with overlapping and waste of beds in some areas, and will supply accommodation in other areas where hospital resources are inadequate. This would also reduce the long waiting lists for admission and the overcrowded out-patient departments. The voluntary hospitals have done much for teaching by supplying clinical facilities for the medical schools. The healthy spirit of competition does a great deal to make the individual wish to excel. Each special department of the large hospital is sponsored by an honorary head or "chief," who feels himself responsible for its efficiency and, by having a say in the appointment and control of his staff, expects whole-hearted co-operation and loyalty.

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* Abstract of opening remarks in a discussion at the Obstetrical Section of the Royal Society of Medicine, May 15, 1942.

Consultants are now paid in hospitals such as those of the London County Council, some being whole-time and others part-time. The question is, Will the future generation of consultants be willing or able to serve as honorary members of the voluntary hospital staff? The answer is not far to seek. The traditions of the voluntary hospitals must not be lost, as they are a bulwark against a completely socialistic scheme of State service. Co-ordination of the hospitals is being achieved to some extent by the establishment of the Emergency Medical Service hospitals and by the Nuffield Provincial Hospitals Trust. These are on the lines of central councils and hospitals, with regionalization of areas. The Council of the King Edward's Hospital Fund for London has done much to improve the buildings and equipment of the voluntary hospitals. Would a whole-time State Medical Service give the same incentive to original research as the voluntary system? Would promotion depend upon clinical or administrative ability?

Participation of the G.P.

In general practice, midwifery has declined to a great extent owing to the efficiency of the midwives services, the establishment of clinics and hospital beds, and also because of the unsuitability of patients' homes. The decline of the birth rate is also a factor.

The national health insurance does not directly include the treatment of midwifery patients, nor does it give special consultant services and hospital accommodation. The panel doctor is too busy to take up midwifery practice with its inadequate remuneration, and he objects to the risk of criticism from local health authorities if cases should go wrong. Cottage hospitals have a limited number of local practitioners in attendance, and others may be excluded from the treatment of their patients when admitted. Small maternity homes should be established where the family doctor can admit and be responsible for the treatment of his own patients. Consultants and auxiliary services should be available from a larger supervising hospital centre.

In rural areas the family doctor would act in a part-time capacity, as he would have to undertake other branches of medical practice. Women prefer local hospitals, where they can be kept in touch with their families and relatives. The family doctor has been the trusted adviser and confidant of his patients as is the priest and lawyer. He is chosen because of the personal element. He knows the home conditions and circumstances as no whole-time practitioner or consultant can know. In official centres case records are open to the inspection of a staff which is under no Hippocratic oath. Consultation clinics do much to relieve the anxieties of the general practitioner, and discussions can take place as to diagnosis and treatment. The family doctor is, moreover, the first line of defence in the case of disease. But the doctor must have adequate training and must keep up to date by regular refresher courses in larger centres.

A team of doctors and midwives working in collaboration with a keen medical officer of health would ensure good results in these areas. Local clinics or centres could be established for interviewing and treating patients, but such centres would have to be instituted by the local health authority, as otherwise there would be difficulties of administration. Payment for work done would be given by the health authority and collected, when possible, from those patients who could afford to pay or who are specially insured. If any criticism arises it should be considered first by the committee of local practitioners and consultants before being judged by a lay board of management.

In Scotland, domiciliary midwifery is more in the hands of the general practitioners than it is in England and Wales. The midwives work directly under the doctor. The Scottish Board of Health Act, 1937, was a scheme for this co-ordination of practitioners, midwives, and consultants, and it has been established in a large number of areas. Lanarkshire, with its central maternity hospital at Bellshill, is a notable example of its efficiency. The patient has a choice of doctor from the local team of practitioners. The consultants on the staff of Bellshill Hospital must hold the membership or fellowship of the Royal College of Obstetricians and Gynaecologists.

A Basis for Discussions

The Russian public health services seem to provide a basis for many discussions on proposals for a State Medical Service in this country. In Russia all medical education is free and all doctors are whole-time practitioners under the U.S.S.R. The whole aim of the service is the prevention of disease. Every citizen has a right to free medical treatment. Some of the expense is recovered by contributory schemes of health insurance. Women in employment get full pay before and after confinement if off work. The medical practitioners get study-leave and retire on pensions. In the local areas are health centres or polyclinics, and these are linked up with larger centres and hospitals. The teaching schools and research department form the centre of the scheme. Local and central committees or soviets control administration.

A maternity service should give the patient a choice of doctor at the periphery, and consulting and specialist services should work towards the centre. There should be a central advisory committee composed of representatives from the universities, the Royal College of Obstetricians and Gynaecologists, the British Medical Association, Central Midwives Board, College of Midwives, hospitals, and other organizations interested in the practice of midwifery. The administration of such a maternity service should be in the hands of those who have a considerable knowledge of the practical side of obstetrics as well as of public health.

HYPEROSTOSIS FRONTALIS INTERNA*

BY

C. T. ANDREWS, M.D., M.R.C.P.

Physician to the Royal Cornwall Infirmary

Irregular formations of bone on the internal table of the skull have often been observed at post-mortem examinations and among museum specimens, but little notice was taken of the condition until Stewart in this country and Morel in France drew attention to the presence in these cases during life of symptoms suggestive of hypothalamic disturbances.

Cases in the Literature

Stewart (1927–8) recorded 5 fatal cases personally observed by him and called attention to their association with mental symptoms and obesity; and Morel (1930), describing the first living case, noted the presence of cataleptic seizures, excessive eating and drinking, adiposity, and delusions and hallucinations. There followed various surveys of radiological and museum material with a view to determining the frequency of the syndrome, notably by Sherwood Moore (1935, 1936a, 1936b), who carried out a survey of 6,650 radiographs accumulated over a period of 24 years; by Eldridge and Holm (1940), who described the x-ray findings in 200 patients consecutively admitted to a mental hospital; by Greig (1928), who examined 188 crania in the museum of the Royal College of Surgeons of Edinburgh; and by Yolton (1927–31), who described 4 specimens. The histories of many of these cases were reviewed, and in the last 12 years numerous additional cases have been published, notably by Van Bogaert (1930), Schiff and Trelles (1932), Eisen (1936), Moniz (1938), Hemphill and Stengel (1940), Gollan (1939), Casati (1936), Fracassi and Marelli (1936), Fattovich (1938), Roger (1938), Perkins and Biglan (1938), James (1936), Lehoczky and Orbán (1938), and Reider (1938–9).

Bartelheimer (1939a, 1939b) specially noted the association with diabetes. The literature on the subject is now fairly extensive, and it is interesting to note in this connexion that only 3 living cases were recorded before 1935—those of Morel (1930), Van Bogaert (1930), and Schiff and Trelles (1932). In view of the large amount of museum material it would seem that many examples of the syndrome were missed prior to that date. This argument, however, is hardly conclusive, for the surveys of radiological and museum material have shown that hyperostoses may be present without any symptoms, the patient dying from some unrelated disease. It seems clear from published observations that the hyperostoses are often present for a long time before any further symptoms develop. Bartelheimer, for example, noted that a patient of his had a chronic headache for 30 years before further symptoms appeared. About 50 cases in which definite hypothalamic symptoms were present, such as disordered fat metabolism, raised glucose tolerance, polyuria and polydipsia, and sleep disorders, have been recorded during life. In addition many of the patients have developed a progressive dementia, and in a few cases cranial nerve palsies have been noted, probably due to encroachment of new bone on foramina.

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* Synonyms: Morgagni's syndrome (Henschen, 1936); syndrome of Stewart-Morel (Schiff and Trelles, 1932); metabolic craniopathy (Moore); intracranial osteophytes (Greig, 1928).

The marked preponderance in the female sex noted by Moore, Canavan (1938), Greig (1928), Dressler (1927), Carr (1936), and others serves to differentiate this condition sharply from a localized form of leontiasis ossea and from osteitis deformans, to which the bony changes bear a close resemblance in some cases. Some writers have, in fact, described cases under these heads—e.g., Schuller (1918), Bonnamour and Jamin (Morel, 1930). Another notable feature is the age incidence. The great majority occur about the menopause. Some, however, have been found among senile inmates of mental hospitals.

Radiological examination usually shows the hyperostosis as an irregular thickening of the vertical part of the frontal bone, the region of attachment of the falx being free. The surface may be irregular, with numerous spikes, or smooth and nodular. The outer table is never involved. In a few cases calcified masses have been seen in the sella turcica.

Careful microscopical examination of the hypothalamic region and pituitary has been made in only a few cases. Degenerative changes have been described by Morel, Stewart, and others, but in some cases nothing abnormal has been detected. It would seem, however, that the close association in function of hypothalamus with pituitary has not been realized by all observers, and in some instances failure to make a detailed examination of the pituitary may account for negative findings.

Case Record

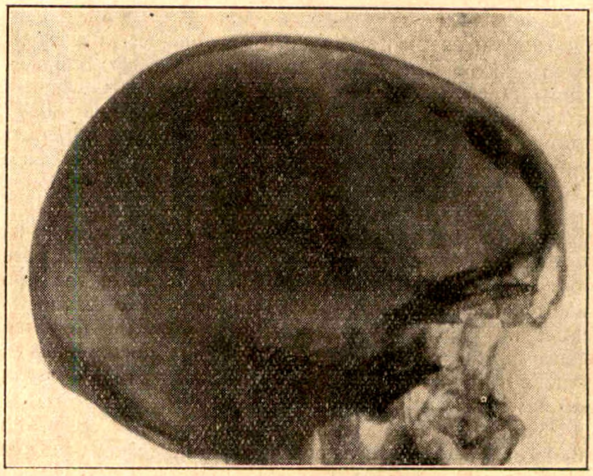
The patient, a female wardrobe dealer aged 45, had married twice and had had 10 living children. She had had one miscarriage—triplets when five months pregnant, in 1935. She had white-leg after this, and was of the opinion that all her trouble started then, as she had never felt well since. She began to have menorrhagia, with periods lasting eight days and intervals of two weeks. Hysterectomy—probably for fibroids—was performed in 1936 when three months pregnant. Between Aug., 1937, and Aug., 1940, she was four times in hospital with phlebitis of the left leg. In Aug., 1940, while in hospital, she was found to have glycosuria; a diagnosis of diabetes was made after blood-sugar estimations, and she was discharged on a 7-line diet and 40 units of insulin a day. Towards the end of 1939 she began to have narcoleptic attacks, which led to a cessation of insulin treatment, as they were thought to be hypoglycaemic. Later, however, insulin treatment was resumed, and subsequent attacks were considered to be due to diabetic coma.

The patient was evacuated to Cornwall in Oct., 1940, and was admitted to the Royal Cornwall Infirmary for suspected hypoglycaemic coma on March 14, 1941. She recovered consciousness shortly after arrival in hospital, but had several attacks in the next few weeks. Her weight had always been constant until the middle of 1940, when she suddenly began to gain. As this time coincided approximately with the beginning of the period of strict rationing, the gain in weight was considered odd. She was 11 st. 10 lb. on admission, having put on 2 st. in 9 months. There was no complaint of failing vision, but she noticed that before her sleepy attacks she went rather deaf. Her most troublesome symptom, apart from the attacks of somnolence, was a dull frontal headache which nothing seemed to relieve. There was no thirst, appetite was moderate, and the amount of urine was not increased.

Examination showed her to be of average mental development, with good memory and normal concentration; she was talkative and sociable, always ready to discuss her large family, with each of whom she kept up a correspondence. Pupils reacted sluggishly to light, more briskly on accommodation. Both optic disks were pale, especially in the temporal halves, and both visual fields showed concentric contraction. Moderate nerve deafness was present on both sides. There was general muscular weakness, particularly in the arms. The arm reflexes were normal; knee- and ankle-jerks were present; the plantar reflexes were flexor; and the gait was steady. No rhombergism and no incoordination to finger–nose or heel–knee tests were observed. There was a remarkable dulling of pain sensation on both sides over the trunk and all four limbs: so definite was this that a needle could be introduced anywhere without complaint of pain. Stereognosis was normal. Tactile localization and discrimination, compass points, and joint sense were also normal. The heart was slightly enlarged, and the blood pressure 160/80. The liver was palpable an inch below the costal margin. There were noticeable fat deposits on the buttocks, thighs, and lower abdomen, but no nodules and no tenderness.

Narcoleptic Attacks.—These came on at irregular intervals. Sometimes there would be several in a day, sometimes freedom for a week. They lasted from a few minutes to an hour, and occurred at any time of the day. None was observed during the night. They started with a dull headache that lasted for several hours, after which she passed into a sleepy state and could be roused with difficulty. The pupils were normal in size, but no reaction to light could be obtained during the attack. The limbs were spastic, with exaggerated deep reflexes, but the plantar reflexes remained flexor. Ankle clonus was observed on both sides on one occasion. During the attacks she perspired profusely, and on being roused complained of feeling cold. Pain sensation, visual fields, and hearing, tested roughly during the period of recovery, showed further restriction. Onset and termination were never abrupt. Once she had visual hallucinations when recovering from an attack. The blood sugar during one attack amounted to 130 mg. per 100 c.cm.

Glucose tolerance estimated in a clear interval showed: fasting blood sugar, 150 mg. per 100 c.cm.; one hour after, 210 mg.; two and a half hours after, 190 mg. The blood urea was 29 mg. and the serum calcium 9.8 mg. per 100 c.cm. The cerebrospinal fluid was clear, and showed no increase in pressure: cells 2 per c.mm.; albumin 0.025%; globulin normal; chlorides 750 mg. per 100 c.cm.; sugar 0.08%. Urine examination revealed glycosuria on an average of three days out of four. Specific gravity averaged 1026. There was nothing abnormal on microscopical examination. The temperature chart showed several unaccountable rises to 99.4°, but was otherwise normal. Radiologically, no changes were present in any bones other than those of the skull, a radiograph of which is here reproduced.



Hyperostosis on the internal surface of the frontal bone. Diploe is invaded at one point, but the outer table is not involved. Antero-posterior view, midline free; enlarged frontal sinuses.

During her time in hospital she had one troublesome attack of phlebitis in the left leg. The narcoleptic attacks were so well controlled by 10 mg. of benzedrine sulphate daily that in the three weeks previous to discharge she had only one attack of short duration.

Discussion

In view of the association of pituitary and other endocrine function, present interest centres largely on the possibility of the bony changes being due to some disorder of parathyroid secretion. While it can hardly be said that the secretion of a parathyrotrophic hormone by the pituitary has been proved, a number of observations are at least suggestive—e.g., the association of parathyroid adenomata with hypophysial tumours noted by Hadfield and Rogers (1932), Gerstel (1938), Husslein (1939); the degenerative changes in the parathyroids of hypophysectomized dogs noted by Koster (1928), Houssay and Sammartino (1933, 1934), and Smith (1927); and the effects of pituitary extracts in causing parathyroid enlargement, noted by Anselmino and others (1935). In an examination of the parathyroids reported by Hemphill and Stengel (1940) it was found that three of the four glands present were unusually small. The three smaller glands showed an increase of pale oxyphil cells; the fourth was formed exclusively of these. These changes suggest overactivity in a set of glands which for some reason were smaller than normal. Serum calcium changes have been noticed in only a few cases; in a series examined by Tager, Shelton, and Matzen (1939) the figures were within normal limits.

Further problems are those presented by the high incidence in the female sex (98% in Moore's series) and the restriction of bony changes to the frontal bone.

From the point of view of diagnosis the importance of the syndrome lies in the danger of treating the patient for something she has not got. My patient has been treated once as a case of hypoglycaemia and once as a case of diabetic coma. The fact that she was insulin-resistant probably saved her from harm on that occasion. In some cases, however, a diagnosis of cerebral tumour has led to unnecessary operation. A knowledge of the existence of the syndrome should serve to protect from these mistakes, and a radiograph of the skull which includes the frontal bone will always serve to establish the diagnosis.

Summary

A case of hyperostosis frontalis interna is described and the literature briefly reviewed. Features of the case were narcoleptic attacks controlled by benzedrine, increased glucose tolerance, sudden gain in weight, restricted fields of vision, nerve deafness, and typical radiological findings.

The importance of the syndrome lies in its differentiation from conditions requiring active medical or surgical intervention.

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P. Robinson (*Amer. J. Dis. Child.*, 1941, **62**, 701) during the last two years has seen at Tel Aviv six cases of favism, an acute haemolytic anaemia due to ingestion of woad berries (*Vicia fava*) and hitherto unknown in Palestine. Favism is most common in Sicily and Sardinia, but only sporadic in other countries. The onset is sudden, with vomiting and diarrhoea, the skin turns pale grey, the eyes become sunken and consciousness clouded. The red cells sink to 1,000,000 or less per c.mm. and the haemoglobin content to 10%. Recovery, which begins spontaneously, is assisted by blood transfusion and takes place in from one to two weeks. Deaths are rare. Its course is like that of Lederer's anaemia, but in favism relapses are common.

ACUTE LARYNGITIS AND SEPTICAEMIA DUE TO H. INFLUENZAE (TYPE B)

BY

S. DE NAVASQUEZ, M.D.
Pathologist, E.M.S.; Department of Pathology, Guy's Hospital Medical School

Attention has recently been drawn by Sinclair (1941) to a very severe and often fatal form of acute laryngitis and septicaemia in young children due to *Haemophilus influenzae*. These infections have occurred with increasing frequency in the U.S.A., and the following case is the first of a similar nature to be recorded in this country.

Case History

A male child aged 2 was admitted on Dec. 15, 1941, for laryngeal stridor. He first became ill 2 days previously, when he began to scream, and it was noticed that his breathing was difficult. This persisted until admission.

On examination the temperature was 101° F., the pulse rate 156, and the respirations 28 a minute. The latter were accompanied by inspiratory stridor and recession of the intercostal spaces. The uvula and fauces were symmetrically swollen and very hyperaemic, but no membrane was visible. Laryngeal diphtheria was diagnosed, and 65,000 units of antidiphtheritic serum were given intramuscularly in 5 doses over 12 hours. The laryngeal obstruction was so severe that tracheotomy was done 3 hours after admission, and while this relieved the stridor and temporarily improved the pulse rate, the latter and the respiration rate soon returned to 160 and 32 respectively. The clinical condition remained poor, the child being prostrated. On the 18th a pleural rub appeared at the right base and he was put into an oxygen tent. The following day there were signs of bronchopneumonia, for which sulphanilamide was given. He died in coma on the 21st, 6 days after admission.

Bacteriological examination of a throat swab on admission gave a growth of *Corynebacterium hoffmanni*, which was confirmed on Horgan and Marshall's medium. Swabs taken from the larynx at the tracheotomy gave a pure growth of *H. influenzae*. Repeated swabs from the nose, throat, and larynx failed to grow *C. diphtheriae*. The blood count showed haemoglobin, 74% (Haldane); white cells, 9,600 per c.mm.

Necropsy

This was performed 22 hours after death, and revealed a well-developed, well-nourished male child with no external abnormality except a clean tracheotomy wound. The pericardial sac was distended with approximately 80 c.cm. of thick yellow purulent exudate, which was moderately adherent to both layers. The myocardium, endocardium, valves, coronary arteries, and great vessels were normal. The larynx, glottis, trachea, and main bronchi were normal except for a clean incision in the trachea. Both pleural cavities were filled with thick yellow pus extending into and encysted in the interlobar septa. The lungs were compressed but air-containing, and exuded a little frothy fluid on pressure. No pneumonic consolidation or bronchitis was detected. The mediastinal glands were slightly enlarged and congested, but were otherwise normal. The mouth, fauces, tonsils, pharynx, oesophagus, stomach, intestines, mesentery, and peritoneum were normal. The liver was enlarged and pale from fatty change. The gall-bladder, biliary passages, and pancreas were normal. The spleen showed lymphoid hyperplasia only. The genito-urinary, endocrine, and central nervous systems were normal.

Microscopical Examination.—Sections from the heart and lungs revealed severe purulent inflammation and numerous Gram-negative bacilli. The lung parenchyma showed a little albuminous fluid in the alveoli but no evidence of inflammatory disease. In the liver there was severe fatty change only.

Bacteriological Examination.—Cultures from the pleura, pericardium, and heart blood gave a pure growth of *H. influenzae*. The cultures grew well on boiled blood agar, and the colonies were smooth; suspensions in normal saline were agglutinated* by Type B serum to a titre of 1/100. No agglutination was observed with Types A, C, D, and F in any dilution.

Discussion

It is difficult to evaluate the pathogenicity of *H. influenzae* in man owing to many strains which appear to lead a saprophytic existence in the human nasopharynx; while others are capable of rapid invasion and often fatal infections typified by well-recognized entities such as meningitis and bacterial endocarditis. Its possible role in producing disease of the respiratory tract is less well defined, and in view of its normal habitat it is surprising that it is not more often encountered as the sole pathogenic agent. One of the difficulties may be due to failure to distinguish between pathogenic and non-pathogenic strains, and between primary and secondary invaders. Pittman (1931) has, however, demonstrated that pathogenic strains are usually capsulated and that the capsules have a specific soluble antigen which renders them capable of differentiation into 6 serological types (A to F). The majority of strains isolated from "influenzal" meningitis are Type B, and Sinclair has shown that the strains recovered from cases of laryngitis with septicaemia also belong to this type. The latter author collected 10 such cases, 8 of them in 18 months, and suggests that the number is increasing.

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* These sera were made available through the kindness of Dr. Margaret Pittman of the U.S.A. Public Health Service, to whom I am greatly indebted.

The clinical picture of severe prostration and acute respiratory distress of abrupt onset, often necessitating tracheotomy, differs from that of laryngeal diphtheria in that the prostration is undiminished by tracheotomy or antidiphtheritic serum therapy. The disease may run a rapidly fatal course in from 18 hours up to 6 days. Four of Sinclair's 10 patients died, those who recovered having received sulphanilamide, sulphapyridine, or sulphathiazole.

The diagnosis is essentially a bacteriological one, depending on the isolation of *H. influenzae* by culture from the nasopharynx, larynx, lung, or blood, or by direct typing of nasopharyngeal mucus obtained by swabbing with type-specific serum—the Neufeld technique, used by Alexander, Craig, Shirley, and Ellis (1941). Since typing sera are not yet available in this country, diagnosis largely depends on isolation by culture; but uncertainty will arise unless serological typing confirms the strain—otherwise the diagnosis can only be presumptive.

The present case affords an opportunity of discussing the pathology. The organism was first isolated from the throat on the third day of the disease and from the larynx on the fourth, where it had probably been present from the onset of respiratory distress. Evidence of pulmonary disease was first detected on the fifth day, and necropsy proved it to be due to empyema, no inflammatory condition of the lung parenchyma having been found. Post-mortem blood culture was also positive, and judging from 7 of Sinclair's cases in which the organism was recovered from the blood ante mortem, the blood in the present case was probably invaded in the early stages, thus emphasizing the highly invasive property of this particular strain of *H. influenzae*—not unexpected in view of its possessing a capsule analogous to that of type-specific pneumococci. The route taken by the organism was probably the lung—a probability that is suggested by the bilateral empyemata and pericarditis, in which the exudate in both the pleurae and the pericardium was too abundant to have formed as a terminal event secondary to the septicaemia. The absence of any inflammatory disease of the upper respiratory tract at necropsy shows that the initial lesion may resolve and that the fatal outcome in those cases which survive the first few days is due to purulent inflammation of the lungs, pleurae, or pericardium, and septicaemia, or, when the former are absent, to septicaemia alone.

Summary and Conclusion

A case of acute laryngitis and septicaemia due to *H. influenzae* is described.

The strain of haemophilus isolated from the larynx and blood belongs to the well-recognized pathogenic Type B (Pittman).

The diagnosis depends on isolation of the organism from the nasopharynx and blood, employing a suitable medium such as boiled blood agar or by direct typing of nasopharyngeal mucus when typing sera are available.

The pathology of the condition is discussed briefly.

I am grateful to Mr. W. H. Clark, who was responsible for isolating the organism and for its typing.

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ATYPICAL ASPHYXIAL DEATHS

BY

NORMAN PATTERSON, M.B., B.Ch., D.P.H.

Temporary Assistant Medical Officer, Central Hospital, Warwick

The remarks of Dr. Eric Gardner in his paper to the Medico-Legal Society described in the *Journal* of April 18, 1942 (p. 502), under "Mechanism of Certain Sudden Deaths," are timely not only from the point of view of correct inquest findings but also in instituting prompt skilful treatment if there is still a chance of life. Dr. Gardner's remarks have been read by the staff of this mental hospital with considerable interest and with a certain degree of relief. Within the past two months it has been my unfortunate lot to have lost three female patients through asphyxiation. The superintendent tells me that within his eleven years' experience here he cannot recall any deaths with similar surrounding clinical and post-mortem evidence.

Case Reports

Case 1.—A woman aged 36 fell on a tiled floor. She was rendered unconscious and was treated for a fractured skull. She regained consciousness within 4 hours, improving rapidly, and was left by the nurse in charge for a few minutes while she attended to duties in the day-room. On her return the patient was dead. It being thought that this sudden catastrophe was inconsistent with the intracranial injury, a necropsy was performed, revealing that the pharynx contained a huge mass of bread impacted above the epiglottis. The bronchial tubes and lungs also contained pieces of inhaled bread. The base of the skull was fractured, but without sufficient trauma or haemorrhage to cause sudden death. The bread could have been given to the patient only by some of her well-meaning friends.

Case 2.—A woman aged 44. This patient, at the breakfast table, devoured her own share of bread-and-butter and, while standing up and about to snatch that of her neighbour, was seen by the nursing staff to slump down into her seat and collapse. Attempts to recover foreign matter from the mouth were unsuccessful, and she died within 5 minutes. The necropsy revealed bread tightly packed in the pharynx, trachea, and bronchi.

Case 3.—A woman aged 65 was noticed by the nursing staff to turn pale and collapse in her seat while eating bread at the breakfast table. Her air-passages were cleared so far as was possible, but she died within 7 minutes. The post-mortem examination revealed soft bread scattered throughout the larynx, trachea, and bronchial tree.

Commentary

The victims were female patients of a mental hospital, and in Cases 2 and 3 were known to be food-snatchers who, not being content with their own ration of bread, would grab at their neighbours' and cram it into the mouth without mastication. The usual signs of choking were absent in the two observed cases: no lividity, cyanosis, coughing, struggling for breath, or convulsive movements.

A feature common to all three cases was a pallid, peaceful facies. The external post-mortem signs of asphyxiation, such as livid patches on the body and extremities, were absent.

The absence of the normal reflexes, through the medulla, of coughing or retching is remarkable in the light of the pathological findings of impaction in the region of the most sensitive receptors for producing them—viz., the larynx, bronchi, and trachea. Considered with the time factor of 5 and 7 minutes in the two observed cases, it is clear that the mode of death could not have been true asphyxia.

Death appears to have been due to syncope set up by shock—the result of a mass reflex through the impaction of foreign matter in the pharynx, larynx, trachea, and bronchial tree, death taking place before the usual signs and symptoms of asphyxiation had become manifest.

I am indebted to Dr. D. N. Parfitt, medical superintendent, for permission to record these cases, to Dr J. L. Berry for the post-mortem examinations, and to both for their encouragement in my presentation of this paper.

Medical Memoranda

Treatment of Poliomyelitis with Convalescent Serum and Sulphapyridine

The following two cases of poliomyelitis in the same family are an interesting contrast. In Case 2 the diagnosis could be made with certainty although there was no paralysis, and treatment with convalescent serum and sulphapyridine was given within 48 hours of the onset.

Case Reports

Case 1.—M. W., the youngest of a family of 4 children, was taken ill on Oct. 4, 1941, and was admitted to hospital on Oct. 8, when he presented the following signs: Temperature 101.2°, pulse rate 126; he was conscious and intelligent, but drowsy; his pupils were dilated; there was marked neck rigidity; Kernig's sign was positive; abdominal reflexes and knee-jerks were absent. Lumbar puncture gave a clear colourless fluid, which showed: protein, 0.23% ; globulin, *nil* ; sugar, greatly diminished, not sufficient to estimate; chlorides, not sufficient to estimate; cells, nearly all lymphocytes, 134 per c.mm. On Oct. 9, 5 days after the onset of symptoms, he developed flaccid paralysis of both arms and legs and became slightly cyanosed, respiration being mainly diaphragmatic. By Oct. 13 paralysis of his respiratory muscles was so extensive that it became necessary to nurse him in a Booth respirator. In this he remained until Oct. 17, when his intercostal muscles had sufficiently recovered to allow of his removal. Since then there has been some improvement, and at the end of April, 1942, his general health was excellent. He had almost complete paralysis of the muscles of his back, left arm, and right leg, some useful movement of his right arm and left leg, and almost complete recovery in his intercostal muscles. There could be no doubt as to the nature and severity of this illness.

Case 2.—P. W., aged 13, brother of Case 1, complained of pain in his back and headache on Oct. 10 (a week after the onset of his brother's illness). He was admitted to hospital on Oct. 11. On admission his temperature was 102°, pulse 130, and respirations 30. His fauces, heart, and lungs were normal. There was slight neck rigidity, and Kernig's sign was positive. There was no paresis, and the deep reflexes were present. His abdominal reflexes were absent on the right side. Lumbar puncture yielded a few cubic centimetres of fluid which was not under pressure and on which the pathologist's report was as follows: "Fluid slightly turbid, with large blood-stained clot. Protein, 0.30% ; sugar diminished; Nonne-Apelt reaction, globulin +; chlorides, 0.75% ; cells, 456 per c.mm., mixed polymorphs and lymphocytes (some cells accounted for by blood); culture, sterile."

The treatment adopted was as follows: In the first 24 hours after admission he received 7.5 g. of sulphapyridine, the first dose being given (intramuscularly) at 6.30 p.m. on Oct. 11. Subsequent doses were given by mouth. The dose in the second period of 24 hours was 6 g., and in the third period 3 g., a total of 16.5 g. On Oct. 12 convalescent serum was available and 20 c.cm. was given intramuscularly at 10.45 a.m. This dose was repeated at 6.45 p.m., and again morning and evening on the 13th, and once on the 14th—a total of 100 c.cm. in five doses. The boy developed no further symptoms. His temperature fell to normal on Oct. 14 and showed no subsequent rise. There was no alteration in his physical signs except that on Oct. 13 the abdominal reflexes were absent on both sides. They were not obtained until Oct. 17. He was discharged on Nov. 9 and has remained in good health since.

Comment

The fact that no paralysis developed in Case 2 would appear to justify a more extended trial of convalescent serum and sulphapyridine, particularly in cases like this in which the diagnosis can be made with certainty before the onset of any paralysis. It is fully realized that the fact that no paralysis developed in the second case may have been a coincidence.

I am indebted to Dr. L. B. Cole for his help in the diagnosis of Case 1 and his suggestion that the combined treatment should be used if further cases occurred; and to Dr. Sinclair Miller for very promptly supplying 100 c.cm. of convalescent serum with instructions as to dosage.

Bernard E. A. Batt, M.B., B.Ch.

West Suffolk Hospital, Bury St. Edmunds.

Reviews

POSTGRADUATE LECTURES

Edinburgh Postgraduate Lectures in Medicine. Volume II. 1940-1. (Pp. 540. 12s. 6d.) Edinburgh and London: Published for the Honyman Gillespie Trust by Oliver and Boyd. 1942

The Honyman Gillespie Trust is to be congratulated on producing a second volume of postgraduate lectures in these difficult times. Physical examination should begin with inspection, unwilling though the student is to realize that fact, so Mr. F. E. Jardine's lecture on the subject is appropriate. Since it is mainly surgical in outlook we would commend the executive committee to secure an equally interesting contribution from the medical side, for the patient who has the disease is as important as the disease he has. Just as medical examination should begin with inspection so medical theory must be largely rooted in genetics. Prof. Crew's lecture on genetics in relation to reconstructive medicine is therefore of particular value, coming from an authority in genetics who has, however, no exaggerated ideas on the advantages of artificially controlled propagation, since, as he says, most derangements and defects of genetic origin behave as recessives. He anticipates more results from improving the environment, though aware that improvements in social conditions will not in themselves yield unlimited evolutionary progress. The whole lecture repays thoughtful study. Of topical interest is Prof. D. K. Henderson's lecture on the significance of fear, which links up with Prof. F. R. Fraser's study of the so-called effort syndrome. This he regards as a disorder of the involuntary nervous system which also occurs in civil life but is given almost specific characters under conditions of war. Since 1914 the mental features have been realized and accepted, so that we may now anticipate better results from more discerning treatment. Prof. Stanley Davidson contributes a helpful article on recent developments of diagnostic sternal puncture, while Dr. C. P. Stewart takes a cautious view of the relationship between dark adaptation and vitamin A, holding that other factors such as age, fatigue, minor infections, and indeed other vitamins also play a part. The recent increase in pulmonary tuberculosis lends point to Dr. Charles Cameron's account of modern methods in its treatment. He does not believe the failure in early diagnosis is so often due to carelessness or ignorance as is often suggested, but rather to the fact that some cases are symptomless in the early stages, while others are so acute in onset that much damage is wrought in a comparatively short time. Nature at the best holds a fine balance, and he quotes the depressing dictum that "60% of all adult pulmonary cases die within five years of coming to our notice." Clearly more active measures are called for.

Naturally a considerable proportion of the lectures deal with medical and surgical problems arising from the war, to which we have devoted a considerable amount of space in these columns. An attractive series is brought to a conclusion by a suggestive if rather discursive paper by Prof. McDowall on the physiological approach to medical problems.

EVOLUTION OF SURGICAL INSTRUMENTS

The History and Evolution of Surgical Instruments. By C. J. S. Thompson (Pp. 113. No price given.) New York: Schuman's, Twenty East Seventieth Street.

Now that so many of the original instruments with which this book deals have been destroyed by enemy bombing, it is as well that a concise account of them should be available in a single volume such as this, even though a good deal of the matter of the book has already appeared as articles in the *British Journal of Surgery*. As Dr. Chauncey D. Leake, who introduces it, tells us, this historical survey can never supplant the instruments themselves, but it may serve to perpetuate the purpose of the collection. It forms an interesting addition to the instrument catalogue of the Museum of the Royal College of Surgeons of England, copies of which fortunately still exist. The book, which is amply illustrated and beautifully produced consists of twelve chapters, of which "The Scalpel," "The Trepan," "Head Saws," and "Tourniquets" may be selected as samples. Possibly those on "Tourniquets" and "Trocars," respectively, are two of the most interesting. It is regrettable that there are many omissions and some inaccuracies. Sir Victor Horsley at one stage of his career may have used the Walsham trephine depicted on p. 44, but he designed and used the well-known truncated cone type of instrument, still used on occasions to-day, which is not shown in this book and might well have been included. Ambroise Paré's "skull compass" is the prototype of Souttar's and Trumble's craniotomes which are not, however, mentioned, and which, if illustrated, would form with it an interesting comparison of more recent instruments. There is no reference to the power-driven skull saws of Doyen and Van Arsdale, and it is quite inaccurate to describe, in the chapter on the trepan, Lambert Rogers's modern electrically driven craniotome—the skull plough—as a reversion to primitive times. Any reference to this instrument, which has no counterpart among trepans, should be in the chapter on head saws, since it is in essence an electrically driven bone saw capable of controlled movement in two planes. The very widely used Gigli wire saw is not mentioned, nor is there any reference to what so far as we know is the only really complete account of this subject of skull saws, viz., "The history of craniotomy, an account of the methods which have been practised and the instruments used for opening the human skull during life" (*Annals of Medical History* (1930), p. 495).

A bibliography is not included, references are conspicuously few (the important monograph of J. S. Milne on *Surgical Instruments in Greek and Roman Times* is not mentioned), and mistakes of printing occur in both text and index. Murrett-Baker (pp. 68 and 70), is surely Morrant Baker, and Roger (p. 112), Rogers. A final chapter on operating tables concludes with illustrations of a British table of 1885 and a French one of 1914. Although, so far as it goes, this is an interesting account, we cannot but regard it as somewhat superficial, and would welcome a further elaborated edition in which references and bibliography are included and attention is paid to some of the points here raised.

HISTOLOGY AND EMBRYOLOGY

Histology and Embryology. By José F Nonidez, Sc D. Oxford Medical Outline Series. (Pp 199 12s. 6d.) London: Oxford University Press

This book, by Prof. Nonidez, is described by the author as an "outline which presents in condensed form the most important facts concerning the structure and development of the organs of the human body," and as "intended to be used as a supplement to a textbook." Like other books of a similar nature, this work appears to have been written with the purpose of supplying the want which is felt by many students of a reliable guide to the essentials of a subject which will save them both time and expense. There is, however, a very real danger that such books may supplant rather than supplement well-illustrated standard works which have been gradually perfected during many successive years. Elementary books without illustrations, and consisting of verbal descriptions only, leave a great deal to the imagination of the reader, who—especially in subjects like histology and embryology—requires clear-cut and accurate illustrations to assist him in interpreting the appearances he sees under the microscope. The work which we are now considering is clearly written, information being imparted by short definitions which are admirable from a didactic standpoint. One would like, however, to have seen greater attention paid to the relations of structure to function, and also greater detail given to the description of the development of those parts which have a practical bearing on medical work—e.g., in connexion with the occurrence of abortion, chorion epithelioma, hare-lip and cleft palate, hypospadias or spina bifida, and in general the effects of malnutrition or disease on the early stages of a normally developing embryo. The student who studies the structure of the skin or other part with the view of understanding the relation of this to its normal functions, and has a good mental picture of that structure, will be quite independent of didactic aids to his memory, and more especially so if his attention has been directed to the bearing that this has upon ordinary medical practice.

ABNORMALITIES IN BACKWARD CHILDREN

Developmental Aphasia in Educationally Retarded Children By M. MacMeeken, M A., Ph D (Pp 95. 3s) University of London Press, Ltd., St. Hugh's School, Bickley, Kent.

It is a matter of common observation that retardation of learning in school is by no means always associated with general mental deficiency—i.e., with general lack of capacity for intelligent development. The existence of congenital word blindness due to lack of development of certain specified areas of the brain as suggested by Hollinshed has been hotly disputed, but that specific reading and spelling disabilities are not uncommonly met with among elementary school children is the experience of every teacher. Dr. MacMeeken has investigated 140 children on the "retarded list," 84 boys and 56 girls from a background of 1,487 children. He found that a large proportion of these owed their retardation to factors other than low capacity, and that this is especially true of boys. He found that 58.6% of this group were "left eyed" and that the proportion of boys was again high. Squint and left-handedness also seemed to be significantly associated with retardation, and a previous investigation showed that these were associated with an aphasic confusional error.

The determining cause of laterality is little understood, but abnormality of foetal posture has been suggested, and left laterality does seem to be associated with twinning. The point is that studies of induced nystagmus show that left-eyedness means a preference for scanning from right to left, whereas written language requires a scanning from left to right—an obvious cause of aphasic confusion which may well induce a retardation of reading and spelling.

This well-documented essay will be of great value to all who are interested in the relation of developmental abnormalities to intellectual and learning capacity, a subject which concerns the medical as much as it does the teaching profession.

Notes on Books

The official *Medical Register* for 1942 has been published on behalf of the General Medical Council by Constable and Co. (Orange Street, W.C.2) at 21s., post free 22s. The table printed in the introductory section shows that 3,293 names were added last year. New registrations numbered 1,189 in England, 632 in Scotland, 285 in Ireland, 134 on the colonial register, and 1,053 on the foreign register. The total number of names on the *Register* at the end of last year was 66,995, being 2,316 more than on December 31, 1940. The number of names removed from the *Register* during 1941 was 993; of these 985 were deleted on evidence of death, and 8 were struck off under the disciplinary powers conferred by Parliament on the General Medical Council.

Prof. JOHN READ of the University of St. Andrews has written an entertaining little book for popular reading on *Explosives* (Harmondsworth, Penguin Books Ltd., 9d.). He describes the chemical nature of explosive phenomena, the various uses which different explosives serve, the method of their production, and gives some account of the quantities in use. It is full of information relating to their specific characters, which vary greatly in sensitivity to shock and other conditions, and describes how each of the different characters is turned to advantageous use. It is interesting to observe some unexpected methods of producing explosives for application to special purposes, such as a mixture of liquid oxygen with finely powdered carbon or carbonaceous matter, and to note that practical use is made of liquid carbon dioxide alone, inert though it is, as an explosive.

Modern Treatment in General Practice Yearbook, 1942, is the eighth annual volume of papers on therapeutics reprinted from the *Medical Press and Circular*. It is published at 12s. 6d. from the office of Baillière, Tindall and Cox, and the editor, Surgeon Rear-Admiral CECIL P. G. WAKELEY, contributes a brief preface. A wide range of subjects is covered; and there are fourteen articles grouped together under the general heading "War Medicine and Surgery."

A seventeenth edition of *Black's Medical Dictionary*, which was edited for many years by the late Dr. J. D. COMRIE, has been published by A. and C. Black at 21s. The main text consists of over 1,000 pages printed in double columns, and there is a brief supplement on the management and treatment of casualties resulting from air raids.

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THE MEDICAL CURRICULUM

The final examinations are over. The successful candidates have a brief six months to adapt themselves to a world whose ideals and demands will prove very different from those of the medical schools in which they were trained. It will not be long before director-generals, scientific advisers, and politicians begin to pass adverse comment on their want of *savoir faire*, their ignorance of nutrition, and their lack of insight into the problems of industrial welfare. The bizarre group of patients with physical signs, who have been with such difficulty collected for the great occasion, have returned to the infirmaries and sanatoria which permanently house them or passed on to that bourne from which no traveller returns. The hospitals breathe a sigh of relief and get on with the treatment of their normal clientele, which, rather surprisingly, seems to be in large measure unsuited to the purposes of a final clinical examination. But no such respite is allowed to the examiners, who must now busy themselves with the revision of the medical curriculum, a problem to which many of them have devoted unrewarded hours in the past. The recrudescence of interest in medical education is in part due to a general stimulation by the ultra-violet light of war; in part to the anxiety felt by the universities about the deterioration threatened by the dispersion of medical schools and the loss of teachers, especially in clinical subjects; and in part, and perhaps most urgently, to the knowledge that an Interdepartmental Committee on Medical Schools is now in action. As this committee is to inquire into the organization of medical schools, with particular reference to facilities for clinical teaching and research, the result of present discussions is likely to be concrete and far-reaching. A little probing at the roots of the matter may therefore not be out of season.

At least three important committees considered the medical curriculum in the decade before this war, and their issue was stillborn. They did not succeed in adapting the curriculum to the inflow of new knowledge or in shifting the emphasis from the study of disease to the prevention of illness. It is important to inquire why this was so. Let it be said quite bluntly, for we are sadder and wiser now than we were then, that we did not apply science, or at any rate the appropriate science, to our task. The committees of the General Medical Council and of the Combined Universities were entirely composed of medical teachers. The committee of the British Medical Association contained general practitioners, and conferred with the teaching profession. Methods of teaching of students and selection of teachers in the medical schools still have the features of a primitive craft which has grown up in a haphazard way and which calls for scientific analysis and re-integration. Education is a science which has a theory, a discipline, and great recent advances. No one with eyes to see can fail to be impressed by the help which educationists and psychologists have given to our rapidly expanding Defence Services in schemes of pre-selection and training. The speed of acquisition of industrial skill as a result of methods introduced during the war has been no less remarkable. No revision of the medical curriculum can afford to neglect this revolution or fail to ask expert help from outside. To do so would be to run counter to one of the main principles for which we ourselves stand as a profession of technical experts. *Experto crede.*

Next we must decide what is the principal aim of medical education. Surely it is the production of good general practitioners. The exceptional man who is likely to become a consultant or researcher can—up to a point—look after himself, and in any event he should not bias the curriculum. Not long ago, in reviewing Alan Gregg's *Furtherance of Medical Research,* we commented on the widening gulf between medical research and medical practice. The staff of the Medical Research Council's institute is now predominantly non-medical. The recent appointment of a distinguished non-medical biochemist, Prof. C. R. Harington, as its head, won universal approval. Medical education cannot legislate for the researcher as well as the general practitioner; it must fit its courses for the latter. It seems, therefore, that we must work back from the medical practitioner: we must find out what knowledge and bodily skills he requires. This information can only be obtained by field surveys, carried out by groups including medical and non-medical workers, to discover what the practitioner is now doing and what he ought to be doing. These surveys will be coloured by the knowledge that the future practitioner will almost certainly have to undergo a period of compulsory house appointments before registration of his qualification, and a period as assistant at a health centre or in a practice before he is allowed to work entirely on his own.

When the information about the appropriate mental and technical equipment of the practitioner of to-day and to-morrow has been collected the educationists must help us in devising the best way of teaching it. The scholastic life of the medical student falls into three divisions—school education, pre-clinical education, clinical education—and between the first and second there may perhaps be interposed a period of national service. It will again pay us to work backwards. Our plans must bear in mind that the cost of the student's education will be borne to an increasing degree by the State and must bear a reasonable ratio to the service provided afterwards. It is undesirable that young men and women should remain *in statu pupillari* after the age of 23 or 24 unless we are deliberately aiming at breeding out our best stocks. Many of them are marrying at that age to-day.

Clinical education might be carried out in three distinct ways: the old-fashioned apprentice training of "walking the hospitals," which has continued with little change up till to-day; the fundamental scientific or physiological approach for which many teachers hanker; and the synthetic type of training which has proved so valuable in the Services and which depends on discovering what the pupil has to learn and then working out the most efficient way of teaching it. It seems *a priori* unlikely that it will be found that the present routine of medical and surgical ward clerkships, or the present teaching by men who are chosen for their professional skill, and who have a duty to get round the ward, to perform their operations, or to examine their out-patients, is the best that can be devised or afforded. It is also clear that life is too short for the medical student to learn everything from the fundamental or scientific standpoint, and it seems probable that he will have to get his scientific education and background in his pre-clinical years and devote the clinical years to the acquisition of technical skills. We must probably look forward to a much greater extension, under whole-time teachers, of what are now known as preliminary medicine and surgery, and a much more intimate fusion of clinical teaching, pharmacology, pathology, and radiology. There is need here for a survey of more modern teaching methods, such as the combined demonstrations of clinical, pathological, and radiological material which have been prepared at some of the Scottish universities or the lay-out of our new museums. Training Command of the R.A.F. is almost too gadget-minded and not always appreciative of the difficulty of transference of skill from the artificial to the real, but it has shown what can be done with the film, the sound-track, and the model or "mock-up," and suggests possibilities in medical education. Developments of this kind will greatly affect the physical structure and cost of medical schools and the type and training of teachers, and are very germane to the evidence to be presented to the Interdepartmental Committee.

School education and the pre-clinical education of the medical student must be planned in association with the general education of the young people of Britain and not as an isolated medical problem. Here, too, we are in danger of getting out of touch with the extensive study of general educational problems which the war has stimulated. As regards pre-clinical training, it is not clear why the anatomy and physiology of the body should leave so little time for the study of the mind. The reasons must lie in the historical development of the medical schools and not in a true appreciation of the needs and possibilities of medical education to-day. The pre-clinical years are likely to become the backbone of the doctor's education as a scientist, and no time or care should be spared in their planning.

New efforts to reform the curriculum will be as abortive as the old if planners think in terms of the claims of rival teachers, the clash of personalities, and peace by compromise. Neither in the pre-clinical nor in the clinical course can we keep the curriculum up to date and of reasonable length by the processes of addition and subtraction. We require new permutations and combinations. The present century has seen revolutionary changes in methods of diagnosis and treatment, in understanding of the psychological causes of illness, and in the prevention of organic and functional disease; and only fundamental changes in the curriculum and the methods and scope of medical teaching can keep pace with them.

FOUR YEARS OF HERBERT'S ACT

In piloting through Parliament so radical a reform of the divorce law as the Matrimonial Causes Act, 1937, Mr. A. P. Herbert achieved a very remarkable success. He succeeded largely by concentrating on a few basic principles and not inviting controversy over many minor details, desirable though these might have appeared. The Act has now been administered for about four years, and few will maintain that it has not on balance been very beneficial. That it should have shown a good many rough edges is inevitable, for under the conditions of its passage through Parliament the persons who could conceivably have moulded it to fit the pre-existing law did not have much opportunity of doing so. A survey recently presented to the Medico-Legal Society by Mr. William Latey and Mr. D. Harcourt Kitchin, barristers-at-law, showed that it fits much better on to the earlier law of divorce than on to the law of mental disorder, with which it is intimately connected through its provisions for divorce and nullity on the ground of insanity in a party to the marriage. As these authors pointed out, the number of cases in which the insanity ground is raised is small—only about a hundred and fifty a year out of seven thousand. Petitions on the ground of desertion are much more numerous. In matters of justice, however, numbers do not matter; if a statutory provision oppresses a few, it needs amendment just as urgently as if it oppressed many, and in some respects Herbert's Act calls loudly for amendment.

A petition for divorce on the ground of insanity may be presented by either spouse on the ground that the other is incurably of unsound mind and has been continuously under care and treatment for at least five years immediately before the date of the petition. "Care and treatment" is very precisely defined, in terms that sound strange to a medical ear. A person is deemed to be under care and treatment while he is detained in pursuance of any order or inquisition under the Lunacy and Mental Treatment Acts, 1890-1930; or of any order or warrant under the Acts relating to the fighting Services; or while he is being detained as a criminal lunatic or in pursuance of an order made under the Criminal Lunatics Act, 1884; or while he is receiving treatment as a voluntary patient under the Mental Treatment Act, 1930, "being treatment which follows without any interval a period of such detention as aforesaid." To make it quite clear that those cases mark the limits of "care and treatment," the section concludes "and not otherwise." Not every permanently insane spouse, therefore, comes within the Act. For instance, the section says nothing about temporary treatment under sect. 5 of the 1930 Act, by which a patient who is incapable of volition but likely soon to recover may be admitted to a mental hospital without a reception order for six months. After that time his temporary treatment may be continued for two more periods each of three months "as may be specified in directions given by the Board of Control." If, therefore, a patient is admitted to a mental hospital on the temporary footing, recovers volition within six months, and remains as a voluntary patient for another five years or more, then even if he is incurable he cannot apparently be divorced under Herbert's Act, for the voluntary treatment does not follow a period of detention under an order, inquisition, or warrant "as aforesaid." It only follows a period of temporary treatment, which, though by the Mental Treatment Act it is called detention, yet is not detention under an order. Nevertheless, if a temporary patient remains without volition for six months and then has his period of treatment extended by directions of the Board, these directions count as an order (Benson *v.* Benson, 1941); and any subsequent period of voluntary treatment is good for divorce purposes. This anomaly badly needs adjustment. So, too, if an otherwise valid period of voluntary treatment is interrupted by a period of temporary treatment, it is probably vitiated for divorce purposes because the temporary treatment, for the first six months at any rate, is not detention under an order. Again, an English patient who happens to be detained in a Scottish mental hospital does not come within Herbert's Act, just as a Scottish patient detained in an English hospital does not come within the corresponding Scottish Act. Other cases in which the care and treatment may be legally interrupted, though the insanity which is the real ground for the divorce subsists, are those in which the patient is let out for a substantial period on trial or holiday, or is discharged to relatives, or escapes for longer than the fortnight within which he may be retaken on the original reception order. The President said in Shipman *v.* Shipman (1938) that routine outings in the daytime or short leave of absence may not interrupt the detention, but that absence on trial for prolonged and indefinite periods may do so: in each case the court must decide whether an invisible line has been transgressed or not. The statutory care and treatment may also be interrupted by a purely technical mistake, such as the failure of a workhouse officer to give the certificate of suitable accommodation required by sect. 25 of the Lunacy Act, 1890, on the transfer of an incurable rate-aided patient (Murray *v.* Murray, 1940). There is no provision in Herbert's Act for divorce on the ground of mental deficiency for which a spouse is indefinitely detained in an institution.

Another legal anomaly under the Act has been introduced by an unfortunate decision of the Court of Appeal. Insanity, besides being a ground for divorce, may be a defence against a petition for divorce alleging desertion or cruelty, for if the respondent is insane he may not be responsible at law for these offences. In Williams *v.* Williams (1939) the court held that, because the respondent husband had been certified as of unsound mind, his wife could not divorce him for desertion although he had deserted her many years before his certification. Once a respondent loses through insanity his ability to form an intention to desert or to return, he no longer commits the matrimonial offence of desertion, for he has no longer the *animus deserendi* which is indispensable to the offence. Moreover, and even less justifiably, if the respondent is certified under the Lunacy Act his irresponsibility is presumed, and the petitioner is not allowed to bring evidence of his actual state of mind. A certified patient may be charged with murder, and then evidence of his state of mind is heard; he may be sued for causing damage to property, and the aggrieved person is at liberty to bring evidence showing that he was responsible; during a lucid interval he may make a valid will. In desertion alone is he presumed on the strength of the certificate to be irresponsible. This decision should be reversed by statute as soon as possible, for, apart from the hardship it may cause, it distorts the pattern of the law governing responsibility.

No amending Bill can come before Parliament until the war is over and controversial private Members' legislation can again be introduced. No doubt, however, Mr. Herbert and others will take the first opportunity of seeking to remove these and other incidental defects of an Act which on the whole has fulfilled its purpose admirably.

THE ADRENALS IN ANOXIA AND IN SHOCK

Judging from the large variety of subjective and objective symptoms observed in anoxia, it is probable that all the active systems of the body are adversely affected. Attempts have been made from time to time to attribute the main trouble to damage of one particular organ, and in this respect the adrenal gland is at the moment receiving a good deal of attention from research workers. R. A. Lewis and his co-workers[1] exposed rats, rabbits, dogs, monkeys, and human subjects for single periods of 1½ to 24 hours to mixtures of oxygen and nitrogen with the partial pressure of oxygen adjusted to correspond to altitudes of 11,000 to 34,000 feet. Their conclusion from the animal experiments is that the "carbohydrate-regulating" factor of the adrenal cortex is closely concerned with the changes in the organism during anoxia, and that it enables adrenalectomized animals to withstand exposure to an otherwise fatal oxygen tension and results in an increase in blood glucose, liver glycogen, and excretion of nitrogen. The increased excretion of potassium during anoxia appears to be accounted for by factors other than the adrenal cortex, whereas the increased excretion of sodium and chloride appears to be mediated by the "carbohydrate-regulating" factor of the cortex. Lewis and his colleagues' eight human subjects were exposed in bed in an oxygen tent to an oxygen tension of 98 mm. Hg, corresponding to an altitude of 13,000 feet, for 5 hours only. This did not cause any striking change in various blood and urinary constituents, although there was a fall in excretion of urinary nitrogen, and in one or more of them there were the following signs and symptoms: hyperventilation, tachycardia, cyanosis, frontal headache, mental exhilaration, general weakness, fall in blood pressure, syncope, precordial discomfort, nausea, and vomiting. The two subjects who lost consciousness remarked that they had similar reactions on motor-car or boat trips. The administration of intravenous glucose to four of the subjects was not associated with improvement in subjective symptoms. Also, the electrocardiographic changes during anoxia were not restored to normal by glucose, although the authors state they have evidence that changes in the electrocardiogram may be associated with abnormalities of carbohydrate metabolism.

Much research work is also being carried out in connexion with the part played by the adrenal and its carbohydrate-regulating factor in shock. H. Selye and C. Dosne[2] find that the venous blood coming from a damaged area is always much poorer in glucose than is the venous blood of a non-traumatized area in the same animal, although, usually, the systemic blood sugar is very high in traumatic shock. In adrenalectomized rats, whose resistance is low, traumatic shock is not accompanied by a rise in the systemic blood sugar, and, indeed, often causes hypoglycaemia. Active cortical hormone preparations restore to normal the low blood sugar of non-traumatized animals subjected to adrenalectomy, but do not raise it about this level, nor do they cause hyperglycaemia in intact animals. On the other hand, if such extracts are administered during traumatic shock to adrenalectomized rats, they cause a significant rise in the blood-sugar concentration, and at the same time increase resistance to shock. It appears that the metabolic changes elicited by extensive damage alter the action of adrenal cortical hormones on blood sugar. It is possible that in shock the blood sugar decreases in the absence of the adrenals because the lactic acid produced fails to be resynthesized into glucose. In any event it seems that changes in carbohydrate metabolism play an important part in the pathogenesis of the shock syndrome.

Other workers have been investigating the possible therapeutic action of cortical hormones in shock. There are a number of reports that "cortin" and corticosterone are of some benefit in treatment or prevention of this condition. Desoxycorticosterone appears to be of some value in "muscle shock," but not when the shock is due to damage to viscera. Recently R. L. Noble and J. B. Collip[3] introduced a method of producing shock in rats which they consider excludes the complication of haemorrhage in addition to those of infection and anaesthesia. The animals are placed in a revolving drum and raised up to a short distance and then dropped. This is repeated many times, and eventually this type of trauma leads to haemoconcentration and the pathological changes ascribed to shock Noble and Collip conclude that a poison or toxin is formed in the damaged tissues, muscles, and viscera, and that there are two possible types of cases. First, there is the case in which, as the result of rapid formation of large quantities of the toxic substance, death follows trauma very rapidly without much haemoconcentration. Secondly, there is the case which runs a protracted course with increasing haemoconcentration due to loss of plasma through the capillaries. In their animal experiments Noble and Collip found that the mortality was mainly toxic in nature, and they attempted to prevent the condition by pre-treatment with various cortical extracts from the adrenal gland. They got some evidence of therapeutic effect, but nevertheless conclude that from the practical standpoint the effects of adrenal preparations on this type of shock are disappointing; but they have stimulated further research. At the same time, no doubt, the difficulty is that other organs are concerned in the mechanisms not only of shock but also of the anoxia which usually accompanies shock.

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[1] *J clin. Invest*, 1942, 21, 33.

[2] *Proc. Soc. exp. Biol. Med.*, 1941, 48, 143, 532.

[3] *Quart. J. exp. Physiol*, 1942, 31, 187, 201.

SULPHANILAMIDE IN ACUTE NEPHRITIS

The close relation of acute nephritis to infections with the haemolytic streptococcus has been recognized for many years, and it is therefore tempting to suppose that drugs of the sulphanilamide series might have a beneficial action on the course of the nephritic process. With a view to testing this hypothesis Williams, Longcope, and Janeway[1] have lately compared the results in 42 cases of acute nephritis treated with sulphanilamide during the acute phase of the disease with a series of 70 cases not so treated compiled from their previous records. Sulphanilamide has been shown to be relatively harmless to the normal kidney, and has not produced the haematuria and anuria occasionally noted during treatment with sulphapyridine or sulphathiazole, but the authors state that in the presence of even slight renal deficiency the drug is not excreted as rapidly as in the normal subject and so accumulates more rapidly in the blood. The treatment must therefore be used with some caution in nephritis.

Almost all the patients treated had some focus of infection (usually the tonsils) from which beta haemolytic streptococci had been recovered. The control group was picked to represent as nearly as possible a series of cases of equal severity and of the same aetiology. The authors claim that in the treated series the foci of infection cleared up more rapidly, the duration of oedema and hypertension was shorter, and the percentage of clinical recoveries greater. Although this is true for the small number of cases recorded, a critical examination of the work under review shows that the differences in the outcome of the two groups of cases were not striking and may not have been entirely due to the sulphanilamide therapy. For instance, the control group contained a smaller proportion of cases in which oedema and hypertension were absent. Moreover, even the treated groups were subjected to tonsillectomy and other procedures for the surgical removal of septic foci. Dosage was very variable, being in some cases 1.2 g. and in others 6 g. per diem, the total amount of sulphanilamide administered varying from 9 to 169 g. Certain facts, however, seem to be indisputable. The number of cases in which positive throat cultures were obtained at the time of discharge from hospital was decidedly less in the treated group; temporary exacerbation of the nephritis after tonsillectomy was common in the untreated and rare in the treated group; and the renal function was never adversely affected by sulphanilamide, even though it was given during a stage when oedema, hypertension, albuminuria, and nitrogen retention were present. The immunologic reactions of the patients, as shown by the antistreptolysin titre of the blood serum, were unaffected. It seems safe to conclude that, whereas sulphanilamide does not constitute a cure for acute nephritis, it is a relatively safe method of treatment and should be used wherever active streptococcal infection is present, and also before and after the removal of septic foci in these cases.

WHAT THE CHILD THINKS OF SCHOOL MEALS

Doctors and educationists and social workers have given their own opinion of the school canteen and its advantages, but it has been left for the Education Committee of Hertfordshire to elicit what the children themselves think about the experiment. Under the title of "The School Child and the School Canteen" the Hertfordshire County Council has published the results of an inquiry undertaken by Mr. F. Le Gros Clark into the reactions of the children to the change in social habits which the school canteen signifies. The inquiry was carried out through the medium of the school essay, and the first 600 essays to come to hand from 19 schools in the county were analysed. About 31% of the boys and 35% of the girls expressed a preference for meals at school, and 45% of the boys and 41% of the girls for meals at home. The remainder were indifferent or had conflict of choice. Meals at home were preferred by a considerable proportion of the older children—that is, those over 13 years of age. The chief reason given for preferring meals at school was the excellence and variety of the food, but, on the other hand, those who preferred meals at home cited most frequently the insufficiency of school meals. Many of the essays were written by children evacuated from London into Hertfordshire, and it is evident from their essays that some of them concentrated upon the school canteen the resentment of the evacuated person against what he considers to be undue favour shown to the local child. Criticism of school meals, however, was fairly common. Complaint was made not only of insufficiency of food—probably the second helping by the indulgent mother is missed—but of indifferent cooking, overcrowding at tables, and noisiness. It is evident from the essays that so far there has been little imaginative effort to develop among these children a community spirit at their school meals or to deal encouragingly with the shy and nervous among them. Undoubtedly a large number of children now feeding at school—in Hertfordshire about 16,000 children are now fed every school day—do hanker after the greater freedom of the domestic table, the sense of maternal thoughtfulness, and the chance of expressing their likes and dislikes. It seems likely, whatever course the war takes, that the food situation will call for such communal service for some years to come. If so, a generation of children will pass a large part of their school life within the school-meal system. Teachers and others should therefore do what they can to transform the canteen from an improvised method of getting children fed into something which will have a formative influence on their training and be a valuable means of social instruction.

SURGEON'S MEDAL FOR LORD NUFFIELD

The medical profession will note with great pleasure that the Royal College of Surgeons has awarded its Honorary Medal to Lord Nuffield "in recognition of his conspicuous service in assisting the improvement of natural knowledge and of the healing art and of the many liberal acts and distinguished labours inspired by the desire to advance the science and practice of medicine and surgery." Lord Nuffield's benefactions have been distinguished not only by their munificence but by clear knowledge of the present needs of medicine and wise foresight of its future problems. Only recently we announced the decision of the Nuffield Provincial Hospitals Trust to create a professorship and to found an Institute of Social Medicine, devoting to this purpose £10,000 a year from its income for the next ten years. There is no need to enumerate in these columns the many other generous contributions Lord Nuffield has made to what we may call his "chosen profession." We may be sure that of the 19 recipients of the College's Medal few have deserved it so well as he.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* have been printed. They will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Accountant, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

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[1] *Amer. J. med. Sci.*, 1942, **203**, 157.

SALVAGED EXPERIENCES

CASES AND COMMENTS FROM GENERAL PRACTICE*

BY

E. DOUGLAS GRANGER, M.D.

Before consigning my bombed and scattered papers to their more useful function of salvage I have extracted a few cases and comments thereon. These random reflections I present to you in the hope that they may give some impression of that pleasant backwater of medicine in which I drift—private practice in a seaside resort.

An Odd Clinical Blunder

A habit of taking notes was initiated by a curious clinical blunder that occurred before I came to Bournemouth. Early in the morning a sailor came to see me complaining of severe abdominal pain and sickness. He was also on the defaulters' list for the day, and was accordingly examined with care and suspicion. No evidence of disease was found, and he was encouraged to return to work. At 3 o'clock on the same afternoon I was in the ward room recovering from lunch when there was an urgent call to the upper deck. There I found the unfortunate sailor stretched out, ghastly white and obviously desperately ill. He had a thready rapid pulse, sunken pain-distorted features, cold clammy skin, shallow respirations, a rigid abdominal wall exquisitely tender. I concluded that I had missed a serious abdominal emergency, and ordered his removal for immediate operation to the hospital ship *China*, some four miles away. As he was being lowered over the side an elderly warrant officer approached me and said that, in his opinion, there was "nothing wrong with Bill's belly, but that he was suffering from the screws." Now, I had been long enough in the Service at that time to treat the many theories of the executive with restraint, and on inquiry I found that a very usual practical joke had been played on him when he was over the side for a slight depth at the bottom of the ship in a diving-suit. He had been blown up, which consists in being brought quickly to the surface, generally upside down—a most uncomfortable sensation. Although I did not believe that such a slight change of pressure could have been in any way responsible for this very serious condition, I reluctantly agreed to stop at the *Cyclops* on my way to the hospital ship. There we were both put in the compression chamber, with the most dramatic results, as Bill the sailor rapidly became sprightly and well, and I felt very poorly indeed. There is no disguising one's intentions in the Navy, as your diagnosis is blazoned in bunting to the entire fleet, so we had to return to the ship, Bill to his work and I to the ribaldry of the ward room.

The interesting point of this case is—first, what would have happened to the man if he had gone straight to the hospital ship; secondly, surely such a shallow diving descent could not possibly produce caisson disease in a normal man; and, in fact, this particular man six weeks later, after carrying out full duty, suddenly reported sick again, and was operated upon for a perforated duodenal ulcer.

Abdominal Surprises

Midwifery constitutes one of the most exacting parts of private practice. The following case did much to scatter my enthusiasm for it.

I was called to a primipara, aged 36, apparently in strong labour. She appeared very emaciated and ill, and although she seemed to be getting regular strong pains I could not feel any uterine contractions. It was a transverse lie. I spent a night trying to do version. The head could be manipulated into the pelvis, but it was no sooner down there than it seemed to pop up with the greatest of ease. After three hours my poor patient suddenly appeared even more collapsed than I was myself, and to my alarm I felt what appeared to be a foot immediately under the skin, and I thought that I must have ruptured the uterus. At a further vaginal examination I did at last succeed in feeling a hard small body, low down in the pelvis and below the child, and it eventually dawned upon me that I was dealing with a full-term ectopic. At the operation two days later the placenta was found to be spread out over the small intestine. A live child was removed, and survived, but attempts to remove the placenta caused the most profuse bleeding. Portions of it were cut away. The remainder was clamped, and an open sloughing wound discharging bits of placenta from the abdominal wound persisted for a couple of months.

Among the cases of abdominal conditions I was surprised how far less frequent the chronic appendix seems to be in recent years, and during the last ten years I have attached importance to the following sign: the sudden removal of the hand after fairly deep pressure in the right iliac fossa, giving a sharp transient pain. If I have been able to get that sign, coupled with *x*-ray evidence of a residue in the appendix twenty-four hours after all bismuth has left the large bowel, I have generally felt satisfied that I shall not have that unpleasant experience of trying to convince myself that the appendix is a little pink and yet having an uncomfortable feeling that the dolorous symptoms, probably due to gut spasm, will resume their appearance. Because there is not much doubt that in these days of tension the spastic bowel can simulate many serious diseases, and a little hyoscyamus with a soft vegetable bulk such as "visiblin" sometimes relieves the most apparently ominous physical signs.

Circulatory Signs in Neurasthenia

Among the most difficult of patients is the advanced chronic neurasthenic. May I recall one case.

It was that of an officer aged 40, with a brilliant war record, whose subsequent retirement brought him great disappointment. He had many complaints, varying from day to day, including numbness of the hands, pains in the limbs, occipital headache, anorexia, constipation, sinking sensations of the epigastrium, apprehension, and constant profound depression. His height was 5 ft. 11 in.; his weight 5 st. 6 lb. The asthenia and emaciation were so extreme that it was difficult to believe that there was not some gross underlying organic disease. Repeated tests and consultations with other colleagues were necessary to exclude this. An interesting sign was constantly present. The pulse at the wrist resembled the pulse of a patient *in extremis*—feeble, thready, almost imperceptible. This was a change in volume and not in pressure. The blood pressure was normal—120 maximum, 94 minimum. In marked contrast with this thready pulse were strong clear heart sounds, without any evidence whatever of heart disease. In a less marked degree I have noticed in other neurasthenic patients this combination of a thready pulse with a normal blood pressure and strong clear heart sounds, and I would submit this as a useful sign in the differential diagnosis of the neurasthenic state. Without doubt it is essential in these people to exclude the presence of any associated chronic factor of disease, such as tuberculosis, diabetes, myxoedema, or any abnormal condition of the blood.

Value of the Blood Count

In fact, apart from the urine test, I believe the blood count to be the most useful single laboratory test in private practice. I have records of two cases in which the only subjective symptom was a painful tongue with no objective symptoms or signs, and in which the blood count disclosed agranulocytosis. Anaemia is especially apt to prove a trap. It is quite possible for a severe anaemia to exist without there being any apparent signs or symptoms, apart from the blood count, and even this may be misleading, as the following case will show.

A lady patient of mine aged 50, always of a nervous temperament, developed pronounced psychogenic symptoms. She was unable to be alone at night, unable to go out alone, could not carry out her ordinary household duties, would not enter a church, was suspicious and almost paranoic concerning her relatives, felt she could not get—as she described it—on top of things, and was convinced she was suffering from some obscure and terrible disease. In order to satisfy her, many investigations were carried out, including a blood count, which was normal. Six months later, at her request, another blood count was done, and was normal. A further six months later a blood count was again done, and revealed a typical picture of advanced pernicious anaemia.

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* A paper read to the Bournemouth Division of the British Medical Association.

This patient belonged to a family that showed a curious blending of blood and glandular dyscrasia. The eldest sister died of bronze diabetes; the second sister, after an operation for an ovarian dermoid, remained apparently well for ten years, and then suddenly died from acute haematemesis. At the necropsy Dr. McNaughtan found an enlarged spleen and scattered areas of necrosis throughout the liver, conforming to appearances due to splenic anaemia. The third sister was the one I described above, who ultimately died of paralysis agitans. One brother died of paralysis agitans and pernicious anaemia. The fourth sister developed signs of myxoedema with complete baldness and great increase of weight, and finally retention and overflow, which was relieved by removing a dermoid of the ovary and a fibroid which was pressing on the neck of the bladder. She also had a spina bifida. The fifth sister has a blood count suggesting aplastic anaemia, makes but little response to liver therapy, is bronzed in colour, and, although her blood pressure is normal, improves in health and is kept going by injections of "eucortone" (suprarenal cortex).

The only progeny of this strange family seems to have gathered all the glandular strength into his own robust body. He is a fighter pilot.

Functional Symptoms with Organic Basis

Fatigability alone may be an organic manifestation. A patient of mine leading a very active public life repeatedly sent for me complaining of one thing only—excessive fatigue. No evidence of disease was detected until I gave her gas for dental extraction. I spent a very unhappy three-quarters of an hour trying to make her breathe again. Within six weeks of this she rapidly developed increasingly advanced signs of myasthenia gravis, with bilateral ptosis, weak flaccid buccal muscles, difficulty in swallowing, and affectation of the speech, and has had to give up her Parliamentary career. I have also yet to convince her that my gas was not the cause of all the trouble.

Symptoms suggesting involvement of the basal ganglia and extrapyramidal system appear to be increasingly common. It seems to me that, in this domain of medicine, functional symptoms can easily have an undetectable organic basis. The usual criteria for differentiating functional from organic disease are not available, and it is common to meet with temporary symptoms of disorder, especially tremor. I have notes of two patients who developed quite violent clonic spasms of the trunk muscles when under any emotional stress. They are well otherwise, and I doubt if they could be classed under any definite organic disease. In this sense they are cases of functional nervous disturbance, and yet I believe they would prove suitable soil for the supervention of organic disease in the event of any great mental or physical stress. A case suggesting this is as follows:

A landlady aged 45 I knew for about ten years as a sensible, industrious, pleasant-natured woman, never ill, and very quiet in her general manner and behaviour. There was no occasion to attend her, but on visiting the house to attend other people I noticed she occasionally had a slight tremor of the trunk muscles and right hand if she was in any sort of worry. After twenty years of hard work she had saved a capital of £200. She then took to backing horses. In three weeks she doubled her capital, and in a further four weeks she had lost her winnings and her capital, and had got slightly into debt. During that period of seven weeks she rapidly developed all the signs of advanced paralysis agitans, from which she still suffers. In her case the reaction to emotion was certainly extreme.

Allied with these mid-brain affections are those curious vasovagal conditions, including Raynaud's. A lady aged 54 who had lived in the Tropics and was subject to curious vascular changes in the legs suggestive of Raynaud's disease suffered from a marked exacerbation of symptoms and violent intractable pain in the foot, which became deep blue in colour. These were followed by a profuse bullous eruption starting on the toes and soles of the feet, and then rapidly appearing over the whole body, the arms, and the face, coming out in successive crops. The bullae were rounded and tense, and were filled with clear fluid. There was a high intermittent temperature varying between 104° and 97°. She suffered intense pain and was desperately ill. Her blood showed a marked eosinophilia. She had become an undoubted case of pemphigus vulgaris.

At this stage, when she was almost suicidal, Dr. Watson Smith saw her, and with his peculiar genius for balanced applications suggested a lotion, which was continually painted on about every three hours. Although a simple thing, it was so remarkable in the immediate relief it gave that I venture to recall it.

Liq. plumbi subacet. fort.	2 drachms
Chalk	6 "
Zinc oxide	6 "
Olive oil and liq. calcis, equal parts	ad 10 oz.

This, plus 1/6 grain of morphine every three hours, was the only treatment she received, and after two months all signs of the rash had completely disappeared, and it has not recurred.

Two Cases and a Moral

Concerning bullous eruptions, a most unpleasant case that I was associated with was that of a certain lady of about 64 who suffered from chronic bronchitis. After being ill for some three weeks she suddenly developed a profuse pustular eruption of the hands, arms, feet, and face, associated with a high temperature, and a doubt arose as to the possibility of smallpox until the fact that she was taking potassium iodide was noticed. When this was stopped she made a gradual recovery, with the exception that she had the sight of her right eye permanently impaired.

A less unfortunate case concerned a middle-aged Jew whom I was asked to see as he had been sent down from London on that day as a case of Mikulicz's disease and had difficulty in breathing. I had never seen anybody so closely resemble in appearance a terrified frog. His eyes were bulging, his face was slightly cyanosed, and he had a huge, brawny, tough, oedematous, apron-like swelling below his chin, extending down his throat and obviously causing great embarrassment in breathing—so much so that the possibility of tracheotomy had to be considered. As this swelling was not confined to the salivary glands alone I could not see how it could be a cause of Mikulicz's disease, and with the pustular lady in my mind I asked to see his prescription. It contained three grains of postassium iodide. The prescription was altered, and within 48 hours, to his intense delight, the swelling had almost entirely gone and the Mikulicz's disease was cured.

An interesting point was that both these patients had albuminuria, with a few scattered casts, and in future I would always hesitate to give potassium iodide to anybody whose kidneys were in any way affected.

A Problem in Diagnosis

A strange difficulty in the differential diagnosis of uraemia concerned a certain middle-aged woman who had her right kidney removed, who complained of frequency and pain on micturition, and who had an enlarged left kidney and urine solid with albumin, and containing hyaline and granular casts. I first saw her in the morning, and the same afternoon I was sent for; she was completely unconscious and had two convulsions in front of me; in the interval she remained unconscious, with stertorous breathing. I concluded this was a case of uraemia and sent her into a nursing home, thinking she would not survive very long. The same evening, about 10 o'clock, during a game at poker, I had an urgent call to the nursing home, and when I arrived there I found pandemonium. The good lady was out on the landing. She had thrown the ornaments off the mantelpiece through the windows of her bedroom. She seemed to be in a delirious rage, and had knocked one of the nurses down, and was being held on to desperately by her husband. I am ashamed to say I got caught up in the general atmosphere of excitement, seized her by the shoulders, and said, "Get back into bed, you silly woman." She had one look at my inflamed countenance, and quietly returned to bed and went off to sleep. She showed a curious instance of alcoholic reasoning, because her unfortunate husband approached me and said, "Doctor, you are wonderful; I could do nothing with her. I went up to her and I said, 'Darling, its G—— speaking,' and she turned on me and said, 'Don't you try these bloody broadcasting methods with me.'" However, she did have a high blood urea, and some two months later died with all the appearances of uraemia.

Two Happy Endings

My limited opportunities of seeing the effects of radium have been somewhat varied. I have records of five cases of radium inserted into the mouth for cancer; all of them were disastrous in the results, and I have been left with a feeling that I should think very long and very carefully before I encouraged anybody to use radium in the mouth. But the following case does show how on occasion a wonderful effect can be obtained in other parts of the body.

A patient aged 62 was sent down from London by Mr. Hedley. He had operated on her and found that she had an extensive round-cell sarcoma of the uterus, which he was able only partially to remove, and which he considered was of a very malignant type, as it had apparently increased enormously in size during a voyage back from Ceylon for operation. She was sent down to Bournemouth really to die. I was first asked to see her because she had a severe and alarming haemorrhage, and when I arrived she had bled so much that I should have been tempted to give her a good injection of morphine and let her depart in peace, except for the fact that she was very acutely conscious and terrified, and something had to be done. Mr. Adeney dealt with her. Under gas-and-oxygen he removed with his hand masses of necrotic growth, and packed in a dose of radium, which he repeated in 48 hours. She was not given a blood transfusion, but received liver extract for her profound anaemia; and the remarkable thing was that, 14 days after this, on examination, she had a beautifully smooth vagina and no trace of any growth could be felt. She has made the journey from Ceylon every year since. I last saw her in 1939, when there was still no trace of recurrence, and I had an air-mail letter from her a few days ago from Ceylon saying she was flourishing and well—exactly 10 years after the operation. Such are the contrasts of a very limited experience.

It is always necessary to be on the look-out for residues of tropical conditions in Bournemouth. I came across records of 14 cases of relapse from tropical sprue; and in passing I would say that these relapsing cases did remarkably well and gained weight on an exclusive diet of either oranges—twelve a day—or, if possible, strawberries, and six to eight pints of colostrum-free milk, liver soup, and, recently, injections of liver extract, and nothing else. One man sent down from Windsor Clinic as a hopeless case gained 2½ st. on that diet and is now well.

One most interesting case was that of a young woman aged 32 who had recently come to England from Hong Kong. She was running an intermittent temperature varying between 103° and 97°; she was very pale and thin, and complained of intestinal discomfort, slight diarrhoea, and frequency and pains after micturition. She had a marked secondary anaemia. On examination a large irregular and apparently soft and cystic mass could be felt in the left loin. It could be pushed back into the lumbar region and was resonant in front. Her urine contained a few granular casts, a moderate amount of albumin, and a number of blood cells. A pyelogram was done and a cystoscopic examination made, but without revealing any disease of the left kidney, and in spite of the anterior resonance the question of whether this peculiar mass was a spleen came under review. The examination of her stools did not disclose anything abnormal. Dr. Bottomley, who kindly saw the patient with me, suggested the possibility of kala-azar. A sternal puncture was done without results. Finally, Dr. Cole examined altogether 14 blood films taken at separate times, and eventually found one cell with parasites. The patient was sent up to London to Dr. Hamilton Fairley. A further sternal puncture was done and Leishmania organisms found. She was treated with neostibosan, and made a slow but complete recovery. She went back to Hong Kong, and I had a letter from her this year saying she was quite well and had managed to get out of Hong Kong in time.

A Diagnostic Trap

In a practice of my type a solid block of work comprises the treatment of the chronic elderly invalid, and, indeed, some of my more intimate colleagues have suggested to me that my *magnum opus* consists in the art of holding old ladies' hands. While I admit that the occasional holding of an elderly distressed hand may be a matter of great therapeutic value, yet I always hope with the other hand to feel her breasts, palpate her hernial openings, and, indeed, explore any other suspicious orifice, because there is no doubt that the supervention of a serious or an acute condition upon a chronic malady constitutes one of the greatest diagnostic traps in medicine.

Such a trap was a lady patient of mine, aged 64, who had apparently never been very well since the change of life, who had a slightly enlarged heart, with an aortic murmur, and a highish blood pressure, and who insisted on remaining firmly in bed: nothing I could do would get her up. She remained there in placid resigned enjoyment of her various maladies, did herself pretty well, and occasionally as a result had digestive upsets. One morning she had been sick; her bowels had been opened, she did not appear ill, her pulse was regular and of good volume, and there was no abdominal distension or tenderness, and I unfortunately watched her for four precious days. During that time she was sick about three times in the twenty-four hours, did not deteriorate in general condition, and had her bowels opened each day. On the fourth day a specimen of her vomit had a definitely faecal odour, and she was removed to the private block of the hospital, where at the operation Mr. Rooke found a segment of the small intestine caught up in the obturator foramen. Only the partially trapped portion of the gut was gangrenous; the remainder appeared normal. A resection was done, but unfortunately she died with uraemic symptoms some ten days later. This is the only obturator hernia I have seen, and it is an interesting fact that it came out her sister had also died of a strangulated obturator hernia.

I always try to get a necropsy. In these days of cremation it is surprising how often one can be obtained, and in time it may become an automatic rule. The correlation of clinical signs with post-mortem findings would certainly redound to clinical knowledge. Doubtless even when all the projects of our New Planners come to their full fruition and that Utopia of organized prevention eventuates, there will still be ample material for the mortuary.

An elderly irascible man, aged 72, who had resided abroad and had evidently lived hard and thoroughly, gave all the signs of cirrhosis of the liver—alcoholic history, telangiectases of the nostrils, dropsy, distended abdomen with ascites, and, after tapping, a hard smooth liver edge that could be felt stretching across the abdomen at the level of the umbilicus. The spleen also appeared to be slightly enlarged. He always slept with a loaded revolver under his pillow, and to everybody's relief he one day had a sudden acute haematemesis and died.

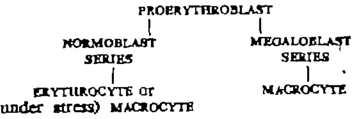
At the necropsy the diagnosis was found to be correct. The spleen was slightly enlarged to about the size that had been felt in life. He had dilated bleeding veins of the lower end of the oesophagus. He had cirrhosis of the liver; but it was the smallest liver I had ever seen—about the size of my doubled fists, tucked up high under the right cupola of the diaphragm, and could not possibly have been felt during life. What gave the sensation of that definite liver edge in life I don't know. There were no enlarged glands or thickened mesentery, and I do not think it could have been the rectus sheath, which is sometimes mistaken for the liver edge. The ascites made it impossible to discern liver dullness during life.

To-day there is a deep and worthy desire to facilitate and interlock the many resources of medical skill so that they are more readily and equitably available to all. In achieving this, some people visualize the ultimate extinction of private practice. There is one service that private practice gives which, without any feeling of undue egotism, I believe to be of the greatest comfort to the sick, and the pith and essence of sound medicine. I do not refer to clinical capacity, nor to organizing ability, nor to technical efficiency, but to that intimate friendliness, based upon mutual trust and affection, without intervening authority or intervening loyalty. This is the rock upon which any satisfactory private practice is built. I hope that, with our capacity for creative compromise, we shall succeed in weaving a similar pattern into the fabric of any new scheme.

Correspondence

Megaloblastic Anaemia of Pregnancy and the Puerperium

Sir,—Davidson, Davis, and Innes in your issue of July 11 (p. 31) group 16 cases of anaemia during pregnancy and the puerperium under the title "Megaloblastic Anaemia of Pregnancy and the Puerperium." At a time when the aid of sternal smears is sought with increasing frequency in the study of difficult cases of anaemia, it may not be out of place to make a plea for both a fuller description of sternal smear pictures and a strict definition of the terms employed. The authors have evidently satisfied themselves that in each of the 16 cases described there is adequate proof that the anaemia is megaloblastic. On this proof alone rests the validity of their claim that these anaemias are megaloblastic. Discussion demands a clear definition of the "megalobast." Unfortunately dissension exists on this point. The following diagram (after Israels) will aid clarity:



The classical megaloblast of Ehrlich is a large haemoglobinated cell with an open network nuclear pattern, and is one of a series of megaloblasts from an earlier basophil cell, the proerythroblast. A limited number of such megaloblasts arise only when the factor necessary for normoblastic maturation is lacking (as in pernicious anaemia). Such a megaloblastic marrow contains many proerythroblasts and few normoblasts. The megaloblasts are recognized essentially by their nuclear characteristics. Other workers deny these megaloblasts a separate lineage and limit the term "megaloblast" to the earlier basophil cell, the proerythroblast. A previous publication makes it clear that Davidson, Davis, and Innes follow the latter usage. For them a megaloblastic marrow is one in which proerythroblasts are numerous and more mature red cells are reduced in number.

On scrutinizing their report it is found that in 3 of the 16 cases no sternal puncture was done (Cases 3, 12, and 14). Proof of their magaloblastic type must therefore rest on indirect evidence (the peripheral blood picture and the response to liver). In Case 3 (Hb 40%, R.B.C. 1,470,000, colour index 1.33, W.B.C. 12,000 per c.mm.) 1 c.cm. of liver extract was followed by a reticulocytosis in 4 days. In this and other cases discussed it must be remembered that following any prolonged or large demand on an active marrow (as, for example, blood loss at childbirth), macrocytes may be produced by a normoblastic reaction, and that such active regeneration is accompanied by a reticulocytosis. Can one be sure that such was not the case here? Again in Case 12 (Hb 52%, R.B.C. 2,180,000, colour index 1.19, W.B.C. 10,200 per c.mm.) the indirect evidence is not conclusive; 15 c.cm. of liver were given and reticulocytosis noted after 3 weeks. In Case 14 (Hb 29%, R.B.C. 1,330,000, colour index 1.09, W.B.C. 8,800 per c.mm.) 48 c.cm. of liver were given and reticulocytosis noted 2 months later. There seems little concrete proof of a megaloblastic anaemia.

In 6 of the 7 cases seen before liver therapy the qualitative and quantitative erythroblast pictures were identical with those found in pernicious anaemia in the stage of relapse. Case 9 (Hb 48%, R.B.C. 3,200,000, colour index 0.75) contained more normoblasts than the authors would expect to find in a case of pernicious anaemia. On what grounds, then, is it included as a proved megaloblastic anaemia? May this not be an active regenerating marrow showing a normoblastic reaction? The amount of liver given was 30 c.cm. (+ iron, etc.), which was followed in 7 weeks by reticulocytosis. Is the so-called liver response an example of *post hoc ergo propter hoc*?

The remaining 6 cases are not convincing. They were first examined 2 days to 2 months after liver therapy was instituted. They showed mixed "megaloblastic" and normoblastic marrow pictures, and in one case, 13 (Hb 29%, R.B.C. 1,200,000, colour index 1.21), gave a normoblastic picture. The latter had received 42 c.cm. of liver (+ iron, etc.), and a reticulocytosis was noted a month later. Is there any proof of a megaloblastic anaemia here or is this a normoblastic anaemia responding to iron and showing spontaneous regeneration? In Case 15 (Hb 32%, R.B.C. 1,580,000, colour index 1.01) normoblasts preponderate and liver (+ iron, etc.) was followed by a reticulocytosis in 2½ months. There were similar findings in Case 11 (Hb 18%, R.B.C. 950,000, colour index 0.95). What proof is there that these are not normoblastic anaemias? Only 2 cases were seen before delivery. The usual pernicious anaemia of pregnancy clears up after pregnancy, or, as Beatrice Russell shows, even during pregnancy in the case of West African women, some of whom after a course of liver continued to term without further treatment. I feel that the work of Russell (*Lancet*, Dec. 27, 1941) deserves consideration in any publication on this subject, and I would draw the authors' attention to this interesting article.

Two conclusions emerge from this discussion. Differentiation of a megaloblastic marrow from a hyperplastic normoblastic marrow may not be easy and demands close study of every characteristic. The work of Israels in this country is of outstanding value in this respect, and his classification of the erythroblasts (as indicated in the diagram) gives the most rational and reliable approach to difficult marrow pictures. Until one terminology is accepted as a standard and its terms exactly defined, confusion of thought in haematology is inevitable. If the term "megaloblastic marrow" is applied to marrows showing an increase in proerythroblasts without further qualification, such terminology offers no clear indication either as to the cause of the anaemia or to its treatment.—I am, etc.,

Manchester. M. L. Thomson.

Oxygen Administration

Sir,—In the *Lancet* of May 16, 1942 (p. 587), Prof. R. S. Aitken and Dr. A. B. Cruickshank give some results dealing with the efficiency of the modification of my mask for oxygen administration by Drs. A. Rose and T. H. Sellors (*Lancet*, 1940, **1**, 648). These latter observers preferred to use the mask with the opening above. Four years earlier (*Brit. med. J.*, 1936, **1**, 1246), I pointed out that the mask could be used in this way and I tested it carefully in this position. Drs. Rose and Sellors seem to have overlooked this.

Prof. Aitken and Dr. Cruickshank's figures for alveolar CO_2 and O_2 under various rates of oxygen flow are similar to mine. After a year's careful trial, these observers have recommended the mask to the Department of Health for Scotland for use in hospitals and mobile oxygen units as a supplement to the supply of B.L.B. masks available for treatment of gas casualties. They state that the celluloid mask used with the opening above is the most comfortable and least disturbing apparatus that they know for the administration of oxygen, not excepting the B.L.B. mask. In every main respect my findings have been confirmed, and, therefore, I made no exaggerated claims for the mask as was stated in certain quarters.

I was ill during the time of publication of Prof. Aitken and Dr. Cruickshank's paper, and this explains the delay in my letter.—I am, etc.,

London, N.W.3 J. Argyll Campbell.

Sudden Compression Injuries at Sea

Sir,—Majors N. P. Breden, A. L. d'Abreu, and D. P. King in their article on sudden compression injuries of the abdomen at sea (Jan. 31, p. 144) make some interesting observations upon the examination of fish killed by depth charge without, however, drawing any conclusions.

Eight specimens of *Gadus morrhua* (cod) brought to the surface by a depth charge in 150 feet of water were examined, and the following facts noted. No fish came up until six minutes after the explosion, and fifteen minutes later they were still arriving at the surface. When first seen all the fish showed: (1) Prolapse of the stomach—the greyish-red mucous membrane of that organ in some cases protruding like a balloon between the jaws. (2) Prolapse of the anal canal. (3) Dehydration. The last could only be judged by comparison with the feel of the fish caught by more usual methods and by their apparent lightness for size upon the scales. (No control was available.)

Immediate biopsy showed, in one case only, a small quantity of blood-stained fluid in the coelomic cavity, and in all cases intussusception of the intestines to a greater or lesser degree into the invaginated stomach—in one case as far as the last loop of large intestine. When the intussusception was reduced there was intense congestion of the vessels in the outer coat of the stomach, and some submucous haemorrhage was visible on opening the organ. There were no other positive findings.

E. Baldwin (*Introduction to Comparative Biochemistry*, 1937) states in regard to osmo-regulation in teleostean fishes that marine teleosts, whose internal osmotic pressure is less than that of their environment, avoid desiccation by swallowing sea-water and excreting the unwanted salts by way of the chloride secretory cells in the gills. Furthermore, "if swallowing is prevented by introducing a rubber balloon into the oesophagus and inflating it the fish is unable to keep up its regulation and soon dies." I suggest that, after an underwater explosion, desiccation consequent upon inability to swallow brings the fish to the surface, where, later, it dies. Possibly, however, spontaneous reduction and recovery may occur, for fish have been observed to swim off after a time.

It seems, if the above explanation is true, that the mechanism causing death in marine teleosts has little application to human cases; and traumatic intussusception, I think, has not been described as occurring in cases of abdominal compression due to detonation in water. The cause of death in elasmobranchs seems still to be uncertain.—I am, etc.,

A. G. EVERSON PEARSE,
Surg.-Lieut., R.N.V.R.

Self Medication and the Chemist's Shop

SIR,—Although, owing to the war, I am not yet a naturalized citizen and am still but a guest in this country, I am deeply interested in the controversy concerning the future of its medical services and in the health of the nation. Will you therefore allow me a few remarks on a question which has, so far as I know, not been mentioned in this discussion, mainly in the hope of stimulating comment by observers more experienced and competent than myself. The remarks refer to: (1) the manufacture and sale of palliatives; and (2) the position of the chemist's shop.

The public is probably by now sufficiently enlightened to know that cancer and consumption cannot as yet be cured by any known drugs. But the unlimited and indiscriminate sale of preparations *effectively relieving symptoms* constitutes, in my humble opinion, a constant injury to the nation's health and probably causes many deaths. To give only two examples. (*a*) Scalding and frequency of micturition are symptoms of a cystitis which may exist by itself, or, e.g., accompany early tuberculous kidney, renal calculi, carcinoma of the prostate or bladder, or be the precursor of an ascending pyelonephritis. Good "kidney and bladder pills" will temporarily relieve the symptoms and will do so in repeated attacks until the underlying condition produces gross effects and brings the patient at long last to the doctor when the condition has become incurable or at least has caused permanent damage with prolonged incapacitation. (*b*) The same applies even more obviously to the syndrome of "indigestion." The patient will successfully "cure" his symptoms until one day his ulcer produces a severe, perhaps fatal, haematemesis or a perforation, or until his carcinoma has become inoperable.

The more effective the preparation the more dangerous it is in the hands of the patient without medical supervision. How many patients die yearly or become seriously ill for long periods by the indiscriminate use of palliatives for undiagnosed conditions? We know that a large proportion of successful research work has been initiated by pharmaceutical manufacturers, and that dramatic discoveries have come from the laboratories financed by them. We are duly grateful. But the men who carried out the research work could have had equal or better facilities if the State would build and maintain such laboratories out of the millions of pounds it could save by preventing loss of life and of working hours caused in the manner described.

The chemist in his shop is to-day the arbiter for a surprisingly large section of the population on the question whether or not a doctor should be consulted, and therefore, in some cases at least, on whether the patient's trouble will be correctly diagnosed and, if possible, cured. An unbelievably high proportion of patients from all except the very rich classes first "consult" the chemist in the hope of being given a remedy without having to pay the doctor's fee. I have no grudge against the individual chemist; the few of them whom I know are honest and conscientious. But the whole dangerous situation is aggravated by the fact that many doctors still supply their own medicines, thus becoming direct "business competitors" of the chemist. Inevitably a chemist who refuses to sell a preparation to a patient and sends him to a dispensing doctor deprives himself of a customer. Supposing even that the chemist had the knowledge and facilities for correct diagnosis—over the counter!—can one expect him in every case of doubt to send his customer to his business competitor—the dispensing doctor?

I can think of only one way to remove the pharmaceutical chemist from his embarrassing position (which has developed through no fault of his own), but it would be drastic and unpopular, and would need legislation. This is to restrict the free sale of drug preparations in open shops to cosmetics and other toilet goods; to forbid "counter-prescribing"; to require a doctor's prescription for the dispensing and sale to the public of all medicaments; and to confine the retail trade in drugs to qualified pharmacists and their bona-fide assistants. It is lawful for general practitioners to supply medicines; and in rural districts, or in emergencies anywhere, there may be no one else at hand to do so. But the medical profession could co-operate with the pharmacists and earn their good will by a self-denying ordinance to abstain from competition in the routine dispensing and supply of drugs, etc., in populous parts of the country.

The only serious opposition to the very necessary reforms would come from the vested interests of the industry, and only energetic parliamentary action could hope to be effective in achieving the proposed change.—I am, etc.,

Nottingham E. L. LOEWENTHAL, M.B., B.S.Lond.

Amoebic Liver Abscess

SIR,—Quite a number of papers and short articles on this condition have been published in the *British Medical Journal* and in the *South African Medical Journal* during the last year or two. Mostly the question was raised whether open operation or aspiration, both combined with emetine treatment, would give the more satisfactory results. In only one instance do I remember a very definite opinion given to the effect that emetine treatment alone without any surgical intervention at all would be safer and at least as successful. I have only treated a limited number of cases (9), but the emetine treatment alone has given such excellent results that I should like emphatically to support this opinion.

My first and most advanced case illustrates the point very well. The patient had a huge swelling protruding in the epigastric region and dullness on percussion over the lower half of the right chest at the back. *X*-ray examination showed the diaphragm to be pushed up high in this region. The epigastric swelling was incised and a big abscess drained. Exploration of the abscess cavity made it obvious that the swelling further back in the liver must have been caused by another big abscess. I felt uncertain whether there were one or several more abscesses in the liver and abstained from further surgical intervention. On emetine treatment the big swelling shrank with such amazing rapidity that I decided in future to use emetine only.

All subsequent cases showed striking improvement of the general condition and fall of temperature in 3 to 5 days with emetine treatment only. In most cases the swellings could scarcely be felt as distinct lumps after about 14 days. I think a "safety" emetine course 2 to 3 months later is advisable. One patient who did not come for a second course had a relapse after a few months. Another case had been treated elsewhere by open operation: relapse was cured with emetine injections.

Aspiration can scarcely be free from such dangers as infection of the pleural space, injury of adherent bowels, or mixed infection. Perhaps only in an extremely "toxic" patient, in whom one big abscess is diagnosed, aspiration might be justified. I fail to see the value of repeated aspirations. The cavity is bound to be under negative pressure after aspiration and to fill up again with serum, blood, or purulent matter until it can be closed by the healing process.

There is ample evidence that any toxicity of the contents of the abscess disappears speedily with emetine treatment.—I am, etc.,

Grootfontein, S.W.A. R. W. J. SCHEEL.

Denis Browne Technique in Talipes Equinovarus

SIR,—The Denis Browne method of treatment of congenital talipes equinovarus is considered highly satisfactory by a large number of orthopaedic surgeons in this country. Its merits are now being recognized in America, but the published descriptions of its employment as modified by individual surgeons must alarm those who know how adequate the original method is in every way and upon what sound mechanical principles it is based. Thus an article in the April number of the *Journal of Bone and Joint Surgery*, based upon a comparatively short experience of 2½ years, describes extensive modifications, none of which appears to be justified. The side bar of the splint has been reduced to rudimentary proportions, felt wedging is no longer used, and the splint is heavily padded with sponge rubber. The sole-plate has a narrow backward prolongation which must play havoc with the bedding when the infant kicks vigorously. The feet are simply strapped to the splint, without any of the repeated manual over-corrections that are such a fundamental feature of the original treatment, and which have been found so necessary in this country.

I am convinced that this method of treatment would fail to obtain good correction in a high proportion of the cases seen in England, and I would urge that those who have to treat this deformity should give an extended trial to the exact technique of Mr. Denis Browne before introducing variations.—I am, etc.,

Stanmore. K. I. NISSEN.

Medical Planning

SIR,—A meeting of the Middlesex Panel Committee was recently held to discuss the interim report. Only the remnants of that committee were present, for many of its members, the youngest whose advice and opinion would have been so valuable, were away on national service. The committee wisely agreed that under such circumstances no authoritative decision could be given.

I was very much perturbed at the conservatism that was revealed in the subsequent discussion. Even so mild a resolution "that group practice be a feature of any future service" was negatived because those present were so afraid that this might be the thin edge of the wedge leading to the dreaded State service. No. 5 (*a*) of the "Questions for Discussion" in the report was agreed to with only a few dissentients.

I did not expect a salaried State service to be agreed to, although I voted for this. What I actually advocated was really a modified State service, as one of the members pointed out; on reflection I think he was correct. I advocated a system of group practice wherever this was possible, such groups working at health centres provided by the responsible authority. Space will not permit details of these health centres, some features of which should be obvious to all. Here, and at their homes, the doctor would attend such families as had chosen him. Such centres would be governed by committees of lay and medical men, while that part dealing with medical treatment by medical men only, in a similar way to the county committees for the National Health Insurance at the present time. Certain modifications are, however, essential. I had hoped that by some such method the general practitioner could be brought into close touch with both hospital and public health work, and that his work would gradually change so as to include the maintenance of health of those trusted to his care, not merely its attempted cure when broken down. Such views, however, were not tolerated by the members present; they did not wish to be disturbed.

If this is the opinion of the majority of the profession throughout the country, some very important questions arise. There can be no doubt that the period succeeding the war will be one of reconstruction, of economic planning, and of greater socialization. The muddled conglomeration of health services that have gradually arisen, without any definite plan or direction, will not be tolerated. The health of the nation as a whole must come under one control. If we advocate the extension of National Health Insurance to dependants and to those of like status, to include consultant and specialist service (the same people having a right to hospital service), the Government will be providing for 90% of the population. Is it at all likely they will do all this and not insist on a higher standard of work, better organization, and greater control?

Why bury our heads in the sand and wait for the tide to overwhelm us? Let us formulate our own scheme of reform rather than have one thrust upon us. The scheme outlined by the question No. 6 in the interim report is a good one, although I personally think it will need State authority and financial backing to put it into practice. It is of paramount importance that as a body we come to an agreement between ourselves; that that agreement should be accepted by 90% of the profession; moreover, it should be one which is possible for the Government to accept. Let us not be afraid to discuss the salaries we are prepared to accept and the conditions under which we are prepared to work. Unless we can agree upon this we shall find a Government scheme suddenly confronting us, resulting in divided counsels and a difference of opinion, as in the case of the recent National Health Insurance extension. The result can only be disaster and defeat.—I am, etc.,

Wealdstone. J. E. GAZE.

SIR,—Although filled with admiration for the manner in which the Medical Planning Commission in its interim report has tackled the multitude of problems with which it has been faced, I must confess to some considerable uneasiness owing to the fact that these vitally important matters are being discussed at this particular time. No one knows what the "brave new world" for which we are planning is going to be like, and it is only too likely that any regime now adopted may be completely impracticable under post-war conditions.

I am quite unable to derive any comfort from the assurance, given in italics in para. 4 of the introduction, that the Commission will not consider the recommendations "until the profession has made known its views through the usual channels." To what proportion of the profession are these "usual channels" still open? It is surely realized that the majority of the younger members for whom these recommendations have been made are now serving with H.M. Forces, either over-seas, when a letter such as this would take months to reach this country, or else under conditions where it is impossible for them to attend their local B.M.A. meetings and discuss these momentous questions with the colleagues with whom they hope to work after the war.

It is just this section of the profession who will have the most definite ideas regarding the advantages and disadvantages of a State Service, which, they quite rightly realize, would have many points in common with the medical services of the Navy, Army, and Air Force to which they are now giving the best of their professional skill. It must therefore be made clear that any decisions which may be reached by the Medical Planning Commission before the end of the war will have been made without a large and important section of the profession having been consulted. This is surely a most unjust state of affairs and quite contrary to the intentions of the Commission as shown in the report, where consideration is given to the interests of all parties when viewed from a peace-time standpoint.—I am, etc.,

H. L. HOFFMAN.

SIR,—In planning good health for a people the first essential seems to be an outlook that can view the question after it has been shorn of all considerations except the doing of what is best for the common good of all sorts and conditions of people. Such purity of purpose is not so simple as it sounds. Human nature is such that altruistic endeavour, even in the best of us, is apt to be tinged to some degree, perhaps almost unconsciously, by self-interest. Such a tendency would be checked by having suitable representation of the lay population to share in the planning. After all, the masses for whom a scheme is being planned ought in fairness to have a good say in its early construction. Having agreed upon a plan in principle, then it should be possible to ensure that the terms of its application allow for equitable adjustment as regards the status and financial position of medical men, in whatever branch of the profession they serve.

Clear vision seems likely to be dimmed even more by traditional thinking, which has had disastrous effects in other spheres of national conduct, and is not conducive to success in a rapidly changing world. Much emphasis has been laid on treatment, whereas a vigorous constructive policy based on the prevention of disease is needed; in other words, there should be a biological rather than a pathological outlook. The possibilities of such a policy have been clearly demonstrated by the findings of investigators at the Peckham Health Centre. Mass radiography, which is on the way to being a recognized procedure, should do much to enlighten public opinion as to the value of forestalling active disease, and the opportunity offered by this awakening should not be lost.

Lastly, the relation of sociological factors to mental and physical breakdown should not be forgotten. Medical planning should ensure a close association between actual treatment and the application of measures for the betterment of an industrial or home environment that has led to the loss of health.—I am, etc.,

Northampton. N. B. Laughton, M.B.

Planning Commission's Report

Sir,—I fear it is too much to hope that Dr. Learoyd's letter will be read by that doubtless earnest body the Medical Planning Commission. Yet has any one of them any personal experience of country practice? Does even one of them realize the complete difference between town and country conditions? Take just one point—the ratio of visits to surgery attendances; mine often runs as high as 4 or more to 1, and on a 3-months test last summer averaged 2.5. We have no trams, tubes, or 'buses to bring the lame, the blind, and the aged to us, and one additional reason for choice of doctor is "does the baker's van run that way to fetch along the medicine."

It is not only in medical matters but in so many other town-governed activities (A.R.P., rationing, N.F.S., etc.) that we country dwellers are having the realization forced on us that all this planning, all these rules and regulations are made for urban existence and closely populated areas, that many of these schemes only fit the rural way of life where they rub, and cause endless waste of time and material with hypothetical benefit. Further, as Dr. Learoyd so rightly points out, a look at any map of any county will show how many hundreds of villages there are and how many dozens of towns.

Social areas are mainly created by physical features, not by county or borough boundaries. It is crazy to have to send throat swabs 50 miles by post when there is an excellent laboratory 5 miles away; or to assign a village for rationing to a town where none of the village's inhabitants ever go or indeed in these days can go. The town-trained bureaucratic mind just cannot understand that, however.

So when the M.P.C. gets down to its next session could it just spend some time trying to visualize the work of those thousands of doctors who live and serve outside the towns? It will benefit the patients as well as the profession. And for any sake let us keep our house free from political bias or control.—I am, etc.,

Newton Ferrers, S. Devon. W. F. Bensted-Smith.

Nurses in Hospital

Sir,—I am profoundly shocked by the letter of Dr. S. L. B. Wilks, in which he says "the brutality of matrons (and sometimes of sisters) to their nurses is notorious." I wonder does Dr. Wilks know of one single case of "a brutal matron" at the present time, or is he thinking of an isolated case or two in the past of a matron who was, perhaps, too harsh and narrow in her discipline. Surely if Dr. Wilks does know of such a case it is his public duty to bring it to the knowledge of the chairman of the hospital concerned for investigation.

In my own, rather wide experience I have found that all the improvements in conditions for nurses have come through recommendations of matrons to their committees, and that the anxiety of the matron for the well-being and happiness of the nursing staff takes second place only to her thought for the well-being of the patients. The greatest worry a matron can have is the serious illness of a member of the nursing staff. Apart from what I feel is a most unjust assertion, these statements make the work of matrons more difficult than it is already. Moreover, it is apt to be bad for recruitment to training and thereby does the health services of the country much harm.—I am, etc.,

Helen Dey,
President, Association of Hospital Matrons

Sir,—The shortage of nurses, both in quantity and quality, is a subject which is necessarily exciting much attention at present. Many suggestions have been made for remedying the shortage, and in particular criticism has been levelled at nurses' homes, the schoolgirl atmosphere engendered by them, and the petty tyranny exercised by members of the administrative hospital nursing staff.

My intention in writing is to propose that the nurses' training schools should be affiliated to a university, and that nurses who have completed their training and the necessary examinations for State Registration should receive a B.A. degree of that university. In this way the social and intellectual status of nurses would be considerably raised: parents would know that their children were receiving a university education and would be more likely to encourage their daughters to enter the profession. This university affiliation would be more satisfactory if it were something more than a nominal one and allowed for some lectures—e.g., in anatomy and physiology—with the members of other faculties and in any case for a social intermingling with them. In certain nursing schools, however, remote from universities, the principle of external studentship would have to apply.

No doubt the universities would insist on some form of qualifying or matriculation examination, and this would at first tend to limit candidates. I do not envisage that all nurses would or could undertake the course, and a percentage of assistant nurses (unqualified) would still be required, but these would, I think, diminish as time went on. The initial difficulties in working out such a scheme might be great, but I submit that it is one well worthy of consideration and for which the time is ripe.

These views are my own and not necessarily those of the authority I serve.—I am, etc.,

Colindale Hospital, N.W.9. W. E. Snell.

Sir,—I have followed with interest the recent correspondence in your columns about the difficulties and troubles besetting the nursing profession, but so far I have not seen any suggested cure that really gets down to the root of the matter. In my view the present system of training nurses has got to be changed from an apprenticeship to a trade to an organized teaching of a profession. The position to-day is remarkably similar to that of the medical profession in the middle of the nineteenth century.

How many times, in the course of her training, does a nurse have to take a temperature, make a bed, or handle a bed-pan, and how few times does she require to become proficient in these arts? Likewise, how few times does she give a hypodermic, set up a subcutaneous drip, or assist at a transfusion? Contrast the hours of cleaning and polishing usually demanded of her with the scanty time allotted to lectures and demonstrations, crammed in between tours of ward duty and frequently abbreviated by delays in theatre or ward. In other words, the real evil lies in the fact that the probationer nurse is first and foremost a servant of the hospital she is training at and only secondly a student.

Now I should like to advocate an arrangement similar to that followed in the training of medical students. There would be a number of training schools, each independent of but attached for practical teaching to a large hospital. By preference these would be the larger non-teaching voluntary hospitals and the municipal and county hospitals, as the teaching institutions already have their educational facilities sufficiently occupied. The young nurse-to-be would attend one of these schools, and, during her first year or fifteen months, would be well grounded by means of lectures, demonstrations, and practical work, in anatomy, physiology, pharmacology, and the handling of drugs, dietetics, and nursing practice. In the last half of this period a series of short demonstrations would be held at the hospital, chiefly to acclimatize the pupils to the hospital atmosphere. After passing an examination in these subjects the student nurse would then start a second year's work in which she would spend half her time at the school on surgical and medical studies and in learning how to give the more complicated treatments expected of a nurse, and the other half in ward work at the hospital. But not, be it noted, doing night duty, theatre duty, or polishing trolleys. A final examination would pass the girl out as a trained nurse, ready to be absorbed, either by her own hospital or by one where teaching was not undertaken.

As to the financial side, the school of nursing would be partly supported by grants from the State, either direct or through the College of Nursing, and partly by fees from the students. These would be low, and scholarships in ample numbers would be provided for poorer girls of promise. During the second part of the training the hospital would pay a small salary for the services of the students, and, on passing out as trained, the nurses would command a proper living wage.

While studying at the school the girls would be allowed to make their own living arrangements, and their spare time would be absolutely their own and in no way under the supervision of the school authorities except in the broad sense in which a university keeps an eye on the public acts of its students. They would be encouraged to form societies and to organize a joint social life, and in most cases a hostel would be provided for those students who could not live at home and did not desire to live in "diggings." This hostel, however, would be under the charge of a matron or warden quite distinct from and independent of the matron of the hospital and the principal of the school. Trained nurses wishing to take up theatre, maternity, or district nursing would return to the school for a further theoretical course followed by a practical course at the hospital, becoming entitled to a special diploma after a test.

If this scheme were adopted hospitals and patients would benefit in that all the nurses actually working would have had a fair amount of training. Nurses would benefit in that, instead of four years' hard drudgery on a pittance of a wage, they would be sure, after a short course of about two years, of an ample range of appointments at a decent salary. Parents also would be able to let their daughters take up the profession secure in the knowledge that the training was short and that their children would be happy in well-run hostels free from that petty tyranny which unfortunately so very often overshadows the present system.—I am, etc.,

Wimbledon, S.W.20 A. HOBSON.

SIR,—Dr. S. L. B. Wilks of Colwyn Bay (July 18, p. 84) writes that the "brutality of matrons to their nurses is notorious." In the issue of Aug. 1 Dr. T. C. Mackenzie writes from Inverness that "matrons throughout the land are loyally and ungrudgingly caring for the welfare of their nurses and probationers."

Dr. Mackenzie has spent his distinguished career associated with mental institutions between Edinburgh and Inverness, and it is difficult to see how he can speak with any authority on hospitals throughout the land. The apathy of those members of the medical profession associated with hospitals is responsible, in great measure, for the present unsatisfactory conditions for nurses. There are few members of the visiting medical staff of a hospital who, like Dr. Wilks, appreciate one of the main defects in the present nursing services. There are many like Dr. Mackenzie, who know little or nothing of a nurse's hospital life.

The tyranny of some matrons, the petty restrictions, long hours, and the limited and often inconvenient off-duty inflicted on nurses have brought almost to bankruptcy a noble profession.

All the exhortations of Mr. Ernest Brown will not bring recruits into the nursing services unless there is a rapid and effective change of nursing conditions in most hospitals. Dr. Wilks's letter contains too much of the truth to be ignored, while Dr. Mackenzie in his letter has allowed his indignation and misguided chivalry to assume the voice of experience and authenticity.—I am, etc.,

Manchester R. SYDNEY DAVIDSON.

[This correspondence is now closed.—ED., *B.M.J.*]

Phenol and Camphor for Desert Sores

SIR,—As Capt. H. M. Rapport, in his interesting article on desert sores (July 25, p. 96), does not mention a form of local treatment I found almost universally effective in this condition in the Sudan, I give it in case he, or others working in the Tropics, may find it useful.

Liquid carbolic acid 30% in camphor is applied on dry gauze once a day with a cotton-wool covering. For some unexplained reason, carbolic in combination with camphor is not toxic up to strengths of 50% so long as it is not in contact with water. For this reason the skin should be dry when it is applied, and the dressing should not be covered with strapping or a waterproof covering which would retain sweat. Sores thus treated are usually clean and healing in a week.

Incidentally, I see that the 50% strength of the same preparation is now widely used in the United States for mycotic infections of the feet. The liquid is easily carried in a small bottle, and can be applied on any dry material, not necessarily sterile, so that it is an eminently practical form of treatment for field use.—I am, etc.,

C. GRANTHAM-HILL,
Beccles, Suffolk Late Senior Surgeon, Sudan Government

⁂ The *Journal of the American Medical Association* for June 27 this year contains a warning against "the promiscuous and unsupervised use of equal parts of phenol and camphor in the treatment of 'athlete's foot.'" The U.S. Food and Drug Administration has stated that "a mixture of equal parts of phenol and camphor is capable of producing necrosis. . . ." To conform with food and drug legislation in that country, this preparation, under certain circumstances of sale, has to bear a label to the effect that it "should not be applied to damp skin or over extensive areas; should not be applied under a bandage; and that if, after use, the skin turns white or is otherwise discoloured, use of the preparation should be discontinued immediately unless the physician directs otherwise."—ED., *B.M.J.*

"Positive Health"

SIR,—The present interesting discussion of the meaning of the term "positive health" and the advisability of its use if it is to mean "exuberant health" suggests that an important factor is being overlooked. Obviously, as Mr. Wilfrid Adams points out, we cannot in a generation, nor indeed in a century, achieve exuberant health for all. Neither, however, can "we" achieve the much less ambitious aim of mere "health for all." One is reminded of a phrase from a *Times* leader of nearly 100 years ago concerning the sanitary reforms of Edwin Chadwick: "We prefer to take our chances of cholera, and the rest, than to be bullied into health." Individuals need all the guidance and reparative work our profession can offer, but by their own freely given co-operation and effort alone will they achieve or keep their health.

This raises the whole question of health education. There is little point in discussing whether it should be promoted or not, because it does in fact exist—every time a grandmother repeats an old wives' tale or a firm advertises a patent medicine. The problem is rather to find out how best to begin to eliminate the very considerable amount of bad health education, and to direct and co-ordinate the good, which is now also of considerable and growing bulk. As the bad can only be eliminated by substituting something better, the question resolves itself into a discussion of what "good health education" is and what it should endeavour to do.

There are doubtless, and rightly, many shades of opinion. I would like to suggest that it cannot be too clearly emphasized that health education is a function of preventive medicine only; in fact, one of its most formidable tasks is to eradicate the pernicious habit of self-treatment. We must not, however, confuse the curative and preventive aspects of medicine with the quite different distinction between private practice and public health. In each of these to-day both aspects are found in some degree, and one of the most desirable developments of the future may be in the growth of the educative work of the family doctor. Commercial propaganda, however regretted, gives us something of a lead as to what health education should try to do. It should, surely, "create a demand," persuade and help people to acquire a taste for health. The means by which this may be attempted are too numerous and their relative values too controversial to be discussed here, but two lines of approach may be mentioned. First, good personal and community health habits should be inculcated in schools and clinics and surgeries, but primarily in homes. Secondly, the desire for healthy environmental conditions should be developed by making such conditions accessible to all. These are undoubtedly Utopian as immediate achievements, but that seems no argument against advancing them as aims. It is apparent at least that some clearly conceived and co-ordinated policy of health education is an essential part of any medical service directed towards the achievement of health of positive, or indeed any other, degree.—I am, etc.,

Herbert S. Davies.

Gravesend.

Sir,—I envy those of my professional brethren whose agile intellects are so satisfied that they understand exactly what is meant by "positive health" that they are prepared to devise a system for its attainment. I see from my dictionary, which is beginning to disintegrate from long use, that "health" is defined as "that state of a being in which all the organs are sound and in proper condition," to which I would add "and functioning normally"; and I cannot conceive a more desirable condition. The same tattered dictionary tells me that "positive" means: "Position. Definitely laid down or expressed. Explicit. Opposed to implied. Not admitting any condition or discretion. Express. Absolute. Real. Existing in fact. Not negative. Confident. Fully assured. Dogmatic. Demonstrable. Distinctly ascertained. Over-confident in opinion or assertion."

One might be pardoned for thinking that we ought to be satisfied to strive so far as we are able to achieve and maintain a state of just plain "health" as defined above for our patients. Many of us have been so striving throughout our professional careers. But *positive* health! Let us take care that it shall not come to mean: "The state of a being which complies explicitly with the official specification definitely laid down and expressed by the Minister of Health. Such compliance must be absolute, real, confident, fully assured, dogmatic, and demonstrable, and nothing in this regulation is to be interpreted as admitting any condition or discretion or permitting any departure therefrom"; followed by a table of penalties to be inflicted on the doctor who by negligence or default fails to prevent any deviation from the Government specification. Which is absurd.

Perhaps my old dictionary may be obsolete, but even so I rather like "over-confident in opinion or assertion."—I am, etc.,

Brookwood, Surrey. H. M. Stanley Turner.

Incidence of Breast-feeding

Sir,—I was interested to read the article on breast-feeding by Dr. Enid Hughes (July 18, p. 69). For a period of 2 years in a working-class district (Port Glasgow) I collected figures on this point: infants breast-fed 128; breast-feeding plus complementary 23; breast-feeding for 2 weeks 96; breast-feeding for 2 months 67; Ostermilk 48; cows' milk 56; Cow and Gate 1; Nestlé's 7; Sister Laura's Food 7; total 433.

The average number of mothers who continued over the 2nd month to breast-feed their babies was only 33% of the total attending the clinic. The cause of failure in breast-feeding was illness of the mother in 15 cases (pleurisy 1, tuberculosis 2, chronic nephitis and debility 1, anaemia and general weakness 3, and acute mastitis and cracked nipples 8).

The majority of the mothers stated that when they came out of hospital or got up to do their housework the "milk left them." The mother was often overworked and tired, and, following the advice of friends, put the baby off the breast as the child was cross after she returned from hospital. Once a bottle was substituted for the breast, there was no difficulty in weaning the baby.

Some mothers have no desire to pursue breast-feeding even though they have been instructed at the ante-natal clinic and at the maternity hospital, and immediately they are away from the supervision of the nurse they bottle-feed the baby, still having more faith in the amount of milk to be seen and measured in a feeding-bottle than in their own supply of breast-milk. By the time the mother manages to come to the clinic, about the 3rd or 4th week, the milk supply has ceased or is small in amount, and the mother is firmly convinced that her baby is more satisfied on the bottle. It seems to me that it is when the mother is left alone without a nurse after the 2nd week that the difficulty begins. The foregoing seems to point to more home visiting daily after the 2nd week either by the midwife or the health visitor, so that the mother can have the advice and necessary encouragement to breast-feed her baby. As well as instruction to the mother at the ante-natal clinic evening classes on mothercraft and nursing could be included in the night-school curriculum, and girls in the upper classes could be taught more of this and domestic science at schools, for many girls marry while still in their teens.—I am, etc.,

Glasgow. Grace McLintock, M.D., D.P.H.

The Rheumatic Lung

Sir,—I was interested in the allusion by Dr. James Burnet (June 27, p. 804) to the fact that he was the first to call attention to the rheumatic lung. I have read Dr. Eli Davis's reply, (July 25, p. 113), in which he has pointed out chapter and verse that A. E. Garrod had already alluded in 1890 to the rheumatic "poison" as an occasional factor in the cause of pneumonia. In 1889 I was house-physician to the late Dr. Wm Howship Dickinson at St. George's Hospital. He then taught—I have often heard him dilate on the theory—that rheumatic pneumonia was one of the clinical forms of that disorder. He always stressed that in this category the pneumonia was usually bilateral and generally accompanied by pericarditis, and the prognosis fairly good.—I am, etc.,

Beaumont H. Comerford, M.D., D.P.H.

Tolleshunt Darcy, Essex.

Obituary

We regret to announce the death in his 88th year of Sir Walter Schröder, K.B.E., whose long and valuable service as coroner brought him into friendly contact with generations of medical men. His participation in coroner's work began in 1870, and in 1894 he was made deputy coroner for Central Middlesex; soon afterwards he became deputy coroner for South-West London and Surrey and held that post till 1899, when he was made deputy coroner for Central London. He succeeded to the senior post in 1910 and remained at the Central London Coroner's Court until his retirement in 1930. During his 60 years' service it was estimated that he had taken part in 50,000 inquests. Sir Walter was for many years honorary secretary of the Coroners' Society of England and Wales, and later its president; he was also honorary treasurer of the Medico-Legal Society.

Dr. James Edward English of West Hartlepool died recently in Hartlepools Hospital, where he had been a patient for the past 10 months. He was born at Kingstown, Co. Cork, in 1885, and studied medicine at University College, Cork, and in Dublin, graduating M.B., B.Ch., and B.A.O. of the Old Royal University of Ireland in 1908. In the following year he took up the post of house-surgeon at Hartlepools Hospital, and later, when he had begun private practice, he was appointed to the honorary surgical staff of that institution, in the work of which he continued to take a keen interest, succeeding the late Dr. A. W. G. Pearson as senior surgeon. Dr. English was chairman of the Hartlepools Division of the British Medical Association in 1925–6.

The following well-known medical men have died abroad: Professor Hans Hunziker, director of the Basle Health Office, aged 63; Dr. Paul Clairmont, formerly professor of surgery and director of the surgical clinic at Zurich, aged 67; Dr. Howard Morrow, ex-professor of dermatology at the University of California and ex-president of the American Association of Dermatology, specially known for his work on leprosy, aged 68: Prof. Kurt Brandenburg, editor of the *Medizinische Klinik* since its foundation in 1904, aged 73; and Prof. Albert Döderlein, the eminent gynaecologist, formerly professor of gynaecology and obstetrics at Munich and a pioneer in the bacteriology of the puerperium, aged 81—his name is attached to the non-pathogenic organism of the vagina.

Universities and Colleges

UNIVERSITY OF OXFORD

At Congregations held on July 18 and 25, the following degrees were conferred:

D M.—J M L. Burtenshaw

M.CH —A H Hunt, R. H Gardiner.

B M , B.CH —M. H. M Gilbertson, J. F D. Frazer, D. S. Parsons, J. L. Boldero, J. D Little, R F. B Bennett, Q. J. G Hobson, W. D. M Paton, W. A. Briscoe, H. G Farquhar, J. D. Green, J. Pinching, K. W. Lovel, S. L. H. Smith, *J. M Jefferson, *H J. C. J L'Etang, R. H. Scott, R. Bryce-Smith, P J Crerar, D M. Hamilton, R. Powell, D A. McDonald, N. G. D Campbell, R H Jackson, A. K. Tyler, A. M. M. Wilson, E. Shephard, W. B. Armstrong, E. L. H. Jones, G A. Neligan, C. P. Silver, J. J W. O'H. Tobin, Constance M. Ormrod, *M. R. Mullins.

* *In absentia.*

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

The following scholarships, exhibitions, and prizes have been awarded:

Goldsmid Entrance Scholarships: (1) D. A. G Galton, Trinity College, Cambridge. (2) J. L Crammer, Christ's College, Cambridge *Goldsmid Entrance Exhibition* Miss J Whitham, Newnham College, Cambridge. *Filliter Entrance Scholarship in Pathology*. J. D. Judah, St John's College, Oxford. *Atchison Scholarship* · J M. Wilson. *Magrath Scholarships*. Surgery, D I. Williams; Medicine, Miss G R Briggs; Midwifery, E W. C Buckell *Filliter Exhibition:* N. Myant. *Erichsen Prize:* Miss G. M. Howard. *Liston Gold Medal:* J. A V. Bates, Miss A M. P Snow. *Fellowes Gold Medal:* W D. M. Paton, H. E Thomas. *Fellowes Silver Medal:* Miss Joan Hardy, A. N. Smith, Miss S. M Howard *Wilfred Trotter Medal:* Miss G. M Howard. *Suckling Prize in Obstetrics and Gynaecology*. P. E. Hughesden.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the quarterly meeting held on July 30, with Sir Charles Wilson, President, in the chair, the following were elected officers for the ensuing year: *Censors,* H. Letheby Tidy, A. G. Gibson, G. E. S. Ward, Geoffrey Marshall; *Treasurer,* C. M. Hinds Howell; *Registrar,* H. E. A. Boldero; *Harveian Librarian,* T. H. Arnold Chaplin; *Assistant Registrar,* A. A. Moncrieff.

The President announced the award of the Moxon Medal to Prof. L G. Parsons for his observation and research in clinical medicine, especially in paediatrics; the Weber Parkes Prize to Prof. G. S. Wilson for his work on tuberculosis; and the Murchison Scholarship to H. J. Anderson, M.B.

Membership

The following candidates, having satisfied the Censors' Board, were elected to the Membership of the College:

A. R D Adams, M.D., H S Banks, M.D , R. Daley, M B., J V. S. A. Davies, B M , J. Denfield, M.B , J. R Dow, M.B., R. M. Evans, M.B , J. E (O'Neill) Gillespie, M D., I R. S. Gordon, M.B., E. R. Gubbay, M B , F. W Gunz, M.B , J. T. Harold, M B., A. M Jones, M B , D W. Liddell, M.B , R A. Moir, M B , Frances J. Pounds, M B, G. E. O Williams, M.D

Licences and Diplomas

Licences to practice were conferred upon the following 296 candidates (including 35 women) who have passed the final examination of the Conjoint Board, and have complied with the by-laws of the College:

P B. Adamson, Khairunnisa B Ahmed, W, B. Alexander, E. B. Allen, J. N H Andrews, A. H Ansari, P. Arnold, J. P. B Arthur, A. N. Ashworth, W O Attlee, A. le P. Avenell, D J. Avery, Ursula M. Bailey, W. E. S. Bain, R F. Barlow, E T Bassadone, J A Bassett, J. A. V Bates, D C P Battersea, Mary R Bayliss, R. H. Beer, J. Beeston, M. R. Beg, A. d'A Bellairs, Elisabeth I Bennett, J. Besden, J. E C. Bevan, G. A. Binns, C. A. K. Bird, N N. Blaxland, T H Blennerhassett, V Y. Bockner, Anne Bolton, W H. Bond, M M Boyle, R J. K Brown, Hilda E. Bullen, N. R Butler, J. S. Calnan, T O. Candler, P. N. Cardew, F. S Carter, A. W. H. Challis, Elinor H. Cleminson, F C Clouting, F. Cockcroft, N A Cohen, G V. Cole, J. G L. Cole, P. J. Collard, Stella M. E Cornes, J C F. Cregan, N. F. Crofts, G. H. R. Curnock, M H Dale, A J. Danby, H G Danziger, I N. Darbyshire, G. I. Davies, Audrey M Dealler, J Dean, Margot H. Dickson, E J. Doel, W A. dos Santos, K, M Duncan, D H Edwards, Lorna B Egan, E N Emmerson, R. M Emrys-Roberts, D. L. Evans, G. C. D. Evans, R. A F. Evans, A J Fairrie, J. K. Farquhar, S. Fazekas, N R. E Fendell, J H L Ferguson, G. E. Ffrench A B. Fieldsend, Mary FitzClarke, J. L. Fluker, Joan Freeman, A. R. Freitag, P. S Gardner, J. B. A Gibson, T R Gilchrist, E Giordani, F. S. Glassow, Daphne I. L Gleed, Edith L Godwin, A. Goldberger, T E W Goodier, N. J. Goorney, Eileen M. Goronwy, G. Graves, J W Graves-Morris, Beatrice A J Gregory, J D Greno, P. J. Haga, J T. C Haigh, R D. M I-K Harkness, T. J R. Harley, S. S Hart, T. G. Harvey, Sheila Haslop, Patricia L F Heaton, Angela B G Hefferman, Edith Hertz, W. J. B. Hett, G E. Hicks, D H Hiley, D Hilson, E J. Holborow, R. A. Holden, R. H Hughes, Dorothy M Hyde, H. Isenberg, P D James, H. V. Jones, J. G Jones, R. N. Jones, J. H. Joseph, J A. Judson, R. N H N. Kahan, C. H Kaye, H. R. Kefford, B. J, Kelleher, D E. Kessler B. T. Kieft, B. Klein, J M. S Knott, E L Knowles, D G Lambley, T C Langdon, A. Lask, D N Lawson, H. M Lawson, J H. T Lawton, A. G. Leacock, Alice M Lloyd, J. C. Lloyd, G. C Lloyd-Roberts, H. E Lockhart-Mummery, R. L. Lunt, I A J McCready, S A MacDonald, Annabella J. McGowan, A. B McGrigor, J S McNair, J J. Macneil, E. A. Malkin, G Martyn, R. M. S Matthews, Helen M Mayer, Grace E Mellows, S J T Merryfield, R. B. Meyer, R G. Moore, K. C. Morris, H. C Mukerji, C A B Murphy, G C. Myddelton, G. J. Myers, J F Neil, L. Neville, J. L Newman, H A B Nicholls, J C. Nixon, C. L Noble, Deirdre R B O'Brien, R Oddy, A. F. Ollerenshaw, H. F Osmond, D A H O'Sullivan, R. Owlett, Nancye M. Park, H. M Parsons, A J Partridge, J. P Patel, V G Patel, P Pattison, J P Paul, J D Paulett, J. F Pearce, K G Pendse, E. S Perkins, J. A. Peters, A B. Philip, J. Phillips, R M Pitts, F Pollak, J. M. B. Pooley, A. C. P. Porter, E C. Poulton, C Pownall, T. J. G Price, Mary Pringle, P. E. Prudhoe, R T. M. Puddicombe, S. H Purser, I. M, Ramsden, A. P. H. Randle, P. K. Renshaw, A. S. Riddell, D S Ridley, Dorothy Roberts, D. J. Robertson, W C. Robinson, W. Rogers, Glenys M Roper-Hall, H. M. J. Rowan, A J. D. Rowlands, J. H. B. M. Rowlaods, J K. Rowntree, P. F Rudd, D C. Sachdeva, J. G. Salter, M. C Sanyal, Irene M. Sarner, E. Schindel, G. B D Scott, Sophy H. L Scott, T. O. Scudamore, D. E. Sharvill, C. H. Shaw, M. P. Sherwood, D. Shiers, M Shrieber, Janet W. Shrimpton, G. A. Silley, W. B G. Simmonds, J H. Simpson, N. R. W. Simpson, A C. Sinclair, J. F. P. Skrimshire, R D Slack, A. P. Smith, H. N. Smith, R. S. Smith, W. A. Smurthwaite, P. R. Sondhi, V H Springett, H. G. Stack, F. H. Staines, P. S. Steen, B. A F. Stephens, D. N Stewart, J. G Stewart, L. V. Sthyr, A. Stoddard, J. C. Swanson, V, R. Tadros, G H Templeman, D C. Tennant, M. N. Teubes, H. O Thomas, B. A Thompson, J. R. Thompson, A. L Thrower, D. C. Thursby-Pelham, R H. Townshend, B. Townsley, R. N. Tronchin-James, A. F. Tuboku-Metzger, S. G Tuffill, L. Turgill, G. S. Udall, G. H Valentine, A. E. Wall, D K, T. Wallace, G. T. Wallace, A. D. J. Watt, G H. Wattley, N C. Welply, J C N Westwood, E. P Whitaker, D. A. White, E. N. Whitley, R, U Whitney, H. G. Whitworth, B F Wickham, F. R Wilde, M Wilks, D I. Williams, J I. Williams, T M. Williams, L. A. H. Willson, Anna M. T. Wilson, F. P Wimbourne, J L Withey, G Worden, G. H. Wright, H. B Wright, J K. Wright, H. J. Young, A. Zoutendyk.

Diplomas in Public Health (three), Psychological Medicine (nine), and Laryngology and Otology (five), were granted jointly with the Royal College of Surgeons of England to the successful candidates whose names were published in the report of the meeting of the Royal College of Surgeons in the *Journal* of July 25 (p. 115).

The following Diplomas were also granted, jointly with the Royal College of Surgeons:

DIPLOMA IN ANAESTHETICS.—Helen M. B. Alcock, R. E. Angel, T. H. Baillie, E. I W Barnard, J. R J Beddard, Stella G Braithwaite, T. R M Bristow, A. Coleman, Florence K Costello, J P. Cuddigan, J H. Dixon, J. D. Ebsworth, Phyllis M. Edwards, A J Evans, Mita Frost, Edith Gilchrist, G. P. Goodwin, J R. Hindmarsh, A R. Hunter, Jean E W Inglis, Edith S. M. Merry, R. E. J. Pembrey, S. F. Polley, Norah K. Priestley, H. J Richards, G. K. T. Roche, G. F Smith, A. E Ward, F Widlake, Gertrude A. Willis.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY —Margaret L. Clay, K. D. Foggitt, S S Freedman, D P Gurd, H E. Hobbs, M. B. Longinotto, W T C. Lumley, G O M Neatby, R L Richards, P. M. Wood.

DIPLOMA IN MEDICAL RADIOLOGY —F. H. Bonnell, G. C. D. Evans, R. C. M. Hadden, H. J. Johnson, Margaret D Snelling, J. H. Stranger.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

An ordinary meeting of the Council was held on July 30 with Sir Alfred Webb-Johnson, President, in the chair. Mr. Cecil Joll was elected a member of the Surgical Section of the Board of Examiners in Dental Surgery for the year ending June 10, 1943. It was decided to continue for the duration of the war the recognition of the post of senior house-surgeon at the Devonport section of the Prince of Wales's Hospital, Plymouth, for the six months' surgical practice required of candidates for the Final Fellowship examination. It was also decided to recognize the posts of resident surgical officer and senior house-surgeon at the Royal Salop Infirmary, Shrewsbury, for the six months' surgical practice required of candidates for the Final Fellowship. Arrangements were made for the institution of a Research Chair in Ophthalmology, tenable at the College and at the Royal Eye Hospital.

Diplomas of Membership were granted, jointly with the Royal College of Physicians, to the candidates whose names appear in the report of the meeting of the Royal College of Physicians.

Diplomas in Ophthalmic Medicine and Surgery (ten) and in Medical Radiology (six) were granted, jointly with the Royal College of Physicians, to the candidates whose names appear in the report of the meeting of the Royal College of Physicians.

Blane Medal

The Gilbert Blane Medal was presented at the Royal College of Surgeons. The presentation was made by Surgeon Vice-Admiral Sir Sheldon Dudley as Medical Director-General of the Navy, in the presence of the First Lord of the Admiralty, the President of the Royal College of Physicians, and the President and Council of the Royal College of Surgeons. The recipient was Surgeon Commander Edward Rex Pascoe Williams, and the award was made to him for his original work on blast effects in warfare.

The Medal was founded in 1830 by Sir Gilbert Blane, Bt., F R.S., a distinguished physician, best known for his service under Rodney and for sanitary reforms in the Navy and for successful measures for the prevention of scurvy. It is awarded annually to a medical officer in the Royal Navy for "skill, diligence, humanity, and learning in the exercise of professional duties."

The Honorary Medal of the College has been awarded to Viscount Nuffield, G.B.E , D.C L , F.R.S., in recognition of his conspicuous service in assisting the improvement of natural knowledge and of the healing art and of his many liberal acts and distinguished labours inspired by the desire to advance the science and practice of medicine and surgery The Honorary Medal was instituted 140 years ago, and this is the 19th occasion on which it has been awarded.

ENGLISH CONJOINT BOARD

The committee of management of the Examining Board in England has decided that until further notice the examinations for the Diploma in Tropical Medicine and Hygiene (D.T.M.&H.) shall be discontinued

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the College, held on July 25, with Mr. J. W. Struthers, President, in the chair, the diploma of Honorary Fellowship of the College was presented to Lieut.-General Alexander Hood, C.B., C.B.E., Director-General Army Medical Services, and to Prof. Antoni Jurasz, Dean of the Polish Medical Faculty, University of Edinburgh.

The following, having passed the requisite examinations, were admitted Fellows:

G. Bankoff, H. Din, T. J. Evans, Dora J. B. Falconer, A. P. Gracie, J. D. Hallissy, A. W. Kay, G. R. Nicks, D. L. Savill, J. A. E. Watts, E. B. Wild.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examination, have been admitted L.R.C.P.Ed., L.R.C.S Ed , and L.R.F.P.&S.Glasg.:

G E. Barnard, K. H. Bayatti, W. L. Bilsland, W. Brydone, B. H Budoff, R. S. David, A. R. N. Dhanji, Jess Diamond, E. S. M. Douglas, M. R. El Sarraff, A. H. Esmat, M S. A El Hamid, C. C. Haupt, El S. A. K. Himmat, P. S. Huck, C. L. Isitt, H E. Katz, I. McKechnie, R Mitchell, L. E. Mosscrop, M. A Motagalli, A. C. Muir, J. A. Murdoch, J. A. M. Ratcliffe, H. Rosenberg, A. Schmookler, M. Schneider, J. S. Seaton, S P Selvadurai, J. K. K. Stelau, B Stillerman, S. Tenzer, I. A. McL. Thomson, R. Vannithamby, Harry Walker, I. Wolff.

The following graduate of a recognized foreign university was also admitted a licentiate:

M. Gross, M D.Berlin.

The Services

NAVAL AWARD

Temp. Surg. Lieut. Gordon Paton Fahrni, R.C.N.V.R., has been awarded the D.S.C. for great bravery and devotion to duty.

EFFICIENCY DECORATION

The King has conferred the Efficiency Decoration of the Territorial Army on Lieut.-Col. (Temp. Col.) J. Rannie, R.A.M.C.

R.A.F. AWARD

The King has approved the award of the George Medal to Squadron Leader Frank George Mogg, A.A.F., and the British Empire Medal (Military Division) to Leading Aircraftman Peter Nigel Rowland, R.A.F. The citation in the *London Gazette* states:

One night in May, 1942, an aircraft crashed on the edge of an aerodrome and immediately burst into flames. Squad. Ldr. Mogg (the station medical officer), accompanied by Leading Aircraftman Rowland, hastened to the scene and found that three members of the crew had been thrown clear of the main part of the wreckage and killed; a fourth member had managed to extricate himself from the tail turret. A wireless operator was, however, trapped in the blazing fuselage, being entangled by his harness and flying clothing, which was burning. Showing complete disregard for their own safety, Squad. Ldr. Mogg, clad only in overalls over his pyjamas, and Leading Aircraftman Rowland went into the blazing wreckage to rescue the unfortunate airman. By lying flat on the floor and using a greatcoat as a shield Rowland was able to afford some protection for the medical officer whilst the latter administered morphine to the injured operator. Rowland afterwards assisted Squad. Ldr. Mogg in cutting the airman free and in extricating him from the aircraft. During the time that they were working in the wreckage two oxygen bottles exploded within a few feet of their heads, and there was grave danger that others might have done so at any time. Squad. Ldr. Mogg was badly scorched and sustained burns to his hands and wrists, but, despite this, he accompanied the dying wireless operator during the journey by ambulance to hospital some six miles away. He then fainted and had to receive medical attention. Leading Aircraftman Rowland was also burned on the hands and wrists. Both rescuers displayed gallantry of a high standard.

CASUALTIES IN THE MEDICAL SERVICES

An Admiralty Casualty List published on July 27 gave a list of the ship's complement lost in H.M.S. *Dorsetshire*, sunk by enemy action in the Bay of Biscay last April. Among them was Temp. Surg. Lieut. STANLEY WALTER PRATT, R.N.V.R., of Leighton Buzzard, who was posted as "Missing, Presumed Killed." He was educated at University College Hospital, London, and took the M.B., B.S.Lond., and the M.R.C.S., L.R.C.P. in 1936, after which he served as house-surgeon and obstetric house-surgeon at U.C.H. and house-physician at Leicester Royal Infirmary. He entered the R.N.V.R. in May, 1940, and was recorded as missing in the *Journal* of May 23 (p. 656). He was a member of the B.M.A.

Prob. Temp. Surg. Lieut. JOHN DOUGLAS JAMES, R.N.V.R., is posted as "Missing, Presumed Killed" in H.M.S. *Belmont* in an Admiralty Casualty List published on Aug. 1. He was born on July 5, 1916, qualified M.R.C.S., L.R.C.P. in 1941, and entered the R.N.V.R. as temp. surg. lieut. in Nov., 1941. His home was at Wolverhampton. He was a member of the B.M.A.

Temp. Brigadier FRANCIS GERALD AUGUSTUS SMYTH, C.B.E., R.A.M.C., died in a Middle East hospital on July 2. He was born in 1891, the youngest son of the late Col. F. A. Smyth, I.M.S., of Weymouth, and at St. Bartholomew's Hospital gained the Kirke's gold medal and scholarship in medicine, the Brackenbury medical scholarship; and the Burrows prize in pathology in 1913. He qualified M.R.C.S., L.R.C.P. in 1914 and took the M.B., B.S. degrees of the University of London in 1923. He served in France and later in India during the war of 1914-18, with a commission in the R.A.M.C., S.R. After the war he took a permanent commission as capt., was promoted major in 1926, lieut.-col. in 1937, col. in 1938, and temp. brigadier in June of this year, and had served in Egypt, India, and Palestine before the outbreak of the present war. He was appointed an O.B.E. in April, 1941, for distinguished services in the Middle East, was promoted C.B.E. in July, 1941, and was mentioned in dispatches in December, 1941. He had been a member of the B.M.A. since 1917, and in 1930 was a member of the Egyptian Branch Council.

Missing.—Capt. H. Bloom, R.A.M.C., Major J. A. G. Carmichael, R.A.M.C., Capt. H. Houghton, R.A.M.C., Capt. G. Lancaster, R.A.M.C., Capt. F. J. D. Webster, R.A.M.C.

Missing, Believed Prisoner of War.—Flying Officer J. Simpson, R.A.F.V.R.

Prisoners of War.—War Subs. Capt. W. G. H. Allen, Lieut J. W. Anderson, R.A.M.C., Temp Major J. D. Fraser, Temp. Major J. D. A. Gray, R.A.M.C., Major G. F. Harrison, Capt. A. F. Hutchison, R.A.M.C., War Subs. Capt. J. A. MacLeod, R.A.M.C., Temp. Surg. Lieut. R. St. C. Mooney, R.N.V.R., Major J. H. Prain, Temp. Major O. G. Prosser, R.A.M.C., Lieut.-Col. J. K. Steel, R.A.M.C., Capt. J. A. Sutherland, R.A.M.C., War Subs. Capt. A. C. P. D. Thomson, R.A.M.C.

The announcement concerning Surg. Lieut.-Cmdr. Walter Gordon Gill, R.N.V.R. (mention in dispatches), published in our issue of January 24, p. 132, should have read Surg. Lieut.-Cmdr. William Gordon Gill, R.N.V.R.

Medical Notes in Parliament

House of Lords Debate on Tuberculosis

In the House of Lords on July 28 Lord DAVIES drew attention to the failure of the Ministry of Health to deal with the staffing requirements of institutions for the treatment of tuberculosis. He appealed to the Minister to take every step he could to increase the facilities for treatment of tuberculous patients and to use the accommodation in the emergency hospitals until the beds there were required owing to the war. The Earl of HUNTINGDON deplored the tremendous depletion in the number of doctors available for civilians. Some way ought to be found whereby the War Office could arrange for the big and almost immobilized reserve of doctors in the Forces to go out and take evening surgeries, and so help the immensely overworked general practitioner.

Viscount DAWSON OF PENN said that although we were concerned with the increase in tuberculosis in this war, we should keep a sense of proportion. A more anxious feature was the selective character of the infection among different classes. In this war, as in the last, there was a tendency for increase of infection in young women. The most notable characteristic of tuberculosis in this war so far had been an extension of the infection among young children. It was particularly noticeable in the higher incidence of tuberculous meningitis, from which there had been increased mortality amounting to 50%. The cause of tuberculosis in war was, broadly speaking, a combination of more opportunities for infection and decreased resistance. It was true to say that, on the whole, the disease was under control, and there was no sign that it was running away with us, although the total rise of mortality in Great Britain during the war, which was 13%, was a considerable figure. Tuberculosis was a germ disease which did not come in waves on us; it was always with us; its root was in almost every country.

The Problems of Infection

To grasp the problems of infection, Lord Dawson asked the House to consider in what way people contracted tuberculosis. There were three ways: one was by contact with the expectoration of a case of established disease; a second was by the reawakening of the disease in someone who had had tuberculosis and recovered from it; and the third, because tuberculosis was conveyed by drinking the milk of a tuberculous dairy cow. In a country like this, where a large proportion of the cattle were tuberculous, it would be a wise precaution to pasteurize the milk. Pasteurization was patchy; it was extremely good in London, good in some boroughs and bad in others, while in the country districts more of the milk drunk was raw. While children were in London they drank pasteurized milk, but since they had been evacuated to the country they had drunk raw milk. Investigation was going on to confirm or refute what he was going to say, but it was not unreasonable to suppose that the increase in tuberculosis in children might be accounted for partly by the fact that they had passed from drinking pasteurized to drinking raw milk

Towards Mass Radiography

Referring to lung tuberculosis, Lord Dawson said that here infection was invariably brought about by contact with the expectoration of an established case, and it was obvious that under the overcrowded conditions of wartime, with the lack of ventilation and other difficulties, the opportunities for contracting tuberculosis must be greater than in peacetime. The question was, how to reduce the trouble to a minimum. The chief difficulty lay in the fact that it was quite common for an infected person in a factory or a home to have symptoms so vague that it was not realized that he was an infected person. Progress was being made in the establishment of mass radiography. We were not dependent solely on the U.S.; there were machines in this country which had been standardized according to an agreed pattern, and which would be turned out in increasing numbers from now onwards. The machine had the advantage that in skilled hands—he emphasized those words—as many as 3,000 examinations a week were possible, and it was possible to organize the examination of a whole factory in a very short space of time. He thought this could be done far better by persuasion than by compulsion. There were good grounds for supposing that mass radiography would be received with increasing favour as the people concerned understood it. That would lead to the discovery of early cases, which were difficult to find by other means. We had to be careful not to speak too optimistically about new inventions. Mass radiography was going to be a great aid, but it had to grow into our system of medicine discreetly. To dispatch large numbers of machines all over the country without proper teams to work them would make a very bad beginning and lead to false conclusions. He had reason to think that the Ministry and the medical services of the armed Forces were aware of that. It was easy to see that if we could remove one infected person from a part of a factory which might contain a hundred people, or take one infected person away from his home at an early stage, we might do much towards reducing the incidence of this disease.

Education without Alarm

On the question raised by Lord HUNTINGDON about the depletion of doctors, Lord DAWSON said there had been no more depletion than was really necessary. The Army, where it could, gave facilities for medical officers in military depots to give a hand. Referring to the education of the public by the cinema, he said he was doubtful of this. A difficulty in all matters concerning health was to give information without producing alarm, and one of the things we had to be careful about in mass radiography was not to raise a sense of alarm among the workers. The danger was that they would swing from indifference to over-anxiety, and he would rather have indifference than over-anxiety in the case of illness. He thought that mass radiography, so far as we had watched it up to the present, had been well received, and if it was presented to the people as it should be presented, as a means of establishing how well people were and not how ill they were, it could be useful. It should be made part of a health measure, which was one of the features of the Youth Movement to-day, as contrasted with health propaganda which made a self-conscious people.

Speaking on rehabilitation Lord Dawson said we must realize that in tuberculosis there must always be a long period between the end of sanatorium treatment and full-time work. He thought that the Ministry of Health were fully alive to this, and that they proposed to consider seriously the maintenance and subsidizing of tuberculosis subjects for a period from the time they left the sanatorium to the time when they got back to work—if they were on a half-time basis, to make up their wages for so many weeks or months. As regards nurses, if it was made clear that there was no more risk of a nurse getting tuberculosis in a sanatorium than in the ordinary ward of a hospital, in fact, rather less if anything, and if in some way the care of the tuberculous patient could be made part of a nurse's duties—she might, for example, be seconded from medical and surgical wards to tuberculosis wards—the difficulty could to a large extent be got over. Of one thing he was sure, and that was that to start any process of compulsion, to make a nurse take up a particular phase of nursing, would end in failure. If an adequate appeal were made, and tuberculosis were made part of the general care of the sick, he thought that the difficulty about nurses would disappear.

Government Answer: Staff Difficulties

Lord SNELL, replying to the debate, said that Lord Dawson had traversed much of the ground which he himself would have covered. It was of considerable importance to have his judgment that, serious though tuberculosis was, it was not incurable and was not a matter either for a grave view or for despair in regard to its treatment. The difficulty was not one of accommodation ultimately, but of staffing facilities. The lack of an adequate staff in the nursing service was not confined to institutions that had to deal with the treatment of tuberculosis. In sanatoria, for which the Ministry received a periodical return of the available nursing and domestic staff, roughly, 4,800 domestics were employed and 920 more were needed. The position, unsatisfactory as it was, was slightly better than a year ago. In 1941 the deficiency was 17%; in 1942, so far as the figures showed, it was 16%. The need was recognized by the Government, and women domestics in these establishments were reserved. The Ministry of Labour had also instructed regional controllers to give high preference to these needs.

An increase in the total number of nurses was being secured. There were 2,000 employed in tuberculosis sanatoria, and it was estimated that 600 more were required and another 600 for beds in other hospitals for tuberculosis. Therefore we needed an immediate enrolment of about 1,200 nurses. The fear of contracting infection was no doubt one factor which had created a prejudice in the minds of girls and even of their parents, but the Minister had made it clear that nursing in a sanatorium need involve no greater risk of contracting tuberculosis than nursing in other hospitals. He was gratified that Lord Dawson had spoken against compulsion in the service. The Department did not think that compulsion ought to be necessary, but they might have to consider a wiser exercise of their powers of direction. A substantial number of student nurses under 21 were employed on the permanent staff of sanatoria, and every care was taken to prevent them from becoming infected. The Ministry were now proposing to modify the embargo, that nursing auxiliaries of the reserve should not be allocated to sanatoria even if they volunteered, by allowing nursing auxiliaries under 21 to serve in sanatoria if they volunteered, provided, of course, that the fullest precautions were observed in looking after their health.

In Defence of Doctors

Lord Snell admitted that ground had been lost between 1938 and 1941 with regard to the number of deaths from tuberculosis. The stripping of the population of their ordinary doctors might or might not account for some of the increase, but he had never felt able to join in gibes at the medical profession. He had felt it right to defer criticism of their work until they had been provided with social conditions such as were required to make that work effective. We could all criticize the doctors when we were well and they were none the worse for the criticism, but we should remember that they had to work under conditions unsuitable for their work. We ought also to remember that if the national health had improved, as it had, it was probably because we were all of us compelled to do now what the doctors had always told us we ought to do.

The ground lost had been due, he thought, to war conditions, which the doctors and the Ministry of Health could not control. The ways of recovery were known and would be open to us to adopt as soon as the war ended. There would be the possibility of earlier diagnosis. It had been difficult to get the necessary equipment of late, but British-made instruments were becoming available and teams of trained workers would be ready to undertake this work by the end of this year.

Glasgow Small-pox Outbreak

On July 28 Mr. JOHNSTON, replying to Mr. A. Edwards, said that the ages of the small-pox patients removed to hospital in Glasgow during the recent outbreak were: (*a*) 10 cases from the ships aged 17, 19, 20, 21, 22, 23 (four), and 28 years, respectively; (*b*) 29 civilian cases aged 3, 5, 6, 7, 8, 11, 12, 13 (two), 14, 15, 16, 20 (two), 22 (two), 29, 31, 34, 35, 37, 38, 40 (two), 49, 56, 65, 67, and 72 years respectively; and (*c*) 6 fatal cases (included in the foregoing) aged 20, 25, 28, 38, 65, and 72 years respectively. Of the 10 cases from the ship only one was vaccinated before May 29, a passenger, aged 23, who had been vaccinated at 1, 7, and 14 years; all except the original case were vaccinated on May 29 and two were revaccinated on June 10 and 11 respectively, the first vaccination having been unsuccessful.

Medical News

The War Office announces that Col. A. B. Austin has been selected for appointment as Director, Army Dental Service, in succession to Major-General D. Clewer, C.B., whose tenure expires on August 31.

A meeting of the main executive committee of the Medical Superintendents' Society will be held at the Midland Station Hotel, Leicester, to-day (Saturday, August 15) at 2.15 p.m. It may be necessary to continue on Sunday, August 16.

Schemes for the co-ordination of hospital activities are reported from many quarters in these days of medical planning, and the King Edward's Hospital Fund for London, which held its annual meeting in London recently, has, in conjunction with the Voluntary Hospitals Committee, set up a joint committee on co-ordination under the chairmanship of Lord Donoughmore. The Duke of Kent, who announced this in his Chairman's address, said that the Fund was also assisting in the Ministry of Health's survey of hospital facilities in London and the Home Counties. At the invitation of the Fund the chairmen of the London teaching hospitals had met and set up a committee of their own in connexion with the Government's inquiry into the organization of medical schools and the facilities for clinical teaching and research. Some co-ordination had already been achieved in London For example, there was the Nurses Recruitment Centre of the Fund, through which many hospitals were now obtaining a large proportion of their student nurses. Then there was the Contributory Schemes Committee, established a year ago, which aimed at encouraging only one such scheme for the London region. The treasurer of the Fund announced at the meeting that the total distributed during the year had been, with expenses and special services, £313,000, or £44,000 more than the net receipts, which meant they would have to draw on reserves. Subscriptions, donations, and income from investments were all less than in 1940, but the position as regards legacies for 1942 was better than in 1941, so the outlook for the Fund's finances in this respect was promising.

Dr. G. E. Friend, medical officer to Christ's Hospital, Horsham, has accepted the invitation of the members of the Food Education Society to become its honorary general secretary.

EPIDEMIOLOGICAL NOTES

Discussion of Table

During the week under review large rises in the notifications of measles occurred in Kent, 78, and Nottinghamshire, 55 (108 of the 192 cases were recorded in Nottingham C.B.). The largest decreases were those of Lancashire, 213; Essex, 74; Middlesex, 65; and London, 52.

Diphtheria was more prevalent in the North than in the South. The Counties of Lancashire, Yorks West Riding, and Durham contributed 282 cases out of the total of 710 for the whole country.

Only 3 further cases were reported from the outbreak of dysentery in Derbyshire, and 7 from Cumberland, Penrith U.D., where nearly 200 cases of Sonne dysentery due to infected milk have been reported.

In London 24 cases of dysentery, almost one-quarter of the total, were notified. The only local outbreaks of any size were those of the cities of Oxford, 11 cases, and Birmingham, 8.

The incidence of paratyphoid and typhoid fevers has been at a very low level during the present year. Only 176 cases have been recorded in the large towns, compared with 1,268 cases in the corresponding period of last year. Although the incidence has fallen the case fatality has risen; the ratio of deaths to cases has been 1 to 7, compared with 1 to 30 in the same period of last year.

In Scotland the chief features of the returns were a decrease in measles, 32 cases, and an increase in the notifications of acute primary pneumonia, 24 cases. These fluctuations were due to the experience of Glasgow, where measles fell by 34 cases and pneumonia rose by 31.

Small-pox

One further case of small-pox was reported in Glasgow, at the beginning of the month, from an institution where a previous case had occurred. At the beginning of August there were 16 cases of small-pox in hospital in Glasgow and only one in Swindon. Many of the suspected cases have proved to be of chicken-pox.

Returns for the Week Ending August 1

The notifications of infectious diseases in England and Wales during the week included the following: scarlet fever 1,456, whooping-cough 1,116, diphtheria 650, measles 6,476, acute pneumonia 418, cerebrospinal fever 69, dysentery 64, paratyphoid 6, typhoid 9.

No. 29

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 25:

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	89	4	25	1	4	184	11	42	3	8
Deaths		—	1				2	2		
Diphtheria	710	35	156	65	14	852	23	161	27	32
Deaths	13	—	3	—	—	19	—	3	—	1
Dysentery	101	24	61	—	—	85	2	44	3	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	3	1	—	2	—	—	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid fever)						44	1	3	5	6
Deaths						6	—	1	—	—
Erysipelas		—	47	3	1		—	35	9	1
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				84						
Deaths	49	7	15	9	3	35	1	5	12	5
Measles	6,817	695	209	40	142	4,610	130	48	191	—
Deaths	4	1	2	—	1	3	1	—	5	—
Ophthalmia neonatorum	110	3	17	1	—	88	5	17		—
Deaths										
Paratyphoid fever	11	—	3	—	—	329	7	29	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	479	12	4	—	3	531	18	3	—	—
Deaths (from influenza)	3	1	—	—	1	4	12	2	1	—
Pneumonia, primary			153	19				108	16	
Deaths		—		5	6		—		3	—
Polio-encephalitis, acute	5	—				4	1			
Deaths		—					—			
Poliomyelitis, acute	12	1	—	2	—	10	—	4		
Deaths		—	—				—	—		
Puerperal fever	—	4	5	1	1	—	—	12	2	—
Deaths		—					—			
Puerperal pyrexia	154	17	20		3	132	11	11		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,516	80	242	37	35	718	24	128	31	16
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	2	1	11		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	10	1	1	8	2					
Deaths	1	—	1	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,125	105	13	57	12	4,662	244	49	122	5
Deaths	6	2	—	1	—	24	2	2	2	1
Deaths (0–1 year)	296	38	72	43	17	262	21	53	20	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,652	500	568	170	108	3,709	447	534	169	97
Annual death rate (per 1,000 persons living)			12·8	11·3	†			11·6	11·2	
Live births	6,028	708	894	347	307	4,565	345	789	324	185
Annual rate per 1,000 person living			18·5	23·4	†			16·0	21·5	
Stillbirths	207	23	39			187	9	39		
Rate per 1,000 total births (including stillborn)			42					47		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

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B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Itching of Limbs

Dr. W. A. Milligan (London, W.1) writes: I have a patient, male, aged 79, who for the last two years has suffered from intolerable itching of the skin, more especially round the ankles, thighs, and arms. No rash of any kind, except the marks from scratching. All the irritation goes completely whenever he puts on his clothes in the morning, and does not trouble him again till he takes off his clothes at night. All the ordinary remedies have been tried, with no effect. His organs are all quite healthy, except for a slight prostatic enlargement. Can anyone suggest a treatment?

Artificial Respiration in Phosgene Poisoning ?

Dr. F C. Eve (Hull) writes in reply to Dr. J. L. Barford who asks (Aug. 1, p. 148) for information about the above question, on which opinions differ: In 1938, I gave a lecture in London on "gravitational nursing" in which various uses of my tiltable bed were demonstrated. It can be tilted (and clamped) around a central axis at any desired angle, head up or head down. When the clamps are removed the bed can be used to produce artificial respiration efficiently by Eve's rocking method (a dozen double rocks a minute through a total range of about 60° shifts the diaphragm up and down by gravity: see *Lancet*, March 11, 1939) At the lecture a colonel in the R.A.M.C., who had experience of "choking" gases in the last war, was in the chair. He felt confident that the steep head-down tilt available in this bed would be very valuable in cases drowning in their own secretions from gas poisoning. He sent the manufacturer to the War Office with a note to that effect. Later, a number of these beds were ordered by the Ordnance Dept. and also by the Air Ministry. Although I cannot speak from experience of irritant gas poisoning, my original case of a child drowning in her own secretions (from post-diphtheritic paralysis of the diaphragm) was quickly relieved of her "death-rattle" by a steep head-down tilt and then permanently cured by two days of artificial respiration by rocking. Hence the tiltable bed should certainly relieve cases of gas poisoning in the "drowning" stage by the drainage (? intermittent) of a steep head-down tilt (bed-blocks inadequate). Artificial respiration by rocking could then be proceeded with on the same bed—if and when it gave relief. (The manufacturers are Sidhall & Hilton, Sowerby Bridge, Yorkshire; the price is, or was, very moderate.) The pelvis (not the chest) may be immobilized on the bed by a cross-over girdle extemporized from a motor-car inner tube with 2 cords pulling it upwards and 1 (median) pulling it downwards. These distressed patients would presumably not tolerate Schäfer's method but might stand the rocking method (on and off), which is equally efficient and should aid their respiratory efforts it synchronized with them.

Income Tax

Expenses of Assistant

O. G. is an assistant living away from his principal's premises. Messages are delivered at his residence, and he sees patients there. What proportion of the cost of his rent, heating, lighting, domestic services, etc., can he claim?

⁂ It is assumed that the professional use of his residence is one of the conditions—express or implied—of his assistantship, otherwise he has no legal claim for any allowance. As regards any proportion, it is impossible to offer any suggestion without full details of the total accommodation, etc., and the extent of professional use. The test is what is reasonable in the circumstances of each case, and O. G. may find that the best way of arriving at a settlement is to call on the inspector of taxes, explain the position, and endeavour to agree a reasonable figure.

LETTERS, NOTES, ETC.

Warmth in Winter

G. D. G. writes: The coming winter hardships of fuel shortage would be greatly mitigated if we were to follow the methods of Northern Chinese who pass through five months of rigorously cold weather, with low fuel consumption, in comparative comfort. They have a simple rule—the colder the climate the more clothes they wear. A wadded gown with long sleeves and wadded trousers bound round the ankle make them independent of a chilly room. Men, women, and children of all classes wear these wadded (cotton-waste) garments. In North China they would laugh at the spectacle one sees in this country of our womenfolk clad in thin "undies" with short skirts and silk stockings shivering with cold. Also, the Chinese do not have the open fireplaces we have with 70% of the heat going up the chimney: they install a small stove in the far corner of the room and lead a long chimney metal pipe right across it The bigger the room the longer the pipe. This radiates heat from a few pounds of coal in a slow-burning simple stove

Blood Serum in Local Treatment of Burns

Dr. F. W. Simpson (Perth, W. Australia) writes: For some time now I have been using blood serum for the local treatment of burns and wounds of any nature. The burns are cleansed in the usual manner, the loose skin being removed, and serum applied by means of a pipette. This is repeated every hour for 12 hours to tampons applied to the burnt area. In fact the serum simply takes the place of tannic acid in the usual treatment of burns. If the burns are extensive, mixed blood serum is also given intravenously. I think the serum is the ideal dressing for burns of the hand and face, as it is a simple supplement of Nature's own exudation of serum to the raw areas. The results have been excellent. I prepare the serum myself by drawing it off from blood after standing for a few hours. The serum keeps for a month or so if stored in a refrigerator.

Silver Nitrate in Excessive Bleeding

Dr. G E. H. Le Fanu (Liverpool) writes: The interesting case of death in a haemophiliac after tooth extraction reported by Messrs Endicott, Mitchell, and Qvist (July 11, p. 34) has brought to my mind two cases of oozing after tooth extraction in middle-aged women: one had been bleeding for 15 hours, the other for 24. In both cases arrest of bleeding was immediate after insertion between finger and thumb of a stick of silver nitrate into the cavity and gentle rotation from side to side for a few seconds; bleeding did not recur and healing was uneventful. I have never seen any reference to this method: it should be worth trying.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for August 13, 1842, being a letter to the Editors under the heading "Professional Etiquette":

"Gentlemen,—In justice to the profession to which I belong, I lay the following glaring case before the public. Had it been a single instance from the same quarter, I might not have noticed it; but as it is only one out of many, equally bad, I select it as of most interest.—I remain, Gentlemen, yours obediently,

William Reeves,

Carlisle, August 8, 1842 Surgeon to the Carlisle Dispensary

"A young man, a dispensary patient under my charge, laboured under stone in the bladder, for which I advised him to submit to an operation. I stated to him that I would perform the operation in his own house, or, if he preferred it, he might go to the infirmary, where more conveniences would be provided than he could otherwise have. This, the young man said, he would decide upon in a short time. However, in the meantime, the apprentice to a general practitioner in this town, Mr. Elliot, met the young man in a joiner's shop, on leaving which the patient said, 'I must go and see Mr Reeves at the dispensary' The apprentice asked what ailed him, and the patient answered, 'I have got a stone in the bladder.' The apprentice then advised him to call upon Mr. Elliot, and the lad did so. After the patient had answered Mr. Elliot's questions, and stated that Mr. Reeves had advised him to submit to an operation, Mr. Elliot intimated that if he allowed himself to be operated on he would surely die, and at the same time read to him some statistical table, showing that almost every one died after an operation for stone. Mr. Elliot then proceeded to examine him—stated that there were two stones, and that he could cure him without cutting, or any danger. This the man gladly listened to, and came and told me what I have above stated. I told him I never discovered more than one stone, and if Mr. Elliot had persuaded him to the contrary, he would ultimately find out his mistake. At the same time, I told him that no operation could be unattended with danger. After a short time Mr. Elliot operated, cut down upon the membranous portion of the urethra, dilated the prostate, and took away one small stone."

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LATE REHABILITATION OF THE INJURED

A SURVEY OF SEVEN YEARS' EXPERIENCE IN AN INDUSTRIAL CLINIC

BY

ALEXANDER MILLER, M.B., F.R.C.S.Ed.

Regional Consultant Orthopaedic Surgeon, E.M.S., Scotland, and Lanarkshire Orthopaedic Association,
Senior Assistant Surgeon, Fracture Department, Victoria Infirmary, Glasgow

Informed opinion is agreed that rehabilitation of the injured is inseparable from early treatment of the original trauma, and the importance of this was adequately stressed in the Delevingne Report of 1936 (*British Medical Journal,* 1937, **1**, 1218 ; 1939, **2**, 417, 461). Since time must elapse, however, before the changes recommended in such a report are generally accepted, some measure of compromise is necessary to encourage further progress, and the work of the Lanarkshire Orthopaedic Association is an attempt to improve some of the existing anomalies. The following report is a survey in narrative of the work of this association to date.

Before the present war, regional hospital service in Scotland had not developed to the same extent as in England, and thus it happened that the large industrial county of Lanarkshire, where coal-mining constitutes a major source of employment, depended mainly on Glasgow for all hospital and out-patient treatment. Trauma is a common occurrence in the mining industry, and as a result of this there were accumulating an increasing number of patients who had recovered in part from their original trauma but who were still scarcely well enough to return to their previous occupation. This raised among medical practitioners the question of providing a centre in the county where provision might be made for further treatment of these cases.

Following on a number of preliminary meetings with representatives of all those interested in the problem, an Orthopaedic Association was formed in 1935 with an Executive Committee consisting of six members of the body known as the Lanarkshire Medical Practitioners' Union, three members of the Coalmasters' Association, and three members of the Mineworkers' Union. It was agreed that maintenance costs should be borne equally by the mineworkers and coalmasters, and that a grant towards equipment should be made by the Miners' Welfare Committee. The problem of travelling expenses for patients attending the clinic necessarily arose, and this difficulty was overcome by the coalmasters making a grant to cover these.

The first session of the clinic was held in May, 1935, at Motherwell, a central town providing easy access by rail and road from all the surrounding mining areas. Accommodation was provided in the out-patient premises of the County Fever Hospital, whose *x*-ray facilities were placed at the service of the clinic. In the course of the first two years three further treatment centres were opened in welfare institutes adjacent to the main industrial centres.

The Ideal Aimed At.—At the beginning of the experiment it was stressed that the objective was the segregation of all injured employees at the earliest possible time. Unity of control throughout the period of treatment, and until full working capacity or maximum improvement was obtained, was highly desirable; but, since hospital facilities were not at present available locally, it was indicated that an attempt would be made to deal with that group of patients comprising the late stages of trauma.

Staff and Equipment

An orthopaedic surgeon controls the activities of the clinic and has the right to refuse treatment where this is unlikely to further the progress of the patient. In a clinic of this nature such a mandate is important, as otherwise patients who are out of work might be apt to look on the clinic as a club centre and thus falsify statistics, or at least give an untrue picture of the position. Treatment is carried out by an orthopaedic sister who is also a qualified masseuse. During the past year a secretary and a liaison officer have been added to the staff. The duties of the liaison officer are referred to later.

On the surgeon's recommendation it was originally decided to equip the clinic with simple radiant-heat baths and to add apparatus as circumstances demanded. The wisdom of this decision has been amply demonstrated in practice, for, apart from a heavy rowing-machine and plinths, all other apparatus has been devised from simple ropes, pulleys, and sandbags. In treating this type of patient the essential requirement is a well-trained orthopaedic sister, with personality and patience rather than an academic knowledge of electro-magnetism.

Working of the Clinic

There was some antagonism to the scheme in its early months, for the workman tended to view it as an attempt to coerce him to return to his labour, and the surgeon was apt to appear to him as an ally of the compensation authorities. At first there were many prolonged and heated arguments related to these points, but gradually the clinic came to be accepted purely as a treatment centre which had no aim beyond that of aiding and perhaps accelerating the return of the patient to full physical well-being. Two principles have been adhered to throughout and have helped to win the confidence of the patient. First, the surgeon's record cards are private, and the only progress notes sent out are dispatched direct to the patient's own doctor. Secondly, no medical reports are made by the surgeon on behalf of either patient or employer. This I believe to be an indispensable rule in the working of this type of clinic; otherwise, the possible appearance in the law courts of the surgeon in charge tends to create a suspicion of bias and invalidates the usefulness of the clinic as a purely therapeutic centre. Personal experience has shown that this has encouraged the patients to be frank in stating their views, their fears, and their grievances, so that they often seek advice before coming to a decision in respect of the particular difficulties of their problem. From this factor has emerged a social aspect to the problem of those injured in industry which, in the view of many of those concerned, is being inadequately dealt with.

Type of Patient

It is unusual to see a patient who has not been under treatment elsewhere for some time. The period varies in the case of a soft-tissue injury from a few days to six months, and in the case of a fracture from months to years. In most instances no notes of previous treatment accompany the patient, and previous records are often difficult to obtain and frequently incomplete. A considerable number of patients not inaptly illustrate the expression "broken men."

The great proportion of patients are in receipt of compensation, although some are receiving national health insurance benefit. In the past two years there has been an increase in the number of patients seeking treatment while still attending their work, and there has been a tendency to refer minor injuries at an earlier date, but, on the whole, the bulk of the patients conform to the comprehensive title suggested above.

In the early months of the clinic's activity attempts were made to tackle the problem of providing "light work" in the mining industry, and in 1937 the Executive Committee finally agreed to a formula of occupational therapy in the form of "alternative work." The mineworkers stipulated that this work should not include such duties as those at present performed by the aged or by young boys, but should consist of some alternative duty specially provided. Agreement was reached by deciding "that in any instance where the surgeon considered that the patient would benefit from alternative work, then suitable duties should be provided at the rate of 25s. per week in addition to patient's compensation allowance, based on the earning capacity of 25s. per week." It was made a condition that this should not prejudice the patient if any later disagreement occurred regarding his physical fitness and where an appeal was made to the medical referee.

In practice this scheme was difficult to administer, as its hope of success lay in the full co-operation of everyone concerned, and it became clear that the presence of a liaison officer, to act as an intermediary in the home and at the pit-head, was necessary.

Social Service and the Liaison Officer

Experience of the valuable work which a trained almoner was accomplishing in an orthopaedic and fracture clinic to which I am attached pointed the way to a solution of many problems. As the patient gained confidence in the clinic workers he occasionally revealed problems of his private life which were greatly aggravating his physical burdens, and the advantages to be gained from the services of a trained almoner were placed before the committee. The suggestion of such an appointment did not meet with whole-hearted approval, the main opposition coming from the miners' representatives, who feared that such an arrangement would interfere with the liberty of the men and the privacy of their homes. In 1940, however, it was agreed to allow a trained almoner to work under the direction of the surgeon for a probationary period of six months. Her duties consisted in visiting the home of each patient, where her help in solving domestic burdens in cases of family illness, in arranging holiday convalescence, and in obtaining suitable training for younger members of the family earned general gratitude.

Contact was made with the unemployment bureau, with the industrial firms in the county, and more particularly with the various colliery managers. This personal approach has done a great deal to enlist sympathy and help. In the colliery, special work was arranged for 14 recommended cases in the first few months. Graduated duties were also arranged for many patients so that they might accustom themselves to the routine of their previous work. Similarly, where wet workings were often responsible for broken time in cases of the "rheumatic diathesis," arrangements were made to give recommended cases more favourable working conditions. In the past year 87 employees have benefited by this arrangement. Many relatively trivial matters were also dealt with, and the action taken has promoted a better mutual understanding of real or apparent grievances.

Recently, the emergence of the Government Training Scheme has opened up a wide field of possibilities for dealing with many of the problems of late rehabilitation, but the personal approach of the liaison officer to industrial concerns in the county has up till now yielded more immediate results.

Clinical Conditions

The complaint is usually one of pain, swelling, deformity, or stiffness related to the limbs or trunk. The proportion of soft-tissue injuries is greater than that of fractures, and by the time the patients are first seen healing of bone is almost invariably established.

Recently a card index has been prepared so that a more accurate statistical record may be made, but this is only due to be brought into operation now. It is based on the punch record system. The back of the card is reserved for treatment and progress notes.

Trauma and Arthritis.—In injuries affecting the muscle–joint system signs of arthritis are often detected clinically and radiologically, especially in the knee, hip, and spine. Radiological evidence of arthritis is very uncommon in the shoulder-joint proper even where clinical evidence is unmistakable, but irregularity of the acromio-clavicular joint is not unusual. Indications of arthritic change in other parts of the muscle–joint system are the rule even although these have remained symptomless to date. During routine examination clinical evidence of arthritis is sometimes detected in relatively young miners without any previous disability having occurred, and it is clear that this factor will predispose to joint injury and incapacity. The working conditions of cramped posture, damp, and repeated minimal traumata are all accepted factors predisposing to osteo-arthritis, and this relation of trauma to arthritis is an ever-present one in the mining industry. Spinal injuries due to twist or strain are notoriously common, and here again underlying arthritic changes which have been present over years of work in the mines are usually evident. The superimposed trauma is literally the "last straw," and the result is prolonged incapacity.

Age.—Tissues show the usual evidence of wear and tear from arduous work in the mines, but age in actual years plays little part in deciding working conditions for the individual. Not infrequently men between 60 and 70 are still actively engaged in work at the coal face, and although it is obvious that they are becoming more liable to injury it often requires some "accident" to bring about their retirement from labour Frequently we see youths and young adults who are quite unsuitable for working conditions below ground and who are heading for early invalidism unless transferred to more suitable surroundings. Their attendance at the clinic is due to their working at a strain quite beyond their physical capacity.

Mental Attitude.—As a group the mining community is not nervous, though a few individuals have had their confidence shaken by imprisonment under falls from the roof and will not be fit for duty again if this necessitates return to their previous environs. On the whole they accept the discomforts of work with little complaint, but when faced with injury are unyielding in their demands for retribution. They are keen on any hazard, and thus are tempted to gamble with the "lump sum" settlement. Their generosity to an injured colleague is common knowledge: we had a recent example of this when a group on pay-day subscribed enough to purchase the "best artificial limb" for a disabled colleague rather than delay until "Charitable Boards" came to a decision.

Treatment

Experience at this clinic has shown the importance of the social aspect of rehabilitation of those injured in industry, and in my opinion it should form an integral part of any comprehensive scheme. A change of environment was desirable in many of the patients examined, and this was arranged by encouraging a greater use of the facilities existing in the Miners' Convalescent Home. It entailed a break in continuity of treatment at the clinic; but the patients were never away for longer periods than 7 to 14 days, and the occasion was thus used in the nature of a complete change from home and treatment. In 1938, however, the advantage of a residential rehabilitation centre in country surroundings was advocated as a reason for further extension of the scheme, and the committee still had this matter under consideration when war supervened. At present the difficulty is being partly overcome by utilizing accommodation in an E.M.S. country hospital where the facilities of an orthopaedic service are available under the same surgical supervision as the clinic.

Only the principles of treatment will be mentioned here, as routine exercises vary little in nature from those described in recent articles on rehabilitation by Watson-Jones, Nicoll, and others. Most of the patients have local heat applied to the affected part, and a simple radiant-heat bath has proved adequate for this purpose in practically all cases. Active exercises are carried out on a graduated scale, and resistance exercises are begun as soon as muscle power justifies this. Recourse to passive stretching is seldom made, and then only under surgical guidance, but manipulation under general anaesthetic is occasionally required. In such instances the patient is transferred to hospital for at least a 48-hour period to ensure immediate post-manipulation co-operation in exercises. Electrical stimulation of an atrophied muscle is rarely practised after voluntary contraction is obtained, greater reliance being placed in the re-educational skill of the orthopaedic sister than in the effects of electrical stimulation.

Each patient is taken individually until he understands his instructions, and thereafter he is transferred to a class in which the competitive spirit is encouraged. The introduction of exercises to music was a popular innovation, and is now routine in all class exercises. At a later stage in treatment, when the patient is approaching fitness for work, he is encouraged to use the implements of his trade, but these have no place in the early stages of treatment. It is important that working posture be fully appreciated in any scheme of treatment, and in order that this might be understood and applied, the staff have visited the coal-mines and noted the attitudes adopted for each branch of the work. This knowledge has also proved of benefit when giving advice regarding suitable graduated duties before a patient returns to his previous work.

Some patients need local splintage as a temporary measure to support weak muscles during their stage of recovery. Others, again, require a more permanent type of support to aid function, as in drop-foot, or to control painful movements of a joint in the presence of gross arthritis.

As previously stated, the greater part of the equipment used in the clinic is devised by the orthopaedic sister from simple ropes, weights, and pulleys.

Some Unusual Anomalies

Compensation

Case 1.—A patient, after a crush injury at work, was left with spastic paralysis of lower limbs and permanent incontinence of bowel and bladder. He was first seen at the clinic following on two years' recumbency treatment, and after instruction was finally able to walk by the aid of spinal brace, callipers, and stick support. To relieve the monotony of existence he opened a small shop in his own home, but was advised that any attempt on his part to serve behind the counter would result in his compensation being reduced to that of partial incapacity.

Case 2.—Following on compound fracture of a lower limb with resultant knee and ankle stiffness the patient's general condition improved and he was advised to do home gardening to accustom himself to shovelling, etc. He was agreeable, but reported later to say he was informed that this would result in his being classified as fit for light work. Though this was possibly true, it delayed purposeful re-educational exercise in a willing patient.

Legal

Case 3.—A patient who had almost fully recovered from his injury was advised to consider return to graduated duties when reporting to his compensation board in a few days' time. He seemed troubled regarding this suggestion, and explained that he was under legal advice. It transpired in subsequent discussion that his law agent lived some 80 miles away, that he had never seen his agent, and that his case had been booked by a colleague who acted as a tout on a commission basis.

Trade Union

Case 4.—A patient under 18 years of age lost his leg as a result of an accident at his work and showed a desire to take an alternative vocational training. Arrangements were made for his absorption into selected secretarial work, but he was counselled by his union to delay settlement until his claim could be considered on an adult basis, it being stated that if he sought training prior to settlement it would prejudice his case. This introduced the psychological problem of possible change in mental attitude of a young patient during a long period of inactivity and a probable lost opportunity of training. The patient's guardian agreed to accept the personal responsibility of settlement and immediate training.

Results

It has been difficult to keep a close and accurate follow-up of all cases discharged from treatment since the clinic started, but this has been rendered easier since the appointment of the liaison officer, and it is hoped it will be less laborious with the new index system of records. In the earlier years, statistics were maintained by reports from new patients concerning the activities of previous patients known to them either through domestic or working contacts—the freemasonry of the miner—or by direct communication. The results are shown in the Table.

Annual Report	No of Patients Examined	Cases Unsuitable for Treatment	Cases Returned to Full Duty or Settled and Working
1935–6	183	20	123 (75%)
1936–7	221	14	136 (65%)
1937–8	325	25	208 (69%)
1938–9	378	36	270 (78%)
1939–40	350	18	229 (68%)
1940–1	414	19	303 (76%)
1941–2	385	37	274 (78%)

Conclusions

Early treatment of traumatic cases under unity of control is desirable until return to duty or maximum recovery. From experience in the present clinic this would be possible on a regional basis in Scotland by development of the after-care clinic system under the control of a central traumatic unit. The scheme should include a residential rehabilitation centre.

Treatment entails knowledge of the mental attitude of the disabled as well as of their physical complaints. This is best acquired at present by staff under training in an orthopaedic hospital, where they learn to appreciate many problems of the disabled during convalescence and where the advantages of vocational training are seen.

In an industrial clinic it is desirable that the staff visit the various industries in their region so that they may appreciate fully the working posture of the patient and may be able also to suggest possible graduated light duties in the patient's trade.

The clinic should be under the direction of an orthopaedic surgeon whose case records are strictly confidential and who should refrain from issuing medical reports, on patients under his care, for purposes of litigation.

A liaison officer who has had training as a hospital almoner is indispensable in work of this kind. The social aspects of this problem are not sufficiently appreciated, and extension of social service will do much to solve many of the problems existing between workman and employer.

Anomalies in the Compensation Act are well known to all, and the cases here recorded demonstrate some unusual occurrences and suggest obvious and easily effected improvements for these. Many other aspects of this particular problem are beyond the scope of discussion in this paper.

Trauma and arthritis are inseparable in many patients from the coal-mining industry. Some method of periodic medical supervision of the employees would be an advantage, so that with advancing years and decrease of physical power the miner could be recommended for less arduous duties. It might be possible to adjust wages by introducing a contributory pension scheme.

The mining industry has only limited scope for employing those patients left with residual disability, and it is desirable that regional rehabilitation and training schemes be established for co-operation between heavy and light industries. The recently introduced Government Training Scheme promises a solution to this problem, but it requires to make some more definite arrangements for the patient who is still in receipt of compensation because of residual disability.

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FIRST-AID PROPHYLACTIC TREATMENT OF THE COMPRESSION SYNDROME ("CRUSH SYNDROME")

BY

DAVID H. PATEY, M.S.Lond., F.R.C.S.
Surgeon with charge of Out-patients at the Middlesex Hospital; Surgeon, E.M.S.

AND

J. DOUGLAS ROBERTSON, M.D., D.Sc., D.P.H.
Clinical Chemical Pathologist to the Middlesex Hospital

(From the Wards and the Courtauld Institute, Middlesex Hospital)

The destruction of civilian property by air raids has been responsible for the recognition of a new clinical syndrome with characteristic features and often running a typical and fatal course. There is a history that the patient was in a building which collapsed after a bomb hit, and that a limb was pinned down by a beam or heavy object for several hours before release. Immediately on rescue the victim may look surprisingly well despite burial under debris for many hours. But some hours later the patient becomes gravely ill from shock, and, if this phase is successfully overcome, within 24 hours or so fresh anxiety arises owing to haematuria and a low urinary output. Despite measures directed towards stimulating diuresis, the oliguria becomes progressively more marked, terminating in anuria and death from uraemia. The limb that had been pinned down becomes very swollen and hard with oedema soon after its release from the pressure, and is partly or completely paralysed from nerve compression.

Aetiology: A New Conception

This syndrome has been referred to as the "crush syndrome," perhaps incorrectly; for crushing and pulping of the tissues is not a striking feature. On the contrary, it is much more typical for the limb to show no evidence of damage except for some skin abrasions at the site of the compression. A more accurate descriptive term would be "compression syndrome." The cause of this syndrome has given rise to much speculation, and most theories incline to the view that it is the result of a toxin produced in or by damaged tissue. Treatment based on this hypothesis, however, has been very disappointing, and most surgeons in charge of such cases have had the distressing experience of seeing their patients pass from a good general condition to death from anuria despite heroic measures to re-establish the urinary flow. After similar experiences, in March, 1941, we considered that the toxic theory and the treatment based on it were wrong. Instead of the toxic theory based on the release of toxic metabolites from damaged muscles, we thought the compression syndrome might be simply due to a loss of blood constituents from the circulation into the tissues of the limb, the capillaries of which had temporarily lost their function through the long compression. Certain findings seemed to support this conception, including a depletion of the plasma proteins and a very marked swelling of the limb. Indeed, the swelling of the limbs in the fatal cases was so pronounced that small abrasions in the skin were weeping plasma copiously. It became obvious that fluids given intravenously drained into a toneless flaccid limb, the fluid capacity of which must be enormous.

Treatment by Positive Pressure

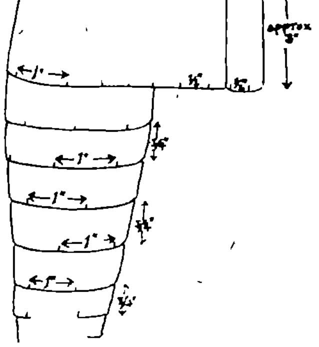
While we were unable to give a complete explanation of the renal phase of the syndrome, we decided to introduce a new form of treatment based on this new conception of the problem. The treatment aimed at restoring extravasated fluid back from the oedematous limb into the circulation. The particular method we used was intermittent positive pressure up to 60 mm. Hg applied through a specially made large blood-pressure cuff firmly bandaged to the limb and connected with a pavaex motor. In June, 1941, we published reports of two cases successfully treated on these lines.

Since this publication we have had no opportunity of treating additional cases. Strong experimental support for our view, however, appeared in a recent paper by Duncan and Blalock (1942). Employing dogs, they have produced a condition similar to the compression syndrome of man. These authors found that if the affected limbs were immediately placed in a pneumatic cuff with a pressure of 40 mm. Hg approximately 75% of the animals recovered, whereas in the control series the recovery rate was only approximately 5%. We (Patey and Robertson, 1942) have recently drawn attention to the confirmatory work of Duncan and Blalock and suggested that routine treatment on the principle we originally recommended is now justified.

Application of the Method

The object of the present communication is to consider the application of the principles outlined by us to first-aid treatment. On our views there would seem to be a justifiable hope that if a simple standard form of first-aid treatment were adopted as soon as a limb had been released from compression many cases of the syndrome would be prevented. But the mere advice to "apply a firm bandage" is not enough. We have studied the question by bandaging on top of a blood-pressure cuff applied to a limb, and noting the increase of pressure produced. With different types of bandage applied in different ways, a wide variety of pressure readings were obtained, varying from ineffective pressure to dangerous pressure occluding the arterial circulation. The factors concerned in pressure produced by bandaging are, first, the force with which the bandage is applied; secondly, the elastic force of the bandage and the degree to which this is stretched; and, thirdly, the number of turns to any given length of limb. We started from the basis that on the facts at present available the pressure to be aimed at was somewhere between 40 mm. Hg (used in dogs by Duncan and Blalock) and 60 mm. Hg (used by us). After this we rejected a number of types of bandage as unsatisfactory—the domette because of its lack of elasticity; the crêpe because of its tendency to stretch and lose its elasticity; and rubber bandages because of the danger of too great pressure and occlusion of arterial supply. We also thought an adhesive bandage undesirable as not allowing for adjustment and reapplication.

Finally we decided on an elastic web bandage made to the pattern of Dickson Wright (by Messrs. Down Bros.), the width of which is a fraction under 3 in. This is a strong bandage of standard strength and elasticity; the latter of which is not easily lost. If this bandage is applied from below upwards stretched to double its unstretched length, with each turn partially covering the previous turn so that 3/4 in. of the lower edge of the latter projects below the fresh turn (see Fig.), an approximate pressure of 40 to 60 mm. Hg is obtained. One or two small practical hints may be given. The bandage should be applied direct to the limb without the intervention of clothing, which will interfere with the effective pressure. The degree of stretch can easily be assessed if the bandage is marked along its lower edge at 1/2-in. intervals. Most people can easily judge 1 in., the distance to which the marks have to be stretched: as a simple check, a halfpenny coin is 1 in. in diameter. Care should be taken to see that the stretch is equal all round; there is a tendency to stretch the bandage to the correct distance in front but not to stretch it sufficiently at the back and sides. We have found that this error is best avoided by applying the bandage in short segments at a time rather than in long loops. The 3/4-in margin can



be assessed by noting some convenient longitudinal line on the bandage. Only a light force with the forearm is required to stretch the bandage to the correct degree, and it should be possible with a little practice for even the inexperienced in bandaging to apply it correctly. In order to avoid oedema below the lower limit of the bandage, the foot and hand should be included. We have found that 2 or 3 bandages are required to cover completely the lower limb, and 1 or 2 for the upper limb.

The question next arises of the further treatment of the case after admission to hospital. If the bandage has been immediately and correctly applied no further local treatment should be required. How long the bandage should stay on will have to be determined by experience. But at present it would seem that it should remain at any rate for some days, and possibly then be reapplied at slightly less pressure. Finally, there is the question of the treatment of the case admitted to hospital with an established oedematous limb either because prophylactic first-aid bandaging has not been used or has been used inefficiently. As already noted, we employed in our two original cases intermittent rather than continuous positive pressure, because we thought on theoretical grounds that the pump-like action of intermittent pressure would be more efficient than continuous pressure, particularly in a paralysed or semi-paralysed limb, in getting rid of established oedema. If this view is confirmed, some other motive force than a pavaex motor will have to be devised before our technique can be generally adopted, owing to the limited number of those machines available. We are investigating the possibility of developing a simple water-pump which fulfils the same purpose.

Summary

The compression syndrome ("crush syndrome") is due to loss of blood constituents into the affected limb.

The principle of treatment should be by positive pressure, to prevent oedema and get rid of any already existing fluid.

The elastic web bandage applied in the way we have described is the simplest efficient means of exerting this positive pressure in a standard manner as a first-aid measure.

First-aid parties should be equipped with these bandages and taught the proper technique of their application. The importance of applying the bandage immediately the limb has been released from compression should be stressed.

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The social welfare policy in Sweden is being continued despite the present strain, and the new Swedish State Institute for Public Health in Stockholm was inaugurated by the King last year. The institute is organized in three departments: one for general hygiene, one for occupational hygiene, and a third for the scientific control of foodstuffs. In addition to their intelligence service all three branches carry on scientific research. The first-mentioned department provides education in social hygiene for public health officers, including maternal and child welfare, housing hygiene, tuberculosis care, water, and drainage. The task of the department for occupational hygiene is to investigate and prevent ill-health and accidents arising from unsuitable working conditions. In the sphere of food the prime task of the institute is to prevent the manufacture and sale of products dangerous to health and to assess the value of various foodstuffs from the standpoint of nourishment. Special attention is devoted to investigation and control of vitamins in foodstuffs, fodder, and medicinal preparations. The new institution has at its disposal over 100 laboratories, as well as an animal house, which is said to be the largest in Europe. It employs a staff of about forty persons, not including the medical students studying there, and its head is the well-known Swedish physiologist, Prof. Ernst Abramson. The institute, which is situated within the big "medical city" built in the last few years on the northern outskirts of Stockholm, has cost over £118,000. Part of this has been defrayed by the Rockefeller Foundation.

VAGINISMUS: ITS MANAGEMENT AND PSYCHOGENESIS

BY

JOAN MALLESON, M.B., B.S.

The number of marriages which are legally annulled must be very small compared with the number which are not in fact actually consummated. It is by no means uncommon for women who have been married many years to seek advice on account of dyspareunia, conjugal dissatisfaction, or sterility, and for examination to reveal a hymen partially or totally intact. A large proportion of such patients are genuinely astonished when this fact is made known to them. It would be difficult to assess whether such cases are due more frequently to failure on the part of the husband or that of the wife; because, although one partner may be initially responsible for the difficulty, more often than not this trouble is, so to speak, emotionally "infectious," or, at any rate, accentuated by the other partner being under-competent, over-anxious, or too forbearing. This article will deal with those cases in which the trouble comes mainly from the woman's side, on account of coitus being rendered impossible by spasm of the introital vaginal muscles.

Clinically, the term "vaginismus" denotes a condition of vaginal spasm varying from a constriction at the beginning of coitus (so slight that it may merely discomfort the woman herself) up to the extreme case in which the spasm causes acute pain to the woman and entirely prohibits any penetration by the husband: indeed, the introitus may be so constricted that even the tip of the examining finger can gain no entrance. The spasm may affect the perineal muscles exclusively or may be felt as a varying constriction of the levator ani right up to the vaginal fornices. Accompanying this spasm there is usually a definite adduction of the thighs, even up to the point of cramp-like spasm of the adductor muscles, and invariably the lumbar spine is extended in the position of lordosis. In severe cases the posture adopted is one almost of opisthotonos. A concomitant of the syndrome is a greater or lesser degree of hysterical hyperaesthesia. Rarely, this may be absent, but in some cases it may be more prominent than the spasm itself. The hyperaesthesia is usually of the "glove and stocking" variety, starting exactly at the vaginal introitus, but in extreme cases it may be registered all over the vulva and even over adjacent parts of the abdomen and thighs. Vaginismus need have no relation to an unstretched hymen, and can occur with equal severity in the woman who has borne children as in the virgin. It is known to appear as a secondary protection to some physical lesion (such as urethral caruncle, salpingitis, etc.) which would otherwise cause dyspareunia, but such cases are rare compared with the "idiopathic" vaginismus, and will not be dealt with here.

It is important to realize that a true vaginal spasm cannot be voluntarily produced—that is, it cannot be consciously employed by a woman to evade coitus—and it may appear in spite of the utmost *conscious* willingness to accept the coital act. Fortunately, as will be discussed later, it can very largely be modified by conscious control.

The entire syndrome must, of course, be accepted as psychogenic. Often these women display additional neurotic symptoms, and after marriage many of them develop symptoms of anxiety neurosis, typically precipitated by sexual frustration, although in this case the frustration is self-inflicted. Hence, certain of these cases have of recent years found their way to treatment by psychotherapy or psycho-analysis. Experts in this work assert that the aetiology of the condition appears to be varied, because—as with so many neurotic symptoms—there is a tendency to "over-determine" the original fear against vaginal acceptance.

Observation of a series of cases has suggested a possible common factor which has not yet received recognition. Before outlining this it will be convenient to comment upon the clinical management of these cases, since certain points here may elucidate the hypothesis itself.

Treatment by Persuasion

There can be few medical conditions more gratifying to treat than the case of vaginismus: the average case, even if it has been of long standing, will often resolve after one interview leisurely enough to permit examination and "suggestion." Cases here studied have been drawn from private practice and from the various departments (i.e., gynaecological, sterility, contraceptive) of the North Kensington Women's Welfare Centre. Interviewing in the latter conditions necessitates finding a technique of minimum length compatible with a sufficiently good contact to make treatment by persuasion a feasible proposition.

A proportion of these patients exhibit hostility from the very start; they break the initial appointment or arrive late, and their defensive attitude is often aggressive. While taking a history of dyspareunia it is wisest to accept the patient's own account of the marital situation, but by inquiries to make some assessment as to the normality of either partner's behaviour. When the patient refers to "her fault" or "his fault" it is useful to remind her that "we are not dealing with *faults*, only with temporary difficulties." If the history given suggests that the woman is virginal, before she is asked to undress it is helpful to mention that clearly there may be an unusually difficult "maidenhead" to account for the trouble, or else she may merely have developed the habit of "flinching" and thus be herself causing the discomfort and pain. This idea is new to most women, and they may advantageously consider it while they are preparing for examination.

It is wise to expect difficulty from the patient, and exceptional prudery. If in cases where no physical lesion need be expected a covering blanket is arranged the woman may often be subjected to no visual exposure at all. It is absolutely essential that examination be made in the dorsal position: the alternative position on the side allows of so much lumbar flexion and consequent relaxation that the severity of the introital spasm may be quite concealed. Many mild cases of spasm are probably overlooked in this way. It is helpful to arrange a wall or some other object on the left side of the couch so that the woman can be asked to bend her left knee and keep it resting against the wall. This is invariably easier for her than a direct request to separate the legs, which will certainly revive many painful associations. The case of true vaginismus will at once exhibit lordosis, the axis of the vaginal entrance pointing towards the floor. As the examining finger—well lubricated—reaches the vulva, the left knee is usually brought inwards, still further increasing the inaccessibility of the introitus. At this stage it is advisable to cease examination entirely, and to say, "I am afraid it will be impossible for me to help you if you will not adopt a more helpful position."

Every woman with vaginismus tries, unconsciously, to put the blame or responsibility on to the other person: she expects to be exhorted and physically "attacked." There is no quicker way of modifying these impressions than a kindly but firm refusal to show further interest. Throughout any such interview the most successful contact will be made by an impartial aloofness. Hostility should be met by a firm refusal to be drawn in, and a detached civility will often bring quicker co-operation than a warm eagerness to help.

Many of these women are truly unaware that they render coitus or examination impossible by the thigh adduction, the position being quite unconsciously adopted. An explanation of this is the next stage in examination; and the placing of a folded towel (about 2 in. thick) below the sacrum will demonstrate the required attitude of pelvic flexion. The next attempt must be guided by the woman's reactions: if exceptional hyperaesthesia is present it may be unwise at this interview even to reach the genitalia at all. The woman should be told that this is a fictitious nervous "over-sensitiveness," and she must reflect upon this before she again comes for examination. The very refusal to force her will probably be followed by a request to try once more. The more average patient will allow the insertion of at least one finger, which should be lubricated and should yield entirely to the contour of the contracting passage; pressure against the perineum itself should be avoided. Probably adduction and lordosis will again begin. The patient's attention should be drawn to this, and as she controls her posture she should be told to draw the pelvis up. As the abdominal muscles contract, the levator ani will relax and the spasm and coincident pain will vanish. Given a few minutes' patience, two, or generally three, fingers can be inserted, and the woman realizes for the first time that the vagina is painless and of adequate dimensions. At this stage she should be reminded that her pain has been entirely self-inflicted through her own "flinching," and that her future marital success will therefore depend upon her own efforts. Admittedly, she may be unable to control the vaginal spasm, but if she will attend to flexion of her knees and pelvis, the rest will follow very rapidly.

Most women express themselves astonished that there has been nothing amiss, and are generally glad to have some further talk and explanation. The patient should be made thoroughly to understand that the pain will occur only if the vaginal entrance is "flinching"; and that any hyperaesthesia present must be considered as her own mistranslation of pleasure into pain. Such ideas may appear slightly philosophical, but even uneducated women are often quick to grasp them

Some Practical Measures

Before dismissal the patient should be given a non-greasy lubricant such as K.Y. jelly (or the odourless non-spermicidal Prentif jelly) for lubricating the vaginal entrance, and reminded to place a small support below the buttocks before sexual intercourse. It is unwise at this stage to agree to her using a contraceptive device. If such measures are essential, the husband should employ a condom until the woman is confident and easy about her vaginal functions. Before this stage the use of any appliance seems always to revive the vaginismus. Difficulties are sometimes presented when the husband is incompetent with a condom, and such situations must be met by individual advice. Finally, the woman should be asked to accept sexual relations regularly and to return within a month.

In only the minority of cases will the presence of an unstretchable hymen be found. It is true that efforts to penetrate a difficult hymen may eventually result in psychical distress and some spasm, but this is different in many respects from the "idiopathic" vaginismus that has been described.

Cases in which the hymen is also causing trouble should be treated according to the preference of the medical attendant. It seems usually best to show the woman how to dilate the hymen herself; but if surgical measures seem preferable they should be done under general anaesthesia, and not entail subsequent application of dilators *by anyone except the patient herself.*

The measures above outlined are generally sufficient to ensure complete conjugal penetration. Some women will report absolutely painless acceptance for a few occasions, with later occasional return of spasm; further persuasion may then be required. Each case will, however, display its individual features. Many of these women have other sexual difficulties. Only too often by the time advice is sought either or both partners may be showing signs of anxiety neurosis, increasing sexual coldness, and depression; and often the husband has developed a secondary impotence, which complicates the picture still more. Certain cases, particularly those with hyperaesthesia, show in addition to their "flinching" an extreme distaste for the sexual relationship. Although such cases may by persuasion be encouraged to accept penetration, it is clearly desirable that their attitude should, where possible, be re-orientated by expert psychotherapy as well.

There can be few neurotic symptoms more quickly accessible to cure than the average case of vaginismus. The ideal interview should be of one hour's duration, but often half that time is sufficient. Two somewhat dramatic examples can be chosen to show how quickly resolution may occur even when the complaint has been of very long duration.

Mrs A., a clinic patient, married for 11 years, sought advice on account of sterility. Examination revealed a thin almost intact hymen and typical vaginismus. Three months after her only interview she wrote that sexual relations were improving and a pregnancy was established. This interview could not have exceeded the maximum clinic appointment of thirty minutes. Mrs. B., a scientist aged 36, came to ask about artificial insemination, since sexual relations "were impossible for her." Her first marriage had been annulled after 11 years, and although a doctor had subsequently stretched the hymen, penetration was no easier in her second marriage, which had lasted 4 years and was otherwise very happy. This woman appeared to have little sexual inhibition or strain; but in spite of her doctor's reassurance she still secretly believed that she "must be deformed." Examination showed no hyperaesthesia whatever, but the presence of a strong introital spasm. This relaxed fully to admit three fingers, and the patient subsequently reported easy and immediate establishment of coital relations, with rapidly increasing vaginal feeling. Pregnancy shortly became established.

Before leaving the management of vaginismus, mention should be made of its surgical treatment, whereby the vaginal entrance is relaxed by cutting the posterior muscle fibres of the introitus and vaginal walls. The success of this operation is said to vary greatly; remarkably good results have been claimed, but it is doubtful if the woman with hyperaesthesia or strong sexual prejudice is likely to gain benefit, and it is probably these cases which are therapeutically disappointing.

Aetiology

Let us now give consideration to the causes of this curious disorder. It seems clear that the mechanism is a defensive one: the vagina contracts before it is touched, much as the eyelids blink in anticipation of corneal contact. But why should a small minority of women demonstrate this predetermined and acutely developed anticipation of pain?

In most cases of established vaginismus the woman will mention a previous dread of child-bearing or of sexual pain, or perhaps a preconceived idea that they were "very small inside." Yet such ideas are so common among normal women who show no signs of vaginismus that their description here may be more in the nature of a "rationalization" for the disorder than the actual causative agent. Furthermore, many unmarried women have heard highly exaggerated reports concerning the pain of defloration, yet vaginismus does not as a rule occur among these cases.

Now it has been noticed while interrogating these patients that a common historical factor is often present which does not appear to have received recognition. Many of them have during infancy been "conditioned" to expect pain in the pelvic region by the insertion of a foreign body, the offending object being usually the enema, the suppository, or the old-fashioned soapstick so much employed in Victorian nurseries for the treatment of constipation. Anyone who has witnessed such a procedure will recognize the extreme pain to which the child is subjected. Soap is painful in the rectum as in the eye, and as the infant screams and flings itself into opisthotonos the rectum is instantaneously emptied. The baby who is repeatedly treated in this way will scream and stiffen at the very sight of the attacking object. Here, surely, we have a "conditioning" at the age which is most susceptible to permanent impression.

At first sight it may appear improbable that experience of rectal pain should lead to anticipation of vaginal suffering. To understand such a possibility it is necessary to recapitulate facts of great importance in medical psychology. The rectal, vaginal, and urethral orifices are developed from the original cloaca and possess the same innervation. In very young children the sensations arising in these organs are largely undifferentiated; hence the difficulty in learning sphincteric control and the fact that any of these organs may—and normally to some extent do—receive erotic stimulation during stretching or friction. Thus when a young child experiences pain in either rectum or vagina the resulting impression of the attack will be very similar whichever of the cloacal organs actually received the stimulation.

It is not difficult, therefore, to realize how the child who has come to dread the forcible introduction of a rectal object would respond with fear and shrinking, first in childhood to the vague instinctive ideas of coitus, and then in later life to the actuality of sexual penetration. In some women such trains of feeling must be relegated entirely into the unconscious regions of memory, but in others they are very much part of conscious impression. So large a proportion of women who suffer from vaginismus are able to recall memories of this nature that it is tempting to assume a common pelvic trauma as a basis for all such cases. If this were so the fact should receive recognition, if only for prophylactic purposes.

The possibility of such an association was first suggested by the chance remark of a woman who had suffered from extreme spasm. At her first relaxation of the vagina she stated that the examining finger "Felt exactly like an enema"; and, later, another patient anticipated interrogation by a similar comment, "It feels rather like the bowel."

Since then it has been noticed how many of these patients speak with bitterness of their childhood experiences with enemata. Unfortunately, detailed statistics of these histories have not been kept, but records are available for the rather small figure of 20 consecutive cases of severe vaginismus among educated women. In reply to the question whether they remembered such episodes in childhood, 11 of them replied in the affirmative. Among these answers the following comments were annotated: "Agonizing enemas"; "How I hated them"; "Agonizing soapsticks—at 3½"; "I hated suppositories"; "Mother was always giving us them"; "I loathed them"; "My mother was very heavy-handed"; "I hated them." One patient actually volunteered the illuminating remark, "It was because of enemas I had quite decided I would never marry." It would be interesting to have the replies of a control group of women who recollect such treatments yet have not developed vaginismus, but such have not been collected.

The negative reply of the other 9 does not, of course, exclude the experience, but excludes the probability of the practice being habitual or occurring later than the age of 5 or 6. In fact, psychologists assert that the earlier in infancy a trauma is experienced the more indelible will be its impression. One of these patients agreed to ask her mother for relevant facts, and brought back the surprising reply that no such treatment could have occurred except for soapsticks which, much to the mother's distress, the midwife had insisted on using daily during the first six weeks of life. During examination of these 9 other women 2 exhibited the excessively hostile behaviour so common to such cases: one gave a history of painful catheterization in early childhood, and another of "some painful treatment for soreness."

Neurotic Cases

Although vaginismus is a hysterical symptom, this group of women do not seem to exhibit an unduly high proportion of neurosis. Their sexual behaviour, once the spasm is quiescent, seems fairly representative, vaginal feeling being obtainable in at least half the cases, and none of this series is entirely anaesthetic. Yet it seems certain that the symptom of vaginismus is sometimes "woven in" to an intricate system of neurosis. It might be said that the symptom is *utilized* for other than its original protective purpose. Other trends of feeling such as dread of the penis, hostility to men, parental fixations, etc., may all over-determine the original symptom and make use of it, in their various ways, at unexpected occasions. Herein may lie the explanation for those rare cases of vaginismus in which the symptom develops spontaneously after sexual life has already been established, and for cases which are sometimes amenable to persuasion yet liable to be recurrent. Two long-standing cases may throw light on this phenomenon. Both occur in severely neurotic women who have required psycho-analytic help; neither is included in the above series.

Miss C., aged 28 when first seen, had unsuccessfully attempted intercourse with several men. She had a severe anxiety neurosis and many hypochondriacal symptoms. Although this patient has made an excellent general recovery the symptom is still—after marriage and normal childbirth—apt to recur. She reports that in analysis memories were revived of soapsticks administered by her mother. She considers the vaginismus to be an expression of various conflicting emotions. Mrs. D., aged 26 when first seen, was having her first marriage annulled and still suffers from occasional vaginismus. Sometimes it is quiescent, but may recur suddenly, so that she is never without the risk of its revival. She reports that psycho-analytic investigation has shown various precipitating factors for the vaginal spasm, such as resentment that she is not in an emotional position to become pregnant, or fear that the man is "taking too much from her." At the age of 18 months she had severe dysentery, but we have no proof of any rectal treatment. This patient has no conscious memory of rectal trauma, yet an unconscious one is suggested by her showing great indignation concerning a pre-operative enema, and by the fact that at 17 years she was rectally examined by a woman specialist and suddenly fainted.

Such histories may perhaps be taken as direct support of the theory that vaginismus is caused by early trauma—and further indirect evidence may be deduced by the method of resolution of the disorder.

Conclusion

The technique above described for managing these cases came to be adopted many years before this theory was considered, yet its details seem very rational if the contention is correct. If we assume that each attempt at coitus or examination revives the infantile emotional trauma we have the perfect explanation for the hostile patient—rigid, with dilated pupils. So also is explained her surprise and relief when the examination is not insisted upon. However much originally the patient had protested, the attacking enema was rigidly completed. Here, for the first time, she is neither pleaded with nor overwhelmed. Rather she is left herself in control of the situation, and with the responsibility for refusal—and its consequent results—upon her own shoulders. This may well account for the sudden alteration of attitude so often shown. As it becomes evident to the patient that her (" transferred ") fear and hostility are irrelevant, so the atmosphere of the scene alters. Giving her permission to refuse is often followed by exaggerated gratitude, which undoubtedly is propitious for co-operation and persuasion.

Here, too, may be the explanation of the fact that vaginismus treated by bougies and instruments seems usually to give unsatisfactory results: those patients who endure the treatment, while recognizing that they are no longer " too small," seem often to have had their difficulties even further increased. If this theory is correct such a result would clearly be expected, so that any such treatment should invariably be left in the patient's own hands and should not be relegated to the nurse in charge.

Since the original traumata would have been administered by women, it is possible that the sex of the medical attendant influences the degree of emotion transferred. Perhaps the handling of such cases is best managed in different ways by the male attendant. Certainly the patient's behaviour to medical examination and to coitus do not necessarily run parallel, some cases yielding best to one condition and others showing the opposite reaction. One might suppose that relaxation is best achieved when the emotional atmosphere differs as far as possible from the original one; so that the attendant, even if unfortunately resembling mother or nurse, should at least refrain from behaving like her!

Clearly there is scope for more knowledge about the effects of such early trauma in the male as well: for it is possible that here, too, may be found a basis for some sexual anxiety. If other observers corroborate these findings medical teaching will require to restrain a nursery practice which is by no means uncommon.

A Divisional Hospitals Council for Bristol and district was formed in 1941 and has lately issued its first annual report. The Nuffield Provincial Hospitals Trust authorized a sum of £1,000 to enable grants to be made by the Council in respect of hospital and ancillary medical services and also contributed £315 towards administrative expenses. A survey of hospitals and ancillary services has been undertaken in the Council's area by the Bristol Hospitals Commission, a body of 9 members, including Sir Farquhar Buzzard, who is chairman of the Medical Advisory Council of the Nuffield Trust. Inquiry was made whether it was desirable for further steps to be taken to promote co-ordination or expansion and as to the best means of financing and administering existing services. The Commission paid a second visit to Bristol this year to investigate the contributory scheme problem as it affected that area. During the year the new Divisional Council has taken steps to encourage the formation of similar councils in Bath, Somerset, and Gloucestershire, and a conference has been held with a view to creating a provincial hospitals council to cover Bristol and the West of England, bringing in the areas just named. The report states that valuable preliminary work has been accomplished in this direction.

RELAPSING FEVER IN ADDIS ABABA

BY

P. ROBINSON

Captain, R.A.M.C.

(From the Menelik Hospital, Addis Ababa)

This report is based on 340 cases observed during the second half of 1941.

The transmitting agent of relapsing fever in Abyssinia is, according to some textbooks (Manson-Bahr, Salvioli), the tick *Ornithodorus moubata.* Kirk, however, did not succeed in transmitting Abyssinian relapsing fever by infecting ticks. The spirochaetes in that country have been identified by Scaffidi as a regional variety of *Spirochaeta obermeieri.*

In the present series the spirochaetes were transmitted by the body louse. This is substantiated as follows: (1) mixed infections of relapsing fever and louse-borne typhus are common; (2) spirochaetes are often found in crushed lice collected from relapsing-fever patients; (3) ticks were not found, nor was there a single case in which the " tache noir " (the primary tick-bite sore) was observed.

Diagnosis

The tick film taken as a routine reveals the spirochaetes in most cases of relapsing fever, often also in the afebrile stage. Jaundice is very frequent. The enlarged spleen is as a rule tender. The rash is not easily seen on the dark skin of the Ethiopian, but is more visible than the rash of typhus or typhoid. It consists of small violet-red petechiae, the size of " rose spots," slightly raised, and not fading on pressure. The typical distribution is on the shoulders. Epistaxis is a very useful symptom. Bloody sputum or urine, and diarrhoea with blood, are often mentioned by patients but seldom observed in the hospital. Spirochaetes are sometimes found in the sputum. Pain in the left shoulder is quite common. Pain in the calves, common in other parts of the world, is rare in Abyssinia. The condition of the tongue has been found typical and helpful in the diagnosis of relapsing fever. Four stages may be distinguished. In the first stage, during the first 4 or 5 days of the disease, the tongue is stained brown as in not very severe cases of typhus. In the second stage, covering another week, the tongue is moist and clean. In the third stage the tongue is atrophic, and resembles very much the condition in pernicious anaemia. The fourth stage, not seen more than ten times, but which may occur more often, shows ulcers, single or multiple. The ulcers heal in a week or two without any treatment. Pain in the tongue is common in all stages. The blue tongue seems to be of no diagnostic significance. Systolic and diastolic murmurs are very frequent. In contrast with the murmurs occurring in other infectious diseases their frequency is striking. This and the presence of heart failure in Abyssinia, where rheumatic fever appears to be rare, leads to the assumption that relapsing fever may be one of the chief causes of cardiac lesions there. (Endocarditis of the valves has often been found at necropsy together with other pathological changes typical in relapsing fever.

We found that serum of relapsing-fever patients agglutinates the Kingsbury strain of *Proteus* in a high titre, sometimes up to 1 in 3,200. A history of high pyrexia and chill, and positive XK agglutination with no spirochaetes in the blood, usually indicates a case of relapsing fever. If there is a second rise of temperature the spirochaetes are always found. Mariani, D'Ignazio, Barelli, and Pistoni have described a rare condition which they consider to be a benign typhus showing agglutination with XK up to 1 in 100. The cases they quote are by no means convincing, and we think there is no evidence as to the existence of a typhus-like disease with positive XK in Addis Ababa. Typhus-like diseases with a positive XK have been observed twice in this material; but the titre in both cases dropped considerably, while the X 19 rose steadily and reached its peak in the period that is usual in typhus cases. We consider, therefore, that the XK agglutination in these cases was due to relapsing fever, from which the patients had suffered previously.

The following table shows the diagnostic points in relapsing fever and the frequency of their occurrence. (Some of these points are really complications, but their early appearance renders them symptomatic.)

Spirochaetes in febrile period	100%
,, in afebrile period	38%
Jaundice	72%
Rash	8%
Epistaxis	12%
Tongue symptoms	68%
Enlarged spleen	89%
Tender spleen	44%
Heart murmurs	38%
XK agglutination (done in 168 cases)	98%
Pain in left shoulder	4%

Complications

There is little to say about the course of the illness as all these cases were treated immediately and responded admirably to N.A.B. In about 6% malaria was found simultaneously, and the quinine treatment did not interfere with the N.A.B. (Our experience with typhus allows us to assume that the relapsing-fever infection provokes the malaria relapse.) Typhus in about 10% of the cases took its normal course. Jaundice (72%) was the most frequent complication, and formed no contraindication to the specific treatment. The next most frequent, and the severest, were haemorrhages from the mucous membranes (12%): if untreated the patients lose litres of blood. Occasionally bleeding in the central nervous system occurs, causing paralysis. Only three such cases have been observed; one of these patients died. Other complications are rare: oedema (6 cases), acute thyroiditis (3), parotitis (8), perisplenitis (4), infarcts in the spleen (2—both fatal). Spleen infarcts, however, are not always fatal, as we have found them occasionally in necropsies after death due to other causes. The last complication is pachymeningitis (3 cases—all fatal). In 2 of these 3 cases spirochaetes were found in the C.S.F. Examination of the C.S.F. in uncomplicated cases of relapsing fever revealed normal conditions. Dutton's spirochaetes have been found by Lodewyckx in the C.S.F. in 3 cases. In others a hyperlymphocytosis was noted.

Relapses occur in spite of treatment. In 16% of the cases there was one relapse and in 4% there were two relapses. The longest interval observed was 27 days.

Treatment

One, two, or three injections of N.A.B. are necessary, the first injection being repeated if the temperature does not fall the day after the injection or if there is a fresh rise. Haemorrhages if severe must be treated. After having observed that in some cases the blood did not clot, we started to estimate the "prothrombin time" and found it prolonged in every instance, even if not complicated by haemorrhage. As vitamin K therapy is the method of choice in prothrombin deficiency it was tried, and proved to be the ideal treatment. We used 5 to 10 mg. of 2-methyl-1:4-naphthoquinone in oily solution intramuscularly (1 to 2 ampoules of kapilin-Glaxo). Vitamin K preparations should, we think, be given in all relapsing-fever cases to prevent haemorrhages.

The case mortality was 3.5%. At necropsy, perisplenitis was found in almost every case, and sometimes infarcts in the spleen. Endocarditis was common.

Conclusion and Summary

Relapsing fever in Addis Ababa is transmitted by lice.

Spirochaetes are often found during the afebrile stage.

The rash has a typical appearance—a violet shade; and a typical localization—the shoulders.

Tongue pain, atrophy, and ulcerations are typical of relapsing fever.

Relapsing fever in Addis Ababa is assumed to cause cardiac lesions.

All cases show a positive agglutination with XK.

Haemorrhages from the mucous membranes are due to prothrombin deficiency and can be treated successfully with vitamin K.

Relapses occur in spite of N.A.B. treatment.

The mortality rate was 3.5%.

In cases of pachymeningitis, spirochaetes have been found in the C.S.F.

Perisplenitis, spleen infarcts, and endocarditis have been observed at necropsy.

I wish to thank the D.M.S., East African Forces, for the permission to publish this paper.

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MUSTARD-GAS BURNS

BY

JAMES GRANT, M.D., D.P.H.
Medical Officer of Health

AND

T. F. RITCHIE, M.B., Ch.B.
Assistant Medical Officer (Civil Defence), Gateshead County Borough

The following recent experience emphasizes anew certain features of the effects of mustard gas.

On July 1, 1942, a site-decontamination demonstration involving the use of mustard gas was staged elsewhere in this region. Members of the Civil Defence Services of various areas were in attendance. By some mischance premature functioning of the demonstration weapon occurred, resulting in some of the spectators being affected, including 10 persons from this borough.

These patients had been entirely unaware of any contact with liquid mustard gas, which obviously had fallen in the form of fine droplets on their exposed skins. As a matter of fact, part of the bomb casing fell within two yards of the Gateshead party.

Photographs were taken of some of the burns on July 4 and 5, and two of these are reproduced here. The following abbreviated table summarizes each case and the length of the latent period:

Case	Latent Period	Site of Burns	Remarks
1	2½ hours	Left side of neck and temple; outer angle of orbit; left hand	
2	1½ ,,	Left side of neck and angle of jaw; back of left hand; front of right wrist	Faintness, nausea, perspiration on 2/7/42. Burnt by vapour in last war
3	Leg, 2 hours; neck, 8 hours	Left side of neck; right thigh and calf	
4	8 hours	Left side of neck and temple	
5	6 ,,	Bridge of nose; left cheek and face	
6	2½ ,,	Left side of neck; right hand. Small patch ½ in. below left eyelid	Nausea and vomiting on 3/7/42. Blister-gas burn in last war
7	14 ,,	Left side of neck and left hand	Nausea and vomiting, 3/7/42
8	12 ,,	Left side of neck; pinna and lobe of left ear	,, ,,
9	About 12 hours	Left side of neck	
10	,, 50 ,,	,, ,, ,,	

When first seen the lesions took the form in all cases of a sharply defined raised erythema of the skin, and in 7 cases there were also varying degrees of punctate vesication of the burns of the neck. In one of these cases the vesicles continued to appear for a period of approximately 30 hours after exposure. One individual sustained burns on the leg due to the liquid penetrating his clothing. The vesicles were incised where present, and the burnt areas were bathed with weak dettol solution and subsequently anointed with sulphanilamide paste. Four of the patients complained of nausea either one or two days after the onset of the lesions, and these symptoms lasted for approximately 12 hours. The incised vesicles took on the form of yellowish-brown crusts which later separated, to leave pale areas in contrast with the erythematous skin, which became a dark coppery colour, so that the skin of the neck in particular had a mottled appearance. No septic complications were met with in the subsequent progress of the lesions. Two of the patients had sustained mustard-gas burns in the last war, and they had the shortest latent periods after exposure. One still complained 12 days afterwards of an intermittent burning sensation in the neck which interfered with his sleep.

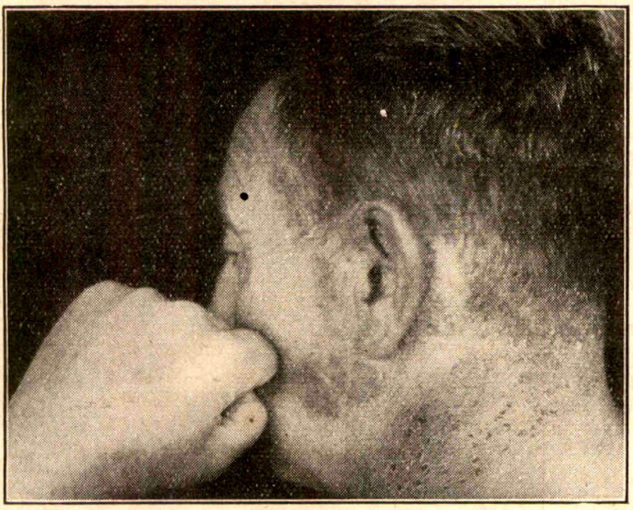

FIG. 1

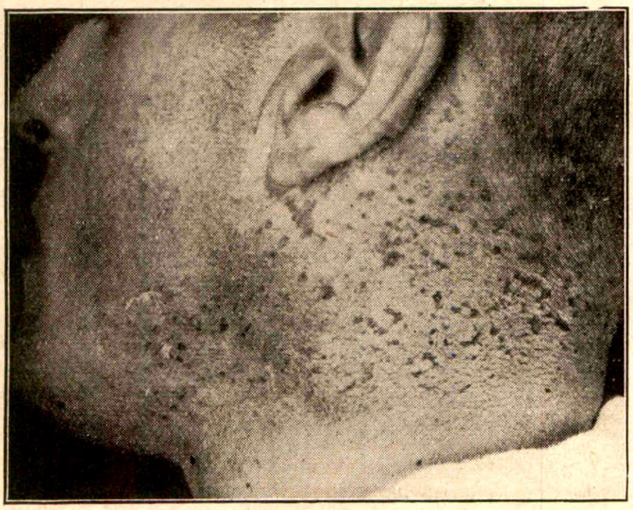

FIG. 2

Discussion

The 10 members of the local authority service present at this demonstration were all highly trained in anti-gas precautions. They were fully aware of the consequence of exposure to mustard gas, but not one realized that he had been splashed by droplets. They all assumed their respirators immediately the accident occurred and considered themselves safe. Conjunctivitis was not evident in any of the cases, probably owing to this; but two of the men had narrow escapes, as they sustained tiny burns on the eyelids.

Sulphanilamide paste apparently countered the danger of skin sepsis and proved a very satisfactory dressing.

Summary

We report 10 cases of mustard-gas burns sustained as the result of an accident during an A.R.P. demonstration.

Attention is directed to the insidious action of mustard gas, a feature that was of course noted in the last war.

The incident described emphasizes the need for strict observance of the recommended safety precautions required in the conduct of such demonstrations.

Medical Memoranda

Fulminating Purpura and Adrenal Haemorrhage

Cases of fulminating purpura and adrenal haemorrhage (Waterhouse-Friderichsen syndrome) are rare enough to be worth recording.

CASE REPORT

At about 12 noon on March 11, 1942, in response to an urgent call, I visited a male child aged 4 months who had suddenly become seriously ill. On my arrival the mother gave the following history: The child had always seemed perfectly healthy. On the previous evening he appeared to be quite normal and had taken his feed as usual. He had slept through the night. On the morning of March 11 he took his feed, though not very readily, the bowels had acted and were normal in appearance, but the mother had noted a rash behind his ears. As the rash began to spread over his face the mother thought that he was "going in" for measles. At about 11.30 a.m. the child suddenly became much worse; his breathing became very rapid and noisy, and as he appeared to be unconscious the mother became very alarmed.

Examination showed a well-nourished, extremely shocked, and cyanosed child, presenting almost a complete Hippocratic facies. A well-marked purpuric rash covered the face profusely, and was also present on the abdomen and on both extremities. There were also large blotches of ecchymoses on both thighs and forearms. The rectal temperature was 101.4°, the pulse about 160, the respirations 64, accompanied by a loud stertor. Nothing abnormal could be seen in the mouth, throat, or nose. The lungs were resonant, the abdomen was flaccid, and rectal examination revealed a soft yellow stool adherent to the gloved finger. There was no head rigidity; Kernig's sign was negative; the pupils were dilated, equal, and did not react to light. No history of a convulsion was elicited. The child died in my presence at 1 p.m.

I was allowed to perform a post-mortem examination on the following day. The heart, lungs, and gastro-intestinal tract presented no abnormality; the mesenteric glands were not enlarged; the liver, kidneys, spleen, and thymus appeared normal. There was, however, haemorrhage into both suprarenal glands, both cortical and medullary portions being involved. No bleeding had occurred into the adjacent tissues. Permission was not granted to examine the brain and spinal cord.

COMMENT

In a review of the literature Sacks (1937) found only 64 cases published up to that time; by the beginning of 1940 these had reached a total of 70 (Carey, 1940). All the cases show a striking similarity, the patient usually being a child aged 2 to 15 months, who becomes suddenly ill and dies often in less than 24 hours. A haemorrhagic rash of greater or less extent is present in every case, the temperature is mostly between 100° and 103°, and the sudden collapse, cyanosis, and accelerated respiratory rate may lead to a diagnosis of pneumonia. The illness is so fulminating and death occurs so early that complete investigation is generally not possible. The accepted view appears to be that the purpura and the haemorrhage into the adrenals are due to a massive bacteriaemia, and Maclagan and Cooke (1916) suggest a selective action by the meningococcus. If that is so the disease is so fulminating that the patients appear to succumb to the general infection before the lesions of the meninges have had time to develop. It might, of course, be a fulminating type of any other infectious fever.

London, N.10. I. S. FOX, M.B., Ch.B.

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Reviews

THE ADOLESCENT CRIMINAL

The Adolescent Criminal A Medico-Sociological Study of 4,000 Male Adolescents. By W Norwood East, M D., F R.C P , in collaboration with Percy Stocks, M D , D P H., and H T. P. Young, M B. (Pp. 327 45s) London: J. & A Churchill 1942

The social problem of crime calls urgently for first-class scientific research, because effective action is more likely to be based upon precise knowledge than upon unaided insight, however sympathetic. Dr. Norwood East has very long experience of prison administration and of the investigation of criminals; he is also an exceptionally clear and vigorous thinker, an untiring worker, and a good writer. Encouraged by the Home Office, he acted as the director of a team of medical officers, statisticians, and women visitors, and this book is the distilled result of the very copious material they collected from a study of 4,000 male adolescents in prison and in Borstal. The information included data on heredity and family, conditions of home, school and employment, physical and mental defect and disease, personality traits, and the disposal of the offenders and their reaction to treatment. The findings have been made easily available to those who will in the future undertake much-needed reforms of law and practice.

A significant number of youths who were convicted more than once for offences against property had a criminal heredity, which was probably a causative factor in their repetition of the offence. Immoral heredity and quarrelsomeness in the father contributed in a certain number of cases to convictions after the first. Dr. Norwood East emphasizes the need for research into the fundamental problems of inheritance. Physical disease does not appear to be associated with crime, except that cardiac or pulmonary disease in the father sometimes deters a first offender from committing a second offence. Home life was proved to be very important. Boys who had lived continuously with their parents rarely had a long record of previous convictions; those who had lived independently showed an excessive frequency of them. The absence of one or both parents, especially of the father, of a lad over 14 was often associated with multiple offences against property or the person. Those under lax, careless, or repressive control, and those who were intolerant of apparently judicious control, had a relatively greater tendency to repeat criminal offences. The average size of the family when young offenders were 14 years of age was relatively large, but the offender's position in the family did not seem to be important. Multiple convictions for non-sexual offences were significantly associated with residence in a poor district; those for sexual offences had a contrary association, and sexual offenders tended to come from dwellings with a smaller number of inhabitants than did offenders in other groups.

Dr. Norwood East stresses the practical importance of these results, for they suggest that the reactions of adolescents to home conditions are far from being simple or stereotyped, and require further elucidation. A lack of interest in school work and periods of unemployment were significantly associated with multiple convictions, and he thinks that the association of rapidity of growth with frequency of crime is worth further study. The psychological investigation emphasized the need for accurate and early mental diagnosis in the prevention of crime. Research into instinctive activities and perversions in non-sexual as well as sexual conduct associated with crime is, Dr. Norwood East considers, overdue. It may show, for example, that perverse aggressive and acquisitive conduct varies in form and causation, and is based upon a special type of personality largely unaffected by ordinary penal methods. In short, he has demonstrated the need for further research into normal as well as abnormal offenders, preferably in a special institution of the kind recommended by himself and Dr. W. H. de B. Hubert in an earlier report.

The volume is large but light and easy to handle; its print is clean and its tables well arranged. It is the most important contribution that has been made to the criminology of the juvenile male for several years, and should play a great part in solving an increasingly dangerous problem.

PRACTICAL BACTERIOLOGY

Handbook of Practical Bacteriology · A Guide to Bacteriological Laboratory Work. By T J. Mackie, M.D , D P H , and J. E. McCartney, M D , D Sc. Sixth edition (Pp 675 17s. 6d., plus 7d postage.) Edinburgh. E. and S Livingstone. 1942.

Since its original publication in 1925, further editions of Mackie and McCartney's *Handbook of Practical Bacteriology* have appeared at regular intervals, and the sixth is now available. This has been brought up to date by numerous additions to the text, and finally by an appendix describing several new culture media, methods for the bacteriological examination of air, and a discussion of the mode of action of sulphonamide compounds with a note on the use of media containing *p*-aminobenzoic acid for cultivating susceptible bacteria from cases under treatment by these drugs For its size this work contains a remarkable amount of information on bacteriological methods: few similar textbooks contain, for instance, a table of opacity equivalents for estimating the density of bacterial suspensions, probability tables for calculating the numbers of coliform bacilli in water, complete instructions for performing a Rideal-Walker test, or a section on the uses of different types of centrifuge. Although the needs of several types of reader have been kept in mind, those of the professional bacteriologist and technician engaged in routine diagnostic work have received most consideration. To them the condensed and detailed technical information can be of daily service, but the medical student needs less of this and a good deal more of the theory of the subject as applied to medicine. He would also be grateful for illustrations, of which there are none, excepting a few line drawings of apparatus. Modern nomenclature is still relegated to brackets, and generic distinctions are disregarded in the arrangement of chapters, some of which deal with an assortment of quite unrelated micro-organisms. The practical value of this book is of course enhanced by its being the official guide to a system of laboratory supply devised by one of the authors for the L.C.C. laboratory service, but now extended over a much wider field.

MENTAL PROCESSES OF THE SCHIZOPHRENIC

Conceptual Thinking in Schizophrenia By Eugenia Hanfmann, Ph.D., and Jacob Kasanin, M.D. Nervous and Mental Disease Monographs, No 67. (Pp. 115 $2 50) New York. Nervous and Mental Disease Publishing Company 64, West 56th Street 1942

Disorder of the thinking processes has long been noticed clinically in schizophrenia, and by some authorities it is held to be a primary symptom of the disease and one which to a greater or lesser degree is invariably present. There has been much debate on this topic, as clinicians who regard the disease as a response to environmental stress are concerned to minimize the importance of this rather "organic" type of symptom. There has been as much dispute about the nature of the disorder of thought when it does occur. Students of genetic psychology have likened the mental processes of the schizophrenic to those of primitive peoples and to those of children; psychiatrists of a neurological turn, to those seen in aphasia and agnosia. But most authors are agreed that the disturbance is distinct in kind from anything seen elsewhere, and there has been much experimentation in the effort to analyse its nature.

Hanfmann and Kasanin carried out an interesting experiment in which coloured blocks were given to three series of subjects —schizophrenic, organic, and normal. These blocks were of a number of strikingly different shapes and colours, and also were either large or small, and flat or high. The subjects were required to arrange the blocks into four groups, the only possible arrangement being one in which colour and shape were neglected for the other two characteristics. Various levels of performance were possible, and the differences between the groups were analysed accordingly. One of the ways in which the schizophrenic differed qualitatively from the normal and the organic subject was in an inability to see the nature of the solution even when it had been actually found. But it was discovered that a conceptual—i.e., insight-ful—approach was confined to the groups both of normals and of schizophrenics who had had a college or higher education; and in general the authors do not seem to have done enough to equalize the highly important factor of intelligence in their three groups. The group of schizophrenics who had had a college education was controlled by a group of research assistants of, no doubt, very high intelligence, and the resulting comparison does not seem to be an entirely fair one.

Notes on Books

PINEY and WYARD'S *Clinical Atlas of Blood Diseases* (J. and A. Churchill, 16s.) is so popular with students and housemen that we are not surprised to receive a copy of a fifth edition. It is both the virtue and the fault of the book that it is a collector's handbook, and a few new specimens have been added without any rearrangement of the collection such as most haematologists would feel was overdue. The additional plates are not so good as the old and do less than justice to the results obtained by sternal puncture.

In its fifth edition Major H. H. CLAY'S *Sanitary Inspector's Handbook* (H. K. Lewis and Co., 18s.) has been revised in the light of recent progress. Account is taken of the far-reaching influence of present-day war conditions upon the range and relative importance of the sanitary inspector's duties. Emergency enactments brought into being to meet the needs of the hour are for the most part passed over in silence, but attention is properly directed to any statutory changes which promise to be more permanent. The fifth edition may be commended as timely and reliable. In these and other respects it maintains the high standards of its predecessors.

The American book by Helen Clapesattle, entitled *The Doctors Mayo*, which was reviewed in our issue of March 28 (p. 415), is now published in this country by the Oxford University Press at 22s. 6d.

Preparations and Appliances

AN APPARATUS TO MEASURE MUSCLE RECOVERY AND RANGE OF JOINT MOVEMENT

Mr. G. A. POLLOCK, F.R.C.S.Ed., and Mr. GEORGE BROOKS write from the Wilkie Surgical Research Laboratory, University of Edinburgh:

An accurate estimation of the degree of functional recovery from an injury is of importance to the surgeon, the physical therapist, and the insurance assessor, especially when injury has been done to the nerves, the muscles, or the joints of the hand. A patient who does not see proof of his progress under treatment may become disgruntled and uncooperative. Instead of continuing with enthusiasm at his exercises, massage, or occupational therapy, he becomes irregular in his attendances and finally ceases to appear for treatment. If there was some device by which one could estimate the rate and degree of progress under treatment, and at the same time demonstrate this to the patient, he would be stimulated to redoubled effort.

With this object in view we devised a dynamometer. The apparatus consists of an oblong box, the form and dimensions of which are shown in the diagrams. It carries an upright post, A, from which the spring balance B is suspended. By means of a system of light vulcanite pulleys, C and D, one of which acts on the pivot E, the excursions of the finger plate and finger rest F and G are registered on the spring balance B in grammes of pull. The range of movement of F and G can be read also in degrees on the protractor scales H and I. By means of this additional check a greater degree of accuracy can be obtained when individual joint movements are compared from time to time during treatment.

The finger-plate attachment J is fitted to the apparatus at 1 or 2, depending on whether it is the distal or proximal interphalangeal joint that is being examined. With the finger-plate attachment in position at 1 or 2, the strength of the flexor digitorum profundus and of the flexor digitorum sublimis is estimated by noting the position of the indicator of the spring balance B. If the finger-plate attachment is fixed at 3, not only the strength of the pull in grammes but also the range in degrees can be read on the scales of B and H. Estimates of the strength and range of abduction or adduction of the fingers to or from the middle line can be made by fitting the finger rest to the apparatus at the pivot hole K. The finger rest is slightly higher than the level of the box itself, and it is inclined forwards. Thus the finger is slightly hyperextended at the metacarpophalangeal joint to eliminate the action of the extensor tendon so that a more accurate appraisal of the power of the interossei and lumbrical muscles may be obtained.

Friction is partially reduced during the performance of those movements by the movable roller of the finger-rest and the pivoting of the pulley wheel at E. The power of these movements can be read off also on the scale B, and their excursion described in degrees of movement by reference to the protractor scale I.

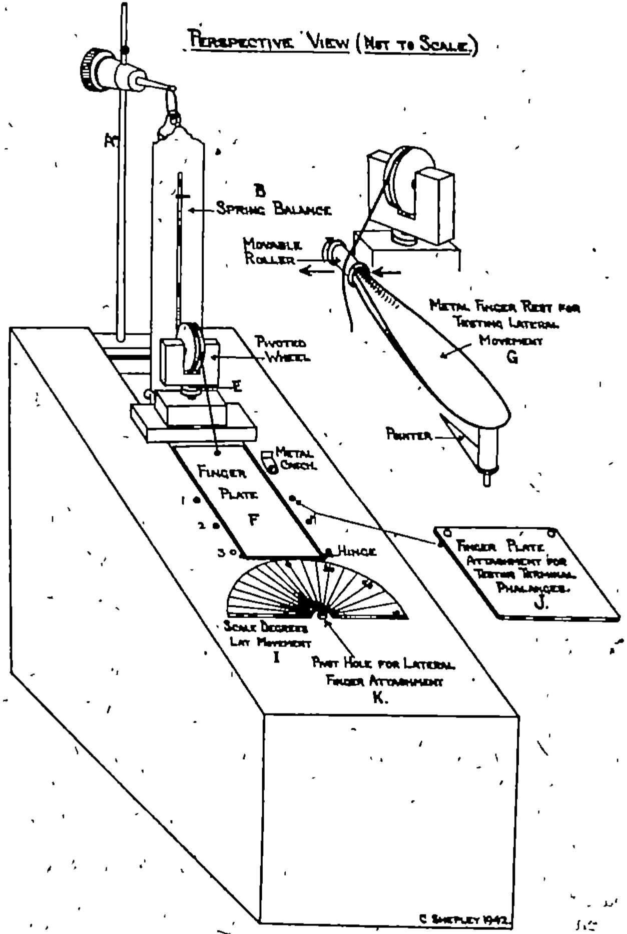
PERSPECTIVE VIEW (NOT TO SCALE)
A
B
SPRING BALANCE
MOVABLE ROLLER
METAL FINGER REST FOR TESTING LATERAL MOVEMENT
G
PIVOTED WHEEL
E
POINTER
METAL CATCH
FINGER PLATE
F
1
2
3
HINGE
FINGER PLATE ATTACHMENT FOR TESTING TERMINAL PHALANGES.
J.
SCALE DEGREES LAT MOVEMENT
I
PIVOT HOLE FOR LATERAL FINGER ATTACHMENT
K.
C SHEPLEY 1942.

FIG. 1

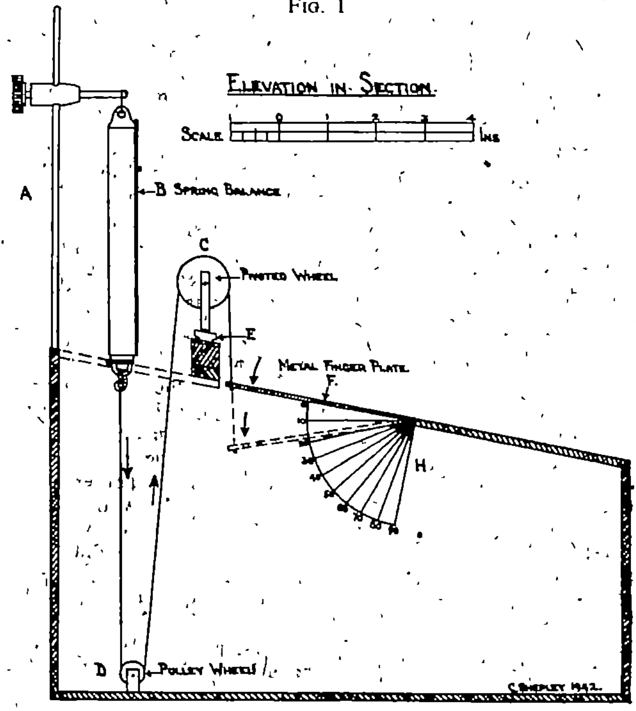

FIG. 2

The apparatus is inexpensive and simple in action. We believe that it will serve a useful purpose in indicating the degree of functional recovery of the joints of the fingers during treatment.

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ACUTE ASEPTIC MENINGITIS

Up till 1925 confusion was present in the description of various cases of meningitis, apart from syphilitic and tuberculous meningitis, in which the cerebrospinal fluid was bacteriologically sterile and contained an increased number of mononuclear cells. At that time Wallgren[1] brought clarity to the situation by gathering a number of them into a symptom-complex of unknown aetiology which he termed "acute aseptic meningitis." All these cases had an acute onset, fever, and symptoms of meningeal irritation, and recovered completely after a short illness. Since then three viruses which give rise to the clinical picture of acute aseptic meningitis have been isolated. The most common of these is that of lymphocytic choriomeningitis, which has been found in U.S.A., Great Britain, France, and Japan. The virus of swineherd's disease (Durand *et al.*[2]) also produces this picture, but is found only in neighbouring areas of France, Switzerland, and Italy. Lastly, there is the virus of pseudo-lymphocytic choriomeningitis (MacCallum *et al.*[3]), which has been isolated on only two occasions, both in England. These three viruses provide only about one-third of the cases of acute aseptic meningitis; the remainder are of as yet unknown aetiology.

Lymphocytic choriomeningitis appears to be much more frequent in the United States than in any other country, possibly because it has been more intensively and extensively studied there. The virus was first isolated in 1934 by Armstrong and Lillie[4] in the U.S.A., and since that time 36 proved cases of the meningeal form, including three of the encephalomyelitic type, and one proved and one probable case of systemic infection without meningeal involvement, have been reported. In addition, examination of sera showed neutralizing antibodies in 32% of 58 cases diagnosed as aseptic meningitis, 28% of 106 cases with recent influenza-like illness but no signs of meningeal irritation, and 10% of 1,000 individuals chosen at random who gave no history of any involvement of the central nervous system (Wooley *et al.*[5]). In this country there have only been 5 reported isolations of the virus from human beings, and neutralization tests on suspected cases have shown a very small proportion of positives. The high percentage of positive sera from individuals showing no obvious involvement of the C.N.S. indicates that there is no single clinical picture which can be said to include all cases of infection with the virus. However, there are certain indications that may lead one to differentiate between a typical case of lymphocytic choriomeningitis with meningitic symptoms and one of acute aseptic meningitis of unknown origin as described by Wallgren. In a group of 23 proved virus cases Baird and Rivers[6] found 16 gave a history of an influenza-like precursory illness which lasted from one to three weeks before the onset of meningitis. Contrasting with these, in a group of 18 patients with meningitis of unknown cause, there were only 3 who had a prodromal illness.

Following the injection of infective mouse brain into human beings (Lepine *et al.*[7]) fever develops in one and a half to three days, and the virus is present in the blood usually from then till the onset of meningitis. The prodromal symptoms develop five to ten days after exposure to the virus and are of one to three weeks' duration. Fever, ranging from 100° to 103° F., usually occurs in two or three waves, with a remission before the onset of meningitis. Then comes an acute onset of fever and chills, generalized headache, and nausea and vomiting. There may be lumbar backache, drowsiness, and disorientation. On physical examination the usual signs of meningitis are present in varying degrees. The blood counts are as a rule normal during this stage, but virus may occasionally be detected in the first few days of meningitis. The cerebrospinal fluid is usually clear or slightly turbid, and rarely shows a fibrin clot on standing. The pressure may be normal or increased. The cell count has varied from 63 to 3,200 per c.mm., with the average about 600 to 1,000, of which 95 to 100% are usually lymphocytes. The sugar and chloride content are usually normal, though both may be reduced. The protein may be normal, but is usually elevated to 50 to 200 mg. per 100 c.cm. of fluid. The virus can be isolated from the cerebrospinal fluid during the first 7 to 10 days of meningitis, but then as a rule disappears. A positive complement-fixation reaction with the blood commonly appears 3 to 4 weeks after the onset and disappears in 4 to 6 months, in contrast to neutralization, which does not appear for 6 to 8 weeks and lasts much longer. An excellent description and detailed study of a typical case is included by Farmer and Janeway[8] in their complete review. In this, the most recently reported case, the patient, a girl of 21, removed a dead mouse from a trap. Three days later she began to feel listless, had occasional spells of light-headedness, and looked unwell. On the fourteenth day she visited her doctor, who found her temperature was 101° F. (oral) and that she had lost 8 lb. in weight in the past month. Though weak, she was able to continue her studies till the twentieth day, when she developed headache, stiffness of the neck, nausea and vomiting, loss of appetite, drowsiness, and lumbar backache. The virus was isolated from her spinal fluid on the twenty-seventh and thirty-fifth days of the illness. However, for every such typical case there must be very many with only a few influenza-like symptoms and no signs of central nervous system involvement. A very good example of such an illness was that described by Armstrong and Hornibrook[9] as the result of an accidental laboratory infection. The patient was carrying out research on the virus and constantly handling infected mice. There was no circumstance which might indicate the possible incubation period of the disease. His first symptoms were troublesome pains in his arms, shoulders, and back, with an accompanying temperature of 99.4° F. By the following day he had lost his appetite and the lumbar pain had increased. The fever lasted five or six days. The acute illness lasted only a week, but weakness and prostration persisted through the following week. There were no symptoms or signs of involvement of the nervous system. A white blood count on the fifth day of illness revealed leucopenia of 2,900 cells. The virus of lymphocytic choriomeningitis was isolated from the blood on the fifth day of fever, and his serum, which had been negative, gave strong protection against the virus six weeks after the illness.

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[1] *Acta pædiatr.*, Stockh., 1925, **4**, 158.

[2] *C. r. Acad. Sci.*, 1936, **203**, 830.

[3] *Brit. J. exp. Path.*, 1939, **20**, 260.

[4] *Publ. Hlth. Rep.*, Wash., 1934, **49**, 1019.

[5] Ibid., 1937, **2**, 1105.

[6] *Amer. J. publ. Hlth.*, 1938, **21**, 47.

[7] *C. r. Acad. Sci.*, 1937, **204**, 1846.

[8] *Medicine*, 1942, **21**, 1.

[9] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 907.

The source of infection and portal of entry of the virus in man has not been settled as yet. However, the weight of evidence at hand indicates the grey mouse (*Mus musculus*) as the reservoir in the naturally occurring disease. Armstrong and his colleagues[10] have found a much greater percentage of infected and immune mice among those caught in the houses where cases have occurred than among mice from homes where the illness has not been present. Experiments carried out over 4 years by Traub[11] in a stock of white mice, and those of Haas,[12] also in white mice, indicate that mice infected *in utero* probably transmit the infection to their offspring and contacts by their nasal secretions. However, their urine, faeces, and semen also contain active virus, which may be the source of infection for human beings. Seven naturally infected house mice trapped in Washington showed no symptoms during five months' observation, but transmitted the infection to normal white mice placed in the cage with them. These latter also showed no symptoms, but virus was present in their blood. In the case of Farmer and Janeway[8] the virus was isolated not only from a mouse found in the fourth-floor flat of the patient but also from the embryos of a pregnant mouse trapped in the cellar of the same building. The virus has been shown experimentally to infect by penetrating the unbroken skin of the guinea-pig, which suggests this as the portal of entry in those who handle infected mice without gloves. The virus may be present in the dust where infected mice have been and infection may take place by the nasal route. But in man the virus has been isolated only once from the nasopharynx, and in that instance the patient was never shown to have developed immune bodies, so proof that the virus was of human origin is lacking. Dogs, both in America (Dalldorf[13]) and England (Findlay *et al.*[14]), also have been shown to harbour the virus in their spleen, and an inoculated dog transmits the infection to his cagemate. Farmer and Janeway[8] describe a case in which a dog might have been the source of infection. Strangely enough, there is no indication that cats are infected or carry the virus.

The most likely disease with which trouble in diagnosis may arise is tuberculous meningitis. Very little difference may be noted till the latter suddenly enters the terminal stage and is fatal. The web-like clot which usually forms on standing is a good point of differentiation. The sugar content is usually decreased below 45 mg. and the chloride content below 650 mg. per 100 c.cm., but normal findings should not be taken as ruling out tuberculous meningitis. The percentage of lymphocytes in the cerebrospinal fluid rarely rises above 80. Also the blood sedimentation rate is elevated. If proof is desired of the virus aetiology of a case two courses may be followed. Inject 5 to 10 c.cm. of blood intraperitoneally in a guinea-pig in the pre-meningitic phase and the same amount of cerebrospinal fluid in the stage of meningitis. Elevation of the temperature to 104° F. (per rectum) for one or two days probably indicates infection; and the spleen and/or brain should be removed aseptically, placed in 50% glycerin in saline, and stored in the ice-box till sent to a laboratory for identification. Serum taken in the acute and convalescent (fifth to sixth week) stages can be examined for immune bodies to lymphocytic choriomeningitis virus.

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[10] Ibid., 1940, **55**, 1222.
[11] *J. exp. Med.*, 1939, **69**, 801.
[12] *Publ. Hlth Rep.*, Wash., 1941, **56**, 285.
[13] *J. exp Med.*, 1939, **70**, 19.
[14] *J. R.A.M.C.*, 1940, **75**, 8.

EXPERIMENTAL SHOCK AND THE "CRUSH SYNDROME"

Since the crush syndrome was first recognized as of common occurrence after air raids, the treatment of it has been the subject of much speculation. The chief reason for this is lack of knowledge of its pathogenesis. According to one school of thought, summarized in a recent discussion at the Royal Society of Medicine,[1] shock and renal damage are two aspects of the same primary lesion —muscle necrosis—although their obvious results are separated in time by seven days: the shock is due to plasma leaving the blood stream and entering the injured area, and the renal damage due to substances such as myohaemoglobin and acid metabolites leaving the damaged area and entering the general circulation as soon as the local blood supply is re-established. On this view the first line of treatment is to establish an alkaline diuresis along the lines shown by Baker and Dodds[2] in 1924 to be effective in protecting animals from the renal effects of intravascular haemolysis; later, to combat shock. Another view, put forward by Patey and Robertson,[3] is that the condition, including its renal manifestations, is the result not of toxic bodies liberated from damaged muscles but simply of the loss of blood constituents into the injured limb. They accordingly treated two cases by an inflatable rubber cuff designed to prevent or diminish the local oedema; whether it had any effect other than this is rather doubtful, as treatment in the first case was started during recovery (11th day), and the second case, treated from the first day, showed no evidence of shock or renal damage except red cells and some albumin in the urine.

Recent experimental work by Duncan and Blalock from the Johns Hopkins Hospital[4] has shown conclusively that the severity of a similar type of shock produced by a crushing clamp may be modified by subjecting the damaged limb to a pressure of 40 mm. Hg in a pneumatic cuff. As, however, the treated animals which survived shock were killed before renal failure could become fatal, and as there is no record of a rise of non-protein nitrogen in the treated group, to compare with that of the untreated group, these experiments offer no ground for deductions as to the effect of pressure therapy on renal damage. To apply the results of these experiments directly to man and to advocate, as was suggested recently in these columns by Patey and Robertson,[5] routine use of such a method throughout the country may be unwise. In our present issue they give clear instructions how to apply a bandage so as to exert a pressure of about 40 to 60 mm. Hg on a limb. It appears possible from the dog experiment that a tight bandage or a pneumatic cuff will limit plasma transudation and thus the degree of shock due to such plasma loss. The oedema, however, is only symptomatic of muscle necrosis and, if plasma loss be made good, is eventually absorbed. Considering how often in such crush cases there is diminution of peripheral pulsation or actual gangrene, some anxiety might legitimately be felt about this method of preventing shock, because in inexpert hands the bandage is easily applied too tightly. The use of serum and plasma is a more generally applicable way of combating the shock of crushing injury, at all events until well-controlled observations have shown in man whether the pneumatic-cuff procedure is beneficial or not. If the renal damage is due to substances absorbed from the damaged area, as appears possible, the effect of a pressure cuff, if applied with alternate positive and negative pressures, may be to hasten absorption from the damaged area. On the other hand, a pressure adequate to diminish the reactive hyperaemia seen surrounding a necrotic area may delay absorption of such products long enough either for a natural re-establishment of normal capillary impermeability or for a therapeutic protection of the kidneys by alkali. The possible use, for such a purpose, of a tourniquet for a short time has already been proposed.[1]

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[1] *Proc roy. Soc. Med.*, 1942, **35**, 321.
[2] *Brit. J. exp. Path.*, 1925, **6**, 247.
[3] *Lancet*, 1941, **1**, 780.
[4] *Ann Surg*, 1942, **115**, 684
[5] *British Medical Journal*, 1942, **2**, 53.

It is clear, therefore, not only from this and previous discussions of the merits of various types of treatment, but also from a review of the published cases, that extreme care must be exercised before claiming any particular type of therapy as effective. To begin with, the possible fallacies inherent in the application of experimental animal results to man are well known. Then, in clinical work, such facts as these must be borne in mind: (*a*) severe cases may occasionally recover without any treatment at all[1]; (*b*) slight cases (one-third of those surveyed[1]) recover without or in spite of treatment; (*c*) other injuries such as haematoma and pressure injuries of nerves closely simulate certain aspects of crush syndrome. It is essential, therefore, in order to ascertain the efficiency of any treatment, to establish criteria by which the severity of the lesion may be estimated. The degree of haemoconcentration and the blood-pressure fall are the most useful criteria of "shock"; the height of the blood urea, the urine output, and the urinary urea concentration have been suggested by Bywaters[1] as the most useful for renal damage. In most cases severity of shock and severity of renal damage seem to run parallel: this has been thought to account for the failure to notice this syndrome in the days when transfusion was in its infancy, as severely shocked patients, untreated, do not survive to show renal failure. Furthermore, the extent of the injury, according to this survey of over 70 cases, appears to determine the severity of both shock and renal damage. These criteria are for the established case; most of them, except the extent of the injury, would be useless if by some means the signs of shock and renal damage could be prevented. Prevention to be effective probably depends on early treatment, certainly as regards shock, and probably as regards renal damage also. The above signs would not therefore be manifest. It may be that the excretion of such products of muscle necrosis as creatine and myohaemoglobin in the urine may turn out to be the criteria of complete success in therapy, together with the later muscle fibrosis. Further experimental studies and careful observation of air-raid victims and the effects of treatment from the very first are both most urgently needed.

RATIONALIZING CHEMOTHERAPY

Sulphonamide chemotherapy passed from the empirical to the rational two years ago with the discovery by Fildes and Woods of the mode of action of sulphanilamide. Their precise disclosure of its point of attack in chemical terms not only settled an acute controversy but opened the door to further developments on more sure and promising lines. What the practical fruits of this discovery may be is now becoming apparent. The action of sulphanilamide on haemolytic streptococci and other bacteria is simply to prevent the utilization of a substance essential for their growth, which is *p*-aminobenzoic acid. Thanks largely to the earlier work of Fildes and his collaborators, various other substances of defined chemical composition, now referred to as essential growth factors, are known to be necessary for the growth of certain pathogenic bacteria. There being a close and simple chemical relationship between *p*-aminobenzoic acid—the growth factor—and sulphanilamide—the growth inhibitor—it can be predicted that a compound having this relationship to another growth factor will inhibit growth by preventing its utilization. Several such inhibitory analogues have in fact been designed and found to function as expected, their relationship to the growth factor being the substitution of $-SO_3H$ or $-SO_2NH_2$ for $-COOH$. The latest product of this form of constructive reasoning, one which may prove to be of great therapeutic importance, is now described by H. McIlwain.[1] Pantothenic acid is an essential growth factor for many pathogenic bacteria, and an analogue which should be inhibitory is pantoyltaurine. This substance, as theoretically predicted, inhibits the growth of bacteria requiring pantothenic acid, including *Str. pyogenes, Pneumococcus,* and some strains of *C. diphtheriae,* and has no effect on the growth of *Bact. coli* and *Proteus vulgaris,* which do not require it. As in experiments with sulphanilamide and *p*-aminobenzoic acid, the presence or absence of growth depends on the relative concentrations of pantoyltaurine and pantothenate; the capacity of various natural fluids such as muscle extract, plasma, and urine, to antagonize the inhibitory action of pantoyltaurine varies with their content of pantothenate. It is an important point that this content in none of the materials tested was such as could prevent the effect of a moderate concentration of pantoyltaurine in the body.

There are other considerations affecting possible therapeutic use. One is the tolerance of the body, and of this it is said that 2.5 g. per kg. body weight can be fed to mice without ill effect. Another is the degree of susceptibility of individual bacterial species; there are variations in this even though the organisms concerned all require pantothenate. To express a further factor which must be taken into account McIlwain proposes the term "antibacterial index" for the ratio between the concentration of the inhibitor and that of the growth factor which it will just antagonize. The antistreptococcal index of sulphanilamide is 25,000, the concentration of this drug necessary to prevent the growth of *S. pyogenes* being this much greater than that of *p*-aminobenzoic acid present in the medium, regardless of the absolute amounts of either. But the antipneumococcal index of pantoyltaurine is 1,000 and the antistreptococcal only 500. Pantoyltaurine is in fact the most effective inhibitory analogue so far studied in this way, as judged by this criterion. Information about its actual therapeutic effect will be awaited with great interest. Meanwhile it may be seen to what elucidation of obscure problems in antiseptic action the fundamental work of the department of bacterial chemistry founded by Fildes is now leading. In another paper McIlwain[2] describes the application of similar methods to an investigation of the apparently more complex action of acriflavine. This is going considerably further than the work of S. D. Rubbo, M. Albert, and M. Maxwell,[3] who have nevertheless by a study of the mono-aminoacridines done much to relate chemical structure with antiseptic and other biological activity. It is not too much to say that the work of Fildes and his colleagues will rank as an achievement at least equal to that of the original discovery of prontosil itself. Domagk's work, although everything else has followed from it, left the whole subject in the darkest theoretical obscurity; that of British workers has made its mechanism plain. The difference between their two methods is that between delving in a lucky dip and constructing to a design.

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[1] *Brit. J. exp. Path.*, 1942, 23, 95.
[2] *Biochem. J.*, 1941, 35, 1311.
[3] *Brit. J. exp. Path.*, 1942, 23, 69.

THERAPEUTIC USES OF CURARE

Sir Walter Raleigh brought the arrow poison of the Aroras from "the large and beautiful land of Guiana" in the sixteenth century, but it was not until 1865 that Claude Bernard showed that its principal action was the paralysis of transmission at the neuromuscular junction. Clinical interest in curare was renewed after the discovery by Bremer in 1927 that small doses, insufficient to paralyse the intact skeletal musculature or to embarrass respiration, selectively released the spasm of decerebrate rigidity. Similarly, West[1] observed a selective response with subparalytic doses in human spastic paralysis, a so-called "lissive effect," which was not present in all samples of curare and was not associated with any known constituent. This variation in the composition of the drug may explain other anomalies in its use as an adjunct in the physiotherapy of spastic paralyses. Thus, whereas Burman[2] noted a selective release of plastic muscular rigidity and spasm, lasting two or three days on intramuscular injection, Bennett[3] found these desirable results far more transient in comparable cases. However, Denhoff and Bradley[4] have confirmed Burman's results on six children with cerebral palsy whom they studied for four months. A standardized stable curare administered intramuscularly gave improved relaxation in the hypertonic muscles for about four days, so that it was necessary to inject their patients only twice weekly. Efficiency combined with safety was attained only when the dosage was determined individually, by noting the responses to increasing doses; the margin of safety is not very large and adequate supervision was required the whole time. On the other hand, when the optimal dose had been found the response was remarkably uniform. Denhoff and Bradley abandoned the intravenous route of administration because of the prevalence of paralytic symptoms, with evidence of respiratory embarrassment. They confirmed previous observations that with large doses the paralysis affects the facial muscles first, followed by relaxation of the neck, trunk, and limbs. During the acute stage there may be pallor and excessive perspiration, confusion, diplopia, and slow shallow respirations. The symptoms may be alarming, but pass off without treatment in 40 minutes, though for the next 24 hours the lethargy is sufficient to interfere with physiotherapy. Von Euler[5] has shown that intracisternal injection of curarine in animals may cause a profound stimulation and even convulsions; although this is hard to equate with the clinical findings, it does suggest that some of the acute symptoms may be due to a central action of curare, an action that is normally overshadowed by the peripheral paralysis. Dangerous symptoms may be averted by injection of prostigmine or adrenaline. The paralytic as opposed to the "lissive" action of curare has been employed in the symptomatic treatment of various convulsive states. Thus curarine has even been used as an intravenous drip, 1/4 mg. per kilo per hour, to prevent the weakness and fatigue which hastens death in tetanus,[1] but the number of recorded cases is not yet sufficient to estimate its value. However, Bennett has used curare to prevent fractures in leptazol shock therapy with considerable success.

The search for curare substitutes has been encouraged by the difficulties in obtaining the drug from the South American witch-doctors. Two types of substitute have been investigated: quaternary ammonium compounds and erythrina derivatives. Quinine methochloride has a curariform action even on oral administration, and Bennett has experienced some success using 3 to 4 grammes daily in eight cases of spastic athetoid paralysis. Erythroidine hydrochloride has also been studied in Parkinsonism and spastic paralyses[6]; the toxic reactions seemed too severe to allow continued trials, although, as they are out of all proportion to those experienced in animal experiments, other derivatives of erythrina may prove more useful.

INCLUSION CONJUNCTIVITIS

Immediately on the publication in 1907 by Halberstaedter and v. Prowazek of the finding of minute bodies in the epithelial cells of the trachomatous conjunctiva the validity of these findings and their specific significance were called in question by many. The issue became more confused when Stargardt in 1909 demonstrated inclusion bodies in various ocular conditions, among them a case of bacteriologically negative ophthalmia neonatorum, and when Haymann observed inclusion bodies in a series of cases of gonococcal ophthalmia neonatorum. It came to be widely believed that inclusion bodies were a reaction product of the epithelial cells to either the organism of trachoma or the gonococcus, but that it itself was not an aetiological factor. Herzog attempted to correlate ophthalmia neonatorum with trachoma by suggesting that trachoma was produced by an evolutionary form of the gonococcus adapted to parasitism on the epithelial cells, whilst Lindner, with more justification, divided ophthalmia neonatorum into two groups—one due to the gonococcus and the other to inclusion bodies, because he found that the bacteriologically negative cases of ophthalmia neonatorum showed these bodies. He linked this inclusion body ophthalmia with trachoma, regarding trachoma as a modified form of genital infection. This was because a macacus and a baboon developed a conjunctivitis indistinguishable clinically from trachoma when inoculated with the vaginal secretion of a mother whose child, shortly before, had been born with inclusion ophthalmia neonatorum. That the inclusion bodies may have been the infective agent was suggested later when Halberstaedter and v. Prowazek found them in the genital epithelium of a mother giving birth to an infant with inclusion blennorrhoea. The unity of trachoma and inclusion ophthalmia neonatorum is still upheld by Lindner, who regards both affections as a manifestation of the same agent; trachoma to him is essentially a genital infection, and inclusion blennorrhoea is the more primitive form of trachoma. Inclusion blennorrhoea, in his terminology, is paratrachoma and has the same relation to trachoma as paratyphoid has to typhoid.

Inclusion conjunctivitis takes several forms, and may appear as a bacteriologically sterile ophthalmia neonatorum, as a mixed infection with a gonococcus and other organisms,[7] or as follicular conjunctivitis in children and adults, particularly in the form of so-called swimming-bath conjunctivitis. These local conditions find a counterpart in a non-specific urethritis in men and cervicitis in women: inclusion bodies are found and the genital infection runs a mild course.[8] The problem of the relation of inclusion conjunctivitis to other virus infections, such as trachoma and lymphogranuloma inguinale, is now much simplified by the clear recognition of these various types. The apparent confusion, which was precipitated by the first description of inclusion cells in ophthalmia neonatorum, has led to a valuable consolidation of our knowledge of ophthalmia neonatorum and of a whole group of follicular reactions in the conjunctiva, as well as a clear recognition of yet another type of venereal disease. The inclusion bodies of trachoma are distinct from those seen in ophthalmia neonatorum and genital infection of the inclusion type.

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[1] *Lancet*, 1936, **1**, 12; *Proc. roy. Soc. Med.*, 1935, **28**, 565.
[2] *Arch. Neurol. Psychiat.*, Chicago, 1939, **41**, 307.
[3] *Amer. J. med Sci.*, 1941, **202**, 102; *J. Amer med. Ass.*, 1940 **114**, 322.
[4] *New Engl J. Med.*, 1942, **226**, 411.
[5] *Acta physiol. scand.*, 1941, **2**, 327.
[6] *Arch. Neurol Psychiat.*, Chicago, 1941, **45**, 649.
[7] *Amer J Ophthal*, 1942, **25**, 52.
[8] *Arch Ophthal*, Chicago, 1942, **27**, 91.

DOCTOR, AND SOLDIER TOO

BY

T. P. BUIST, M.A., B.Sc., M.B., Ch.B.
Lieut.-Colonel, R.A.M.C.; Chief Instructor, No. 1 Depot, R.A.M.C.

From time to time articles have appeared in this and other journals on various aspects of the life and functions of the Army medical officer. It must be assumed that any prospective R.A.M.C. officer who has access to them will have read these articles, yet it is noticeable that many of the medical officers entering the Services have failed to appreciate that an Army doctor in almost any position must have a working knowledge of various military subjects if he is to function efficiently.

The metamorphosis, for such it is, from civil to military medical practice involves three important changes: (1) a domestic change, from private to communal life; (2) a change of sphere, from work in a relatively simple and static community to work in a complex, disciplined, and essentially nomadic organization; (3) a change in horizon, in that whereas in civil practice the doctor's primary concern was medical care of the sick or hurt, he is now joining a Service in which care of the sick and hurt is ancillary to medical care of the healthy. Although the implications of the first of these changes are generally realized by the prospective medical officer, those of the second are usually only vaguely sensed, and those of the third change seldom appreciated at all.

Functions of the Army Medical Officer

The general functions of the Army M.O. fall in the main into one of the following three groups:

1. *Maintenance and Servicing*.—The typical representative of this group is the regimental medical officer, more formally known as the officer in medical charge of effective troops. His work and responsibilities have been ably described in the articles already referred to (Middleton, 1940; Robinson, 1941; Burges, 1941; Tidy, 1942). Briefly, the R.M.O. is the commanding officer's technical expert in the maintenance of the fighting health of his unit. As such, everything which directly or remotely may affect the health of the officers and men is his concern. If he is to fulfil his function efficiently not only must he be a competent doctor but he must have an adequate knowledge and understanding of the work of the unit he serves.

2. *Salvage*.—Under this heading may be grouped all units whose responsibility is the collection of casualties and their delivery in repairable condition to the repairing units. Its typical representative is the Field Ambulance. The Field Ambulance medical officer must be active, self-reliant, a leader of men, and able to find his way about in unfamiliar territory and amid the complexities of the military formations in battle. He must be a competent soldier as well as a doctor.

3. *Repair and Reconditioning*.—Under this heading come the C.C.S., hospitals of all types, and units responsible for the control of post-hospital convalescence. It should be noted that repair and reconditioning aim at the return of the repairable casualty to full military health as expeditiously as possible. This objective must never be forgotten. Even in this group the medical officer, be he a specialist or not, must possess military knowledge and understanding, if only to enable him to turn out his work in the form most useful to the army he serves.

But there are additional and more personal reasons for his possession of military knowledge. Let us take the case of an officer who has entered the R.A.M.C. as a specialist or graded specialist in, say, anaesthetics. It is understandable that, knowing nothing of the Army, he may tend to assume that his work will be much the same as it was in civil life and that knowledge of such things as map-reading, organization, military law, soldiers' affairs, and so on will not concern him. He may be sent to work in a C.C.S. or a military hospital and spend most of his time in his specialty. But it is unlikely that this will occupy him fully all day or every day, and in a military hospital there are many other duties in which he will be expected to bear his share when he is free. Not a few of them will require military as well as medical knowledge. He may, on the other hand, be sent to join a mobile surgical unit as its anaesthetist, perhaps to replace another who has become a casualty. He may find himself reporting for this duty somewhere in the desert, informed that his unit is at "Point X," 30 miles away, given a truck and a driver, and expected to carry on, perhaps in the dark. If he does not know how to find his way about he is likely to get lost; he may cause his driver and possibly others to lose their lives; and the mobile surgical unit may continue to be short of an anaesthetist. Even the specialist must be a fitted piece in the military machine. If not, he may be a potential spanner in the works.

The Preliminary Course for R.A.M.C. Officers

Doctors share with chaplains a privilege which is at the same time a disadvantage, in that they normally enter the Army as commissioned officers without any previous service or experience in the ranks. All other officers are now commissioned only after a period of service in the ranks followed by training in an O.C.T.U. An untrained newly commissioned medical officer cannot avoid feeling a notable greenhorn in any congregation of officers.

The preliminary course of instruction for R.A.M.C. officers is designed to reduce the acuteness of this disadvantage. It comprises three weeks' training in the officers' wing of one of the R.A.M.C. depots, followed normally by a further week at the Army School of Hygiene. A description of the course at one of these depots has already been published (Cameron, 1942) and may be accepted as typical. During the course the metamorphosis is performed under expert and sympathetic guidance. The domestic change, shared with others at the same stage, becomes less drastic; the change of sphere, with new understanding, comes naturally; the change of horizon begins to develop. The officer emerges from the metamorphosis a fledgeling perhaps but not a self-conscious greenhorn, with a growing instinct of how to find his way about in his new work, with an increasing tactical sense, and feeling and looking fitter physically than he has done for years.

It has been argued repeatedly that it is possible for a doctor to turn himself into a competent Army medical officer without attending a preliminary course of instruction; that, in fact, many have done so; and that such a course is a waste of valuable professional time. An analogous argument can be advanced that it is theoretically possible for a suitably gifted individual to become a competent doctor without attending a medical school. The medicine we practise to-day began with the work of such men. In both cases the process is hard on the aspirant and unfair on the patients. The path is long and rough, and inevitably strewn with unnecessary casualties. That this is so in the case of the Army medical officer, those who have had to start work without a preliminary course are usually the most ready to admit.

Finally, let it be said that the preliminary course is not a cramming course. Its aims are: to define the objects and principles of the medical care and management of soldiers; to give a general picture of the military machine and its medical organization, with close-ups of various aspects of a medical officer's life and work; to teach the new medical officer how to start to find the answer to "What does A do now?" in various circumstances. It is in essence a reconnaissance; and, to quote a well-known military axiom, "time spent in reconnaissance is seldom wasted."

I wish to thank Col. W. Foot, *M.C.*, Commandant, No 1 Depot, R.A.M.C., for permission to submit this article for publication.

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It is reported (*Dtsch. Militär arzt*, 1941, **3**) that some 2,102 persons (82%) of the occupants of a camp in Germany were attacked by Flexner dysentery, 20% of them on the first day and the rest in the course of six weeks. The incubation period was three to six days, the illness lasted on the average for two to three weeks, and the death rate was 3 per 1,000 In the first three days the bacteriological demonstration of bacilli was easy, but it was difficult towards the end of the first week, when the stools were slimy and watery. Extensive hygienic measures had to be taken in order to prevent the disease spreading. Treatment with rivanol is stated to have given excellent results.

Reports of Societies

PAEDIATRICS IN MEDICAL PLANNING

The fourteenth annual meeting of the British Paediatric Association, recently held at Windermere, was devoted to a discussion on the future of paediatrics, having in mind the changes in the organization of medical services which will follow the war.

Dr. J. C. **SPENCE** (Newcastle), who opened the discussion, said that three branches of paediatrics had to be planned for—namely, domestic practice, public paediatric services (such as child welfare and school medical care), and, finally, the hospital and institutional treatment of children. To ensure the success of each of these branches it was necessary to have active and progressive teaching units, preferably a hospital or a clinical unit closely associated in a hospital centre with other teaching hospitals and university scientific departments, and providing not fewer than 100 beds, with adequate out-patient and clinic facilities. These should serve as consultation centres for both private practitioners and the public health services. In the interests of both clinical science and the welfare of patients the artificial segregation of patients into medical wards and surgical wards should be abandoned; patients should be re-grouped into clinical units, with wards arranged according to the age of the patients and the character of the disease, and to these units physicians, surgeons, and specialists should be attached. Another problem to which the British Paediatric Association should address itself was the form in which advice and constructive criticism should be given to the Ministry of Health in formulating its paediatric policy. He urged the setting up of an advisory committee—rather than the appointment of a single adviser—membership of which would be limited to a certain term of years.

Children's Nursing

Dr. **ALAN MONCRIEFF** dealt with a memorandum which has been put forward by the London members of the Association. He called attention in particular to the necessity for close co-operation with the health authorities as regards school medical work and child welfare work; to the danger of children's hospitals losing their identity and becoming departments of general teaching hospitals, and to the further danger of the special children's nurses' register being abolished. He said that certain children's hospitals had recently appointed matrons without this diploma. Dr. **REGINALD LIGHTWOOD** said that in London as in other large cities a university centre for paediatrics was certainly needed for postgraduate training, and should be set up without delay. It should have a professor of paediatrics, and the hospital and academic sides of preventive paediatrics should be encouraged. Dr. N. **CAPON** (Liverpool) referred to the shortage of applicants for training as sick children's nurses. This would become even more serious unless something were done to raise the status of such nursing. In his view the problem could not be satisfactorily settled by accepting a short period of service in children's wards as adequate training for paediatric nursing. He suggested that the association should make representations to the General Nursing Council that the register of sick children's nurses should be maintained. Dr. F. M. B. **ALLEN** (Belfast) urged that the interim report recently presented by its committees to the Medical Planning Commission should be carefully studied by paediatricians, and the Commission made acquainted with their views.

State Medicine and Paediatrics

Dr. R. **COLLIS** (Dublin) said that State medicine in effect meant the handing over of the medical profession to become part of the patronage of a central or local authority whose main idea would always be "safety first" or the maintenance of the *status quo*. What was needed was not a nationalized service, but a national medical service through a more complete national health insurance system, including provision for children. What he called "university medicine" should be made the centre of the medical organization, and in paediatrics the Hospital for Sick Children, Great Ormond Street, might well be the centre of paediatric organization, with a chair of paediatrics, the professor, and not the senior physician, holding the predominant position at the hospital. Dr. **WILFRID SHELDON**, while emphasizing the need for a post-war paediatric policy, said that perhaps the more immediate need was the solution of the numerous clinical problems of childhood which the war had created. He thought the association should approach the authorities concerned as an organization prepared to advise on, and assist in, measures to deal with such questions. Dr. C. W. **VINING** hoped that the children at any rate would not be caught up into national health insurance. There should be a comprehensive medical service for children charged with supervising the well child in addition to the child who was ill. In such a scheme the family doctor would be in charge of a unit comprising perhaps 1,000 children, with their mothers, and he would work in close relation to a hospital service providing out-patient consultations and in-patient beds.

In further discussion the part which the British Paediatric Association might take in the future planning of paediatrics was emphasized by Dr. K. D. **WILKINSON**, Dr. A. G. **OGILVIE**, and Dr. **DONALD PATERSON**. Dr. **RICHARD ELLIS** raised the question of regional planning in paediatrics and the need for the establishment of consulting centres visited by physicians on the staff of a university paediatric unit. He felt also that the experience of paediatricians of all nationalities would be required in combating the effect of widespread famine conditions in occupied Europe. Dr. L. G. **PARSONS** (President) urged closer co-operation between hospitals and welfare centres, and also the greater stressing of paediatrics in the final examination of students.

A resolution was passed instructing the committee to interest themselves in, and advise any appropriate authority on, current paediatric problems, and for this purpose it was empowered to co-opt members both from the Association and from other bodies.

Correspondence

Special Clinics and Planning

SIR,—The figures you publish for the rising death rate of pernicious anaemia make sad reading (Aug. 8, p. 176). A similar rise is occurring in the death rate of diabetes mellitus (Peck, F. B., 1941, *Southern Med. and Surg.*, **103**, No. 10). Yet we know that in efficient hands, such as those of Joslin and Wilkinson, the mortality from these diseases can be greatly reduced. It has now been my experience to found anaemia clinics at two teaching hospitals in succession. At each hospital a large proportion of the patients with pernicious anaemia who had been treated as in-patients were in bad shape when they were followed up. They subsequently responded to treatment and remained well while attending the anaemia clinic. Undoubtedly the patients were to blame for neglecting treatment when they felt themselves cured. Nevertheless it is clear that private practice has not provided a satisfactory solution for the care of patients with diabetes mellitus or pernicious anaemia, who require lifelong maintenance treatment under laboratory control. It is unlikely that local health centres dealing with populations of the order of 25,000 will achieve much better results.

Special clinics for this type of illness must be confined to a relatively small number of key hospitals in each area. Moreover, their setting-up must be carefully controlled, for there is a real danger that clinics for individual diseases may multiply too fast and do harm in the end to the general practice and teaching of medicine. There is an obvious distinction between diseases like peptic ulcer and asthma, in which the patient takes no harm if he neglects treatment when he feels well, and pernicious anaemia and diabetes mellitus, where such neglect may prove fatal. Finally, methods must be devised for keeping in touch with the practitioner, so that he does not feel robbed of his interesting cases and is in a position to deal with the dangerous emergencies which may arise when a patient with pernicious anaemia or diabetes mellitus contracts another illness. This is an important section of medical planning which as yet has hardly received the consideration it deserves.—I am, etc.,

Oxford L. J. WITTS.

Medical Planning and Research

SIR,—There appears to be one aspect of future planning in the interim report of the B.M.A. Planning Commission which has not received the attention I believe it deserves, even if one remembers that the report is pragmatic and deals primarily with the practice of medicine. I refer to the question of medical research, both clinically and in the laboratory. In my own field of endocrinology most of the fundamental advances in the understanding of disease and its alleviation or cure have depended upon experimental research, and I doubt if this is qualitatively less true of other fields of medicine. Most clinicians, during their practice of medicine, have felt with deep regret the inadequacy of the therapeutic resources available to them, and this has led in some instances to a keen and healthy interest in the social and preventive aspects of medicine, which branches of medicine are rightly assuming increasing importance. No one would doubt that medical research in this country is also developing on sound lines, but I feel that after the war its growth and depth can be vastly accelerated and augmented, and, further, that many of those practising medicine could participate in a very useful manner.

In the first case no one should be able to attain consulting status who has not made his contribution to the advance of medical knowledge. This would, in practice, mean that all medical registrars (at least in teaching hospitals) would be required to undertake research for a period of two years or more in the research department of their hospital. In my opinion no one is unsuited to participate in research, although the quality of the results is bound to vary enormously. Nevertheless, anyone working in a proper research department is bound to make a contribution to medical knowledge, even though it may be of a negative character. We must also destroy the opposite delusion that a brilliant research worker is necessarily, or even probably, a bad clinician. It may well be, as some contend, that research work at its optimum is a full-time job carried out by those whose lives are entirely devoted to it, but this does not mean that valuable research cannot be carried out by others, or that we should throw away any opportunity of creating a research army working in conjunction with leaders in this field, as indicated above. Such research work carried out over a period of years would enable those who ultimately restrict their activities to clinical work to appreciate the qualities of their research colleagues and to interpret their work. It might also help some research workers to appreciate the potential quality of collaboration with their clinical colleagues.

Research in medicine, however, is by no means limited to the laboratory, and there are wide opportunities in the clinical and pathological fields. Such work is being undertaken every day by clinicians in hospitals in collaboration with their colleagues in the pathological departments. I think, however, that it is gradually being realized that the properly trained medical practitioner can also make valuable contributions in the clinical side of this field providing that his collaboration is welcomed, stimulated, and even sometimes directed, and also providing that he is given the necessary time and facilities. I believe that any post-war scheme for medical reconstruction should bear these facilities in mind and make them practicable from an economic aspect. Is it not realistic to believe that this approach will bring to light more than one James Mackenzie or Frederick Banting?

If the above considerations bear fruit, and if an economic disparity between research work and medical practice is adjusted equitably, I think that the whole field of medical practice will be enriched by the creation of a research atmosphere and activity that is bound to yield valuable results in our fight against disease.—I am, etc.,

London, W.1. S. L. SIMPSON, M.D., F.R.C.P.

Social Medicine and State Medical Service

SIR,—Having had a long experience of public health work as well as general medical practice I venture to submit a few suggestions on this subject. Medical reform has been "hanging fire" too long, and even when there has been reform there has been obstruction to progress. The National Health Insurance Act, for instance, included a scheme for local committees to speed up preventive measures; this was never put into operation. Insurance Committees also had power to press public health authorities to speed measures to improve health, but they were never used as they should. Later, when the Ministry of Health Act was passed, it was expected there would be unification of medical services; this also has not been achieved, as shown, for example, by the industrial medical service being under one department and the school medical service under another, while the N.H.I. service is distinct from the local public health service. I remember attending a large meeting in Bristol in 1920, after the passing of the Ministry of Health Act, at which Lord Dawson of Penn and Sir Dawson Williams, Editor of the *B.M.J.*, were present; all were enthusiastic at the prospects of great things being done, yet all of us know what happened after.

Now we are busy again. In 1938 I gave a presidential address to the Derbyshire Branch of the B.M.A. on "Medicine and the Public Health," in which I suggested that the N.H.I. service should be joined locally with the public health service under a medical officer of health, who would be of a new type—more of a physiologist and consulting physician with a bent for research than an administrator. He would have at his disposal records of the different general diseases (as well as infectious diseases) that the local population suffered from through the N.H.I. part of his work; and similar information on the illnesses caused by or related to work in factories, including disability, through the industrial section of his organization. In that paper I gave much detailed information obtained from sources not usually open to a M.O.H., and the picture was an astounding one.

What I desire to stress is this: (1) Medicine must be integrated as one organized body under the State, including in its scope general practice, the health services, industrial medicine, the school medical service, and maternity and child welfare work; and these services should be linked with the large hospitals and universities and research centres. An active intelligence bureau should be available to it. (2) There must be a different approach to medical reform; delay like that from 1920 to 1942 in getting things done is inexcusable, and we medical men are to some extent to blame.

Medical reforms are, unfortunately, as to their actual embodiment in law, largely in the hands of lay persons unacquainted with details and ignorant of what is vital and what is not. For this reason, therefore, we medical men must not hold ourselves aloof from medical politics: rather must we, flushed with humanitarian feeling, push forward for what is needed, even with violence (in the moral sense) if necessary; provided, of course, what we advise is in keeping with modern medical knowledge and with a sane philosophical outlook.—I am, etc.,

Glossop E. H. M. MILLIGAN.

A Physician Free from Bondage

SIR,—In these days, when the art of medicine is in danger of losing its individualism by submergence into the civil service, it is refreshing to look back at such people as Sir Wilfred Grenfell. Just fifty years ago a young doctor who had worked under Sir Frederick Treves landed from a sailing ship on the barren forbidding coast of Labrador. He had abandoned that security which coaxes so many of us from our more ambitious aims, and exchanged a promising career in London for the life of a pioneer.

Grenfell crossed the Atlantic in characteristic fashion, sailing his own ship, which was no larger than the famous *Matthew*, and following almost exactly the course taken by John Cabot just four hundred years before. He found no medical or social work. At the first port of call he was led to a tiny turf-covered hovel in which lay the bread-winner of the house dying of pulmonary tuberculosis and surrounded by a forlorn family of six half-starved children. During the first eight weeks of that voyage he saw over nine hundred Anglo-Saxon and Esquimaux patients. Unlimited opportunities presented and Grenfell accepted the challenge. Like his ancestor, Sir Richard Grenville of the *Revenge*, he was prepared to take on any odds.

He built hospitals and nursing stations, schools and industrial centres. When it became customary for the people to leave their orphaned children to the doctor, he founded orphanages. Finding deficiency diseases common, he encouraged the cultivation of vegetable gardens and made greenhouses to foster the young plants. Ice and uncharted reefs take their toll of fishing schooners to this day, but many vessels have been saved by the dry dock that Grenfell constructed. Some of his ventures, such as the introduction of reindeer, failed, and his endeavour to improve the economic lot of the people sometimes stirred jealous opposition, but he had no personal ambition and feared no one. Each season saw him on his travels. In summer he navigated the hospital ship *Strathcona* into every harbour of the six-hundred-mile coast. In winter he visited patients by dog-sledge, driving his own team of eight husky dogs. These dogs he had trained himself, and they were able to haul an 800-lb. load all day, averaging 8 to 10 miles an hour.

Sir Wilfred Grenfell was a visionary who had the courage to follow his dreams and turn them into reality. He was concerned only with the welfare of the people he served. On their behalf he fought against ignorance and red tape and won a greater victory than he knew. On Oct. 9, 1940, Sir Wilfred Grenfell died. But his inspiration lives on in the work that he created.—I am, etc.,

C. Denley Clark.

"Orthopaedic" or "Orthomorphic"

Sir,—I am in complete agreement with the statement made by Brigadier Max Page (July 18, p. 79) on the misuse of the term "orthopaedic," but I venture to disagree with his assertion that the term used as an adjective was introduced into France in 1828 by Delpech. Actually the term was already in use in France at the beginning of the 18th century, and its first official introduction into medical terminology was by André in 1741 (*André, L'orthopédie ou l'art de prevenir et de corriger, dans les enfans les difformités du corps,* Paris, 1741, 2 vols.). As we can see, originally there was no misuse, and André carefully defined the limits. This term was again used by Levacher in the *Mémoires de l'Académie Royale de Médecine* in 1768.

Brigadier Page also affirms that the term "orthopaedic" had a much wider application already in the latter half of the 19th century; in fact it was a great deal earlier. Discussion on the alleged misuse of this term started in France at the beginning of the 19th century with the same etymological objections now raised by Brigadier Page. Delpech, whom Brigadier Page claims to have been the originator of this term, was in reality its greatest opponent, his reason being that at that time the term "orthopaedic" was totally inadequate to express its wider use. He wrote: "*De l'orthomorphie par rapport à l'espèce humain ou recherches anatomo pathol. sur les causes, les moyens de prevenir, ceux de guérir les principales difformités,*" etc. (Delpech, Paris, 1828, 2 vols.). This plainly shows his opinion of the term used. Another expression—namely, "orthosomatic"—was introduced by Bouvier (*Dict. de Méd. et Chir.,* Paris, 1834, t. 12, p. 293). But it was Delpech's term which was adopted by the contemporary medical dictionaries. Under "orthomorphie" they understood: l'ensemble des connaissances, qui ont pour but de prevenir et de corriger à tout âge les déviations," etc. (*Dict. des Dict. de Méd.,* Paris, 1850, t. 6, p. 110). For my part I consider the term "orthomorphic" ideal from an etymological and practical point of view, and would like to see it introduced into medical terminology.—I am, etc.,

French Hospital, London, W C.2 S. Galewski, M.D.

Use of the Term "Orthopaedic"

Sir,—In your issue of Aug. 1 (p. 142) Mr. H. Jackson Burrows asks me to explain why I have changed views expressed in 1935 and which he thinks worth quoting. In so far as the tone of my letter (July 18, p. 79) may be deemed at variance with those views, I should say that any change in my opinion has resulted from recent observations in the surgical organization of the Army Medical Service. We may tolerate slovenly and unscientific nomenclature in peacetime and yet find its use an encumbrance under war conditions.

In my letter to you I instanced two examples of undesirable repercussions from the present application of the term "orthopaedic": the remedy to such confusions may not be as simple as I suggested—but I think it should be sought.—I am, etc.,

C. Max Page.

Sir,—Brigadier Max Page has raised an important point in his letter of July 18. The regulations of the E.M.S. enumerate a certain and considerable group of injuries which must be treated at orthopaedic centres and hospitals. The men staffing these centres are termed "orthopaedic surgeons." Some have had a wide training and experience in traumatic surgery and are very competent to treat patients with multiple injuries; others appear to have practised orthopaedics in the sense of the treatment of deformity and surgical tuberculosis, and some of these seem not to have the experience necessary to take charge of patients suffering from acute and multiple injuries. Disputes on definitions are unsatisfactory. When, however, the regulations of a service such as the E.M.S. lay down that certain injuries must be treated at orthopaedic centres, it is desirable to know what is meant by the term "orthopaedic surgeon."

Since trauma is not confined to the bones, the staff of a traumatic unit needs a wide training as well as knowledge of the treatment of fractures. I suggest, therefore, that a general training would be of rather more value in qualifying a man to be a surgeon in a so-called "orthopaedic centre" of the E.M.S. than previous experience in "19th century orthopaedics."—I am, etc.,

London, S E 1. T. W. Mimpriss.

Sir,—I suggest the following to replace the above term: "orthodemic" or "orthochōldemic" (ὀρθόω, χωλός, δέμας, make straight, maimed, living body). The full term may be too fussy, so "orthodemic" is perhaps preferable.—I am, etc.,

Glossop E. H. M. Milligan, M.D.

*** This correspondence is now closed.—Ed., *B.M.J.*

Animals and Plague

Sir,—The interesting note by Sir William MacArthur (July 25, p. 106) on the historical association of rats and plague, raises the question whether our forefathers had any idea of the rats' part in spreading infection. I am inclined to think that towards the end of the period when plague was common in Western Europe some such suspicion must have arisen. Arnaud Baric (quoted by Grimbert, *J. méd. Paris,* 1903, **15**), writing in 1646 on precautions to be taken against plague, says: "Si l'on pouvait faire mourir tous les rats ce ne servit que bon." More definite evidence, perhaps, is the fact that in 1647 the town council of Aberdeen, who seem to have had rather a flair for epidemiology, included in their anti-plague measures "poysone laid for destroying myce and rattons."

Gilbert Skene's reference to moles was presumably derived from Avicenna. Why he added "the serpent" is difficult to say. He practised in Aberdeen and Edinburgh, and probably had little opportunity for studying the habits of serpents. But statements regarding the appearance of reptiles, especially frogs and toads, when plague was imminent are common among early writers.

The pig was regarded with suspicion. He was supposed to be susceptible to the disease, and his flesh, according to Rhazes, was a specially unsuitable diet for the plague-stricken. Boccaccio says that he saw two swine rooting among the rags of a man who had just died of plague, and that in less than an hour both were dead. Another pig, equally ill advised, was guilty of the same indiscretion at Mendenblick in Holland, and served to point a moral in various plague tractates. Even though in good health the pig, owing to his neglect of personal hygiene, was considered a danger to the community. Sennertius emphasizes that in time of plague it is essential that the streets be cleared of droppings of swine and geese, because their smell aids the spread of infection.

Dogs and cats appear to have been regarded as carriers rather than as themselves liable to contract plague. Victor de Bonagentibus refers to the risk of their sleeping on infected material. Ambroise Paré thought they might carry infection by eating the remains of food left by patients, but that they rarely acquired the disease themselves—"pource que leur temperament n'y est pas disposé." On the other hand Mercurialis believed that domestic animals might become infected and transmit the plague to persons or fomites. Municipal authorities probably paid little attention to those epidemiological speculations, but killed off stray dogs and cats on the chance of their being dangerous. The goat, however, was the friend of man. His natural odour was supposed to counteract the plague venom in the air: "C'est qu'une mauvaise odeur chasse l'autre," Paré explains. Mercurialis, dining with the Chancellor of Hungary, was surprised to see a large goat in the room and was informed that it was kept there as a prophylactic! The spider also played her humble part. Her web was supposed to have a special power of absorbing the plague venom, and domestics were sometimes forbidden to remove cobwebs from rooms when the disease was prevalent. Diemerbroeck regarded this as folly, pointing out that if cobwebs did absorb the infection of plague they must be most dangerous things to have about a house and should be removed and burned as soon as possible.

Those old notions are something more than ancestral absurdities, fit only to amuse a better-informed age. They were founded, often quite logically, on the orthodox doctrines of the times, and are not without importance to those who are interested in the evolution of epidemiological theory.—I am, etc.,

Dumfries JOHN RITCHIE.

Rehabilitation

SIR,—The obvious and tremendous advantages of rehabilitation centres to the individual and to the man-power of the country, quite apart from the fact that the Ministry of Health has been urging the necessity for rehabilitation for the treatment of casualties in the Forces, make one read with interest every article written on this subject. Such interest is especially roused when an article appears written by so authoritative a person as Sir Robert Woods (July 25, p. 89), who so fully appreciates the importance of, but also the difficulties attendant on, rehabilitation centres.

One sympathizes greatly with his observations on the need for trained personnel and the impossibility almost of obtaining or retaining these important people. But when one reads the final paragraph of his article, one gasps at the tragic consequences of the, presumably, authoritative statement on the policy of the Ministry of Health:

> "The policy of the Ministry is, at any rate at present, *not* in favour of the setting up of rehabilitation 'centres.' *After* the war, however, it is almost certain that such institutions will be found necessary, and the present emergency might, if the individuals were available, lead to the equipment of a number of men and women with a training which would render them competent to supervise a form of therapy *whose post-war establishment will represent a great and long-advocated advance in the treatment of injury and disease.*" (The italics are not in the original.)

Is it not too pathetic an exposure of lack of foresight and of present endeavour to suggest, even, that a form of therapy which represents such a great advance in treatment shall not be available for the men and women who are fighting for us, whether at the front or in our bombed cities, or in munitions and other wartime efforts? Is not our man-power, as it is, so comparatively small that it is of paramount importance that every man and woman shall be restored to full health at the earliest moment possible? Have we not yet sufficiently learnt from past disasters that the attitude of "mañana" must be replaced by one of immediate and thorough preparedness? One can only hope that this statement of Sir Robert Woods does not truly represent the attitude of the Ministry of Health, and that this Ministry will do everything possible to encourage the establishment of rehabilitation centres.—I am, etc.,

Ruthin H. MORRISTON DAVIES.

Urethral Instrumentation

SIR,—I willingly accede to Lieut.-Col. Henry Smith's request (July 25, p. 111) for an account of the present-day teaching of how to pass a silver-plated catheter, but a practical demonstration by a surgeon experienced in urethral instrumentation is the best way to learn the correct technique. This is the most difficult of all types of catheters to pass successfully, but under certain conditions it may be the only one which will relieve the patient's distress.

After sterilization by boiling, lubricate the whole instrument with medicinal paraffin. The custom of dipping the tip only of a catheter in a lubricant is a bad one. Friction between instrument and mucous membrane must be reduced to a minimum. The penis should be held on the stretch at an angle of 40 degrees with the pubis. The tip of the silver catheter is inserted into the urethra, its shaft being held parallel with the abdominal wall. With the penis still on the stretch gently guide the instrument along the urethra until it reaches the fixed portion of the tube—that is, the bulbous urethra. Then raise the catheter slowly until the shaft is at right angles to the pubis, the penis at the same time being depressed towards the perineum. The tip of the instrument is now in contact with the sphincter urethrae. The final movement consists in a slight relaxation of the hold on the penis and pressing the catheter down until it comes to lie between the two thighs. During this part of the manipulation the curved portion of the instrument is sliding along the membranous and prostatic urethra into the bladder. Never allow the tip of the catheter to deviate from the middle line. If it does, a false passage results.

For each type of catheter—metal, rubber, or gum elastic—there is a special technique. As Col. Henry Smith wisely states, "The subject is a most important one." I am glad Dr. E. C. Atkinson in his excellent letter has referred to Mr. Ogier Ward's important contribution to this subject.—I am, etc.,

London, W 1 CLIFFORD MORSON.

Ileostomy for Ulcerative Colitis

SIR,—I read with much interest your report on ulcerative colitis (July 25, p. 107), but I cannot agree with the statement that the mortality is high in cases of ileostomy. I first performed this operation in 1917 for cases of chronic amoebic dysentery when I was a surgical specialist in Mesopotamia. The operation was reserved, as a last resort, for cases which failed to respond to medical treatment, and in the majority the patient improved to such an extent that he could be evacuated to the base.[1]

In my experience appendicostomy is useless for any form of colitis. It provides no rest to the bowel and merely permits of irrigation, and the caecum can easily be reached by rectal irrigation. Ileostomy provides maximum rest to the inflamed colon, and excoriation of the skin in the region of the ileostomy can be prevented by the application of a mildly acid ointment and the administration of ferri redactum 5 grains t.d.s. The liquid consistency of the discharge can be modified by the administration of chalk and opium powder.

For 25 years I have performed ileostomy for any form of ulcerative colitis when, as a last resort, patients have been referred to me by medical colleagues. I have no note or recollection of any fatality which could be attributed to the operation. In many cases improvement could only be described as dramatic, and I am convinced that this procedure deserves a much wider recognition as a life-saving measure.—I am, etc.,

London, W 1. MCNEILL LOVE.

"Silent" Sinusitis

SIR,—Miss Rosa Ford (Aug. 1, p. 128) raises problems of interest to rhinologist and ophthalmologist alike. Her theories are not without obscurity, but her evidence for them urges both comment and inquiry.

Is the evidence in both her cases that a sinusitis existed entirely convincing? In Case 1 three rhinologists found no clinical signs of it and radiographs showed none. When the third rhinologist opened the antrum "the disease was seen." It would seem important to know what disease. Was pus present in the antrum? If so, then would not radiographs have shown it? A week later, it is stated, there was a profuse flow of blood and mucus from the nostril. Must this have been due to disease of the antrum? May it not have come from the nose itself or have been due to the operation of antrostomy? In Case 2 there were no clinical signs of sinusitis. "Nasal medication resulted in considerable nasal discharge." Is this proof that sinusitis existed? It is not mentioned which sinus was believed to be affected. May not the nasal medication have caused the discharge without sinusitis being present at all?

But I am no rhinologist. Miss Ford mentions, as though in passing, contraction of the visual fields as if this were a mere symptom of nasal sinusitis. Any possible connexion between the two conditions would seem to require explanation, if not proof. It is relevant to ask what form of contraction was found, whether concentric peripheral contraction, or hemianopia, nasal, temporal, or homonymous, or a scotoma, central or paracentral. How does sinusitis produce this contraction? Miss Ford is silent. The mechanism is indeed obscure. The "hidden oedema" of which she writes is perhaps a clue, but the mystery remains.

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[1] *Practitioner*, July, 1920

Miss Ford will, I hope, enlighten us, for without answers to these questions no conclusions can be certain or even safe. We must, I submit, suspend judgment as to whether in these cases the visual fields were indeed affected by sinusitis or whether sinusitis did in fact exist at all.—I am, etc.,

Lincoln. C. NEWLYN SMITH.

Headaches and "Silent" Sinusitis

SIR,—The two cases of "silent" sinusitis reported by Dr. Rosa Ford (Aug. 1, p. 128) are of peculiar interest to every general practitioner, as I am quite sure that we have all had similar experiences. I, personally, can quote many cases in which sinusitis has been ruled out by the consulting rhinologist, only to find when operation has been resorted to that gross sinusitis is present.

As Dr. Ford states, in many cases of sinusitis there is nothing abnormal to be seen in the nose or in the radiographs. Such negative radiological findings depend upon the fact that swellings of the sinus mucosa found in association with headaches are often "transradiant." We have long employed radiopaque substances as a contrast media in order to display changes in the soft parts elsewhere in the body; and if the sinuses of patients complaining of headache are examined radiologically after the introduction of lipiodol, it will often be found that the membranous lining—approximately of normal thickness in the interval period—may swell to a surprising degree during a headache. Such a contrast medium may be introduced without disturbance to the patient by the "displacement" or "replacement" method of Proetz,[1] and is of wider diagnostic application than in the search for contraction of the visual fields upon which Dr. Ford relied in the cases she quotes, and which is likely to be of service only in cases of posterior sinusitis. I have employed the replacement method for several years in general practice, and the findings support the idea put forward by Sluder[2] 30 years ago that migraine may be produced by sphenoidal trouble.

The negative clinical findings in the nose depend partly on the fact that streptococci may exist in the nasal mucous membrane, giving rise to the production of oedema rather than pus, and partly on the fact that headaches may be produced by swellings which are allergic rather than infective. In the latter type of migraine excellent results are obtained by employing the replacement method, using ephedrine combined with normal saline in order to prevent the allergic swelling of the mucous membrane.—I am, etc.,

Alderley Edge, Cheshire J. J. CRAIG.

Narco-analysis

SIR,—As the author of articles on narco-analysis (*Lancet*, 1936, **1,** 55; *J. ment. Sci.*, 1936, **82,** 416; *Med. Pr.*, 1937, **194,** 321) I have been interested to read Major J. F. Wilde's article (July 4, p. 4) followed by Dr. J. L. Clegg's criticisms (Aug. 1, p. 140). Wilde rightly emphasizes the difficulty experienced by many Service patients (and civilians too) in confessing to a strange consultant their personal and private problems. The great advantage of narco-analysis as compared with other psychotherapeutic procedures is that by overcoming this reluctance it saves time—a factor even more important in war than in peace. For this reason I disagree with Clegg's assertion that narco-analysis should be resorted to only when other methods have failed. Clegg's second point—"that it is not a reliable means of effecting a transference"—is true of all psychotherapy Admittedly the state of transference cannot be achieved in every patient. Nevertheless, by means of narco-analysis it is possible to achieve this in many patients whose previous state was either apathy, inaccessibility, or even negative transference. His third point—"that it is not a means of gaining access to deeply repressed material"—is contrary to my own experience in analysing more than 1,000 patients. Finally, he admits that in one of his cases the "correctness of the diagnosis was confirmed" only by means of pentothal—and yet he jibs at the method because the patient subsequently denied his previous confession. Surely such denials are well known to all psychotherapists whether they practice orthodox analysis, hypnotism, or merely the sympathetic talks advocated by Dr. Clegg.

It is to be hoped that real progress will be made in the Services towards perfecting the technique of narco-analysis.—I am, etc.

Dorchester. J. S. HORSLEY.

SIR,—The letters of Major J. F. Wilde (July 4, p. 4) and Dr. J. L. Clegg (Aug. 1, p. 140) are of considerable interest. I too have had more than a little experience both of hypno-analysis and narco-analysis (chiefly with pentothal sodium). The relative merits of these two methods must necessarily depend on personal factors. It is clear from his statements that Dr. Clegg's mastery of the technique of narco-analysis is not comparable to his skill as a hypnotist. With most of us it is the other way. But I do not suggest that the technique of narco-analysis is simple—certainly to get the best results the sterotyped method of Dr. Wilde is inadequate. The exact dosage and the rate of administration can of course be varied within wide ranges and the level of unconsciousness reached will vary accordingly. Dr. Clegg does not so much as mention the dosage he favours. It is perfectly true that much of the material collected under narco-analysis is not repressed material but merely withheld material. However, Dr. Clegg admits the main argument for narco-analysis—namely, that it is an effective short cut—and surely this is the aim of most modifications of analytical technique.

The two following examples are relevant to Dr. Clegg's contentions:

(1) An alcoholic patient in hospital had had eight sessions of narco-analysis. One day he threw his tea-tray across the ward and a book through a window-pane. This outbreak was entirely unexpected and unrelated to previous behaviour. When I asked him what had happened, he said, "Doctor, you must give me another dope—there's something there about my sister that we haven't got hold of yet." Next morning another session of narco-analysis produced a circumstantial account of a very perverted sexual incident with his sister when he was a small boy. The revelation relieved the patient's anxiety with very satisfactory results. In the circumstances I am not greatly interested in whether the incident was repressed or not. I know that cure was accelerated

(2) A young woman at her first visit asserted that her relations to her mother were excellent, adding that there was a very close bond between them. During the first session of narco-analysis she said, "I *hate* the woman—God! how drunk I must be to say that."

—I am, etc.,

London, W 1. H. CRICHTON-MILLER.

Declining Population

SIR,—Mr. Green-Armytage has presented his comments on "declining population" (Aug. 1, p. 143) in truly provocative fashion.

Just as those who do routine gynaecological O.P.'s are accustomed to finding "strawberry erosions" in the young bride and mother who has used contraceptive measures, so officers at welfare centres who prescribe such measures are likewise thoroughly accustomed to such findings on the first examination of the young bride, mother, and even virgin. In other words, such conditions are common, and if they were accentuated by the use of such contraceptive measures the vast number of records supervising the "condition of cervix" at birth control clinics would long since have revealed the important fact. Officers at these clinics—in common with any other gynaecological observers—have frequently the interest of seeing such lesions heal spontaneously, and alternatively of observing how often they do not delay a desired pregnancy by even a single month. Surely the serious cases of sterility are found among those women who, having failed early in their marriage to procure contraceptive advice, have rashly resorted to criminal abortion with its coincident evils.—I am, etc.,

London, N W. JOAN MALLESON.

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[1] Proetz, A W. *Displacement*, Annals Publishing Co

[2] Sluder, Greenfield (1919) *Headaches and Eye Disorders of Nasal Origin*, C V. Mosby Co, St Louis.

Delayed Union of Fractures

SIR,—I was much interested to read in your report of the meeting of the British Orthopaedic Association (July 11, p. 50) that not only did "most of the speakers" hold that delay in the union of fractures was commoner than formerly, but that Mr. B. H. Burns had the insight to blame the use of unpadded plasters for this delay. Personally, I have of late years always used such splintage in the treatment of fractures of the leg, but I have done so with the definite knowledge that I was delaying union by some 4 or 5 weeks. Such a delay is amply counterbalanced (to use Mr. Burns's expression) by (1) the certainty of retention of a good reduction; (2) greater freedom for the patient; and (3) a tremendous reduction in the amount of supervision called for from the surgeon.

Any surgeon who has obtained full union, with working ability, in the short space of about 5 weeks in the case of a fracture of the shaft of the humerus by treating it with a wrist sling only, or occasionally with the addition of a weight slung to the elbow, knows full well that the fashionable theory that complete immobility is essential for the union of fractures is, at most, but very partially true. There is certainly equal truth in the older theory that movement promotes union, as so well evidenced in the rapid uniting of fractured ribs. In fact Blair (*Surg. Gynec. Obstet.*, 1938, 67) sums up experimental work on the union of fractures as follows: "Following fracture, immobilization and disuse cause atrophy of bones. Early activity is known to prevent this decalcification, and it apparently hastens the formation of callus and solid union."

The plaster case immobilization school are, perhaps, most insistent on such firm fixation in the case of fractures of the carpal scaphoid. In fact Watson-Jones in his textbook on *Fractures* says: "Every single movement of the wrist-joint puts back the process of repair by several days," and in the *Journal* of May 26, 1934, that "the one and only cause of non-union is failure of adequate immobilization." He recommends at least 6 weeks in plaster followed by 6 in strapping, making a minimum of 12 weeks in all before the patient is out of bondage. Now for the last 15 years I have been treating simple uncomplicated fractures of the carpal scaphoid by very incomplete immobilization in strapping—elastoplast since its advent. I take care to check my results by radiography and follow up, and so far have always obtained good radiographic union with freedom from all symptoms in from 5 to 6 weeks. I have also been fortunate enough to escape any cases of non-union, although I have seen a number of such treated by more orthodox means in plaster.

The method I use is to strap the wrist, base of the hand, and the thumb in 2 or 3 layers of elastoplast. This strapping should be so tight that the patient states that he "cannot move the wrist." A sling is provided, and the patient told not to use the hand. After 5 to 7 weeks, when all such symptoms as pain on movement, tenderness over the bone, etc., have passed off, a radiograph is taken. If this shows full union all treatment ceases. The patient is told to do only light work for a few weeks. The following 3 cases are typical.

1. L. S., aged 17½, errand boy. Seen day of accident. Radiograph shows transverse fracture of waist of scaphoid. Firm strapping applied. 38th day strapping removed. Union good. Patient told to report in one week. He did not do so but attended for follow up 6 months later. Then he stated that he resumed full work immediately after his last attendance at hospital, was now on munitions and waiting to be called up, and had no symptoms of any sort. The wrist showed no signs of injury.
2. R. P., aged 17, van guard. Seen day after accident. Fracture of waist of scaphoid shown radiographically. Put up in strapping. 39th day seen by my holiday locumtenent. No symptoms. Strapping removed and patient told to resume work in one week. Failed to attend for follow up as he had been called up.
3. R. B., aged 20, seaman. Seen day of accident. Fracture of scaphoid and of cuneiform shown in radiograph. Strapped on 2nd day. 46th day radiograph showed full bony union. No symptoms. Strapping removed and patient told to attend for exercises three times a week. 60th day patient attended. Had had no exercises as hand was "all right." Told he could do light duties, but stated that he was going to rejoin his ship as he felt he was cured. Did not attend for follow up as he was in the Navy.

The advantages of such a method of treatment, if successful, are obvious: shorter period of disability, no uncomfortable plaster case, and no massage or physiotherapy afterwards. I am convinced that many of those cases showing delayed union and requiring 3 or even 4 months in plaster owe that delayed union to the completeness of the immobilization.

Looking at fracture treatment as a whole, it is quite clear that as yet our knowledge of the factors underlying the union of fractures is far too incomplete for the formulation of any sound explanation covering all the known facts. Might I suggest that the advocates of complete immobilization in all fractures are victims of that outstanding vice of the medical fraternity through all the ages: the formation of theories on insufficient grounds and the basing of treatment dogmatically on such theories—in other words, of treating medicine (and surgery) as a science and not as an art.—I am, etc.,

Wimbledon, S.W.20. A. J. HOBSON.

Passive Movements for Joints in Paralysed Limbs

SIR,—I am in entire agreement with Prof. Seddon's views on the necessity of passive movements of joints in paralysed limbs. In this hospital there are always a number of cases of recent poliomyelitis, and I have always insisted on passive movements of all the joints in the paralysed limbs through the whole range of their movement each day by the masseuse. Stiffness of the joints in these cases through lack of this precaution is often troublesome, and I have seen more than 50% limitation of movement of the knees in both children and adults where treatment has been concentrated on splinting and massage but not on movement, both active and passive. The stiffness may occur in the first few weeks of the disease, and complete mobilization may take many months to obtain; in fact repeated manipulation under an anaesthetic may be necessary even in a completely flail limb. Surely a partially or completely flail limb is sufficient disability without adding the insult of limitation of movements of joints which, when wrenched, are painful, and the stiffness of which may even cause a fracture of one of the long bones.—I am, etc.,

Royal National Orthopaedic Hospital,
Stanmore. JOHN A. CHOLMELEY.

"Fibro-psychosis" of the Amputation Stump

SIR,—We are all acquainted with the tender amputation stump, especially of the finger. A small number of such cases are frank malingerers, a good many more suffer from a true causalgia, but in the great majority the condition is largely neurasthenic, and if the patient can be persuaded to resume work the complaint of tenderness and electrical shocks in the stump gradually disappears. In describing a case for a medical board, wherein pain and tenderness of this character was complained of in a crushed finger end, I dictated to my secretary that there was some fibrous ankylosis of the terminal joint. She misheard me and wrote "fibro-psychosis." The slip gives so complete a clinical picture of a severe case that I think it might well be adopted in the *Nomenclature of Diseases.*

Incidentally, I have been employing periarticular injections of procaine in the region of the brachial artery with some success in relieving the cases of true causalgia, 5 c.cm. 4 times a week for a fortnight.—I am, etc.,

Sunderland. W. GRANT WAUGH.

The Problem of Abdominal Pain

SIR,—My attention has been drawn to an article by Mr. Francis R. Brown (May 2, p. 543) in which he claims to have been the first to point out the importance of the relative embryological position of an organ in determining the localization of pain in the human being; but it will be clear from the following quotation that the same idea had, however, been submitted in a publication of mine in 1931 (*Ptosis of the Female Pelvic Viscera*, p. 43).

> "The Mullerian ducts are, developmentally, postero-lateral organs which subsequently acquire a midline relation; this probably explains the variations in the position of referred pain when they become affected by disease in the adult . . . ; so when disease develops in the Fallopian tubes, pain usually commences in the iliac region and does not spread to the midline until the peritoneum is involved. The reverse occurs in the appendix"—pain commences in the midline before it extends laterally—"and gall-bladder, which are, developmentally, organs originating in the midline of the foetus. . . . Again, the Fallopian tubes develop originally in the lumbar region in the foetus, and one is not surprised to find that in some cases of salpingitis the pain may be referred in the paracentral

> line of the body as high up as the lower subcostal region . . . ; the cervix occupies a midline position, but was originally postero-lateral; so when cases of chronic cervicitis complain of any pain other than a bearing-down pain, the pain is felt in the sacral or iliac regions rather than in the suprapubic region."

If one can assume that each viscus acquires the foundation of its nerve supply while still in its primary position in the foetus, it follows that the phenomenon of "referred pain" is explicable on anatomical grounds. While the relative position of the viscus is changing with the growth of the foetus, the viscus retains some proportion of its connexion with the central nervous system through the same intrinsic nerves that were laid down when it occupied its primary position, so the painful viscus is "felt" by the central nervous system to be still occupying its primary position, and any pain referable to the viscus is located in its primary position; but the clinician finds that this in fact corresponds with the site of referred pain, no longed occupied by the viscus (cf. the "phantom limb" felt after amputation). A pain which is so severe as to overflow into neighbouring areas is a radiating pain and should not be confused with a referred pain.—I am, etc.,

London, W.1. E. HESKETH ROBERTS.

Respirator Dermatitis

SIR,—Petro's account (May 23, p. 631) of respirator dermatitis corresponds with the clinical appearances observed in 9 cases among soldiers in hospital.

Patch tests on the forearm, in confirmation of the diagnosis, may be called for where the dermatitis is slight, or has already faded by the time the patient is admitted to hospital, or where the condition is obscured by a secondary impetigo which may involve other areas of the face and scalp. It was found that some of these men were very sensitive to the rubber of the respirator. Consequently, if patch tests are to be performed the precaution of using only small pieces of rubber should be observed. A blister reaction may follow, and if a large surface of rubber is applied the reaction may be severe and take some three weeks to subside.

Positive patch-test results are usually observed at the end of 36 hours, but in one case appeared only after 4 days, and in another a test which appeared to be doubtful had become definitely positive at the end of 4 days. It would therefore be desirable to keep the area tested under observation for a week. Late developing patch-test results have been described with other chemical antigens. It was found that a swab moistened with saline and rubbed over the inside of the rubber of the respirator, applied to the forearm, gave a positive patch test in these cases of respirator dermatitis. Hence the irritant "accelerator" or "improver," the composition of which is known, is saline-soluble and probably sweat-soluble. Thorough washing of the inside of the respirator with soap and water, to remove the dried sweat with the dissolved antigens, might have avoided a dermatitis in the less susceptible individuals. If possible, the piece of rubber, or the saline swab which has been rubbed over the inside of the rubber of the respirator, should be kept in place by bandaging rather than strapping, as the latter may itself give rise to a reaction and thus obscure readings.

One man who developed a respirator dermatitis has since noticed redness and itching whenever he wears his new respirator, which does not contain the offending chemical known to the authorities. He gave a positive reaction only after two applications of the rubber of the new respirator, separated by an interval of a week and applied to the same area of skin. There are, of course, many potential irritants among the chemicals used in the preparation of rubber, and Cox (*India Rubber Journal*, 1936, **92**, 724) has stated that rubber and latex can break down under the action of sweat to produce a resinous substance which is a potential irritant.—I am, etc.,

London, W.1. L. FORMAN, M.D., F.R.C.P.

"Positive Health"

SIR,—May I suggest this simple explanation as the basis of the definition: Positive health means health through effort—effort on the part of the patient, effort on the part of the medical attendant, and effort on the part of the local and national health organizations.—I am, etc.,

M. B. DOUGLAS.

Tetanus after Sulphonamide Treatment of Cavities

SIR,—Mr. J. C. Cherry (Aug. 1, p. 142) describes an interesting method of sterilizing a sulphonamide. I should like to suggest, however, that a "negative pressure" of 16 lb. to the sq. in. can only be obtained when the barometer is in the region of 32.5 inches, even with a theoretically perfect vacuum. This will reduce the practical value of the method very considerably in England whatever may be the case in the Free State.—I am, etc.,

Shipley. H. S. RUSSELL.

Obituary

News has reached this country of the death at his home at Birtley, Elizabeth Bay, of Dr. RALPH WORRALL, for many years a leading gynaecologist in Sydney. He was born in Ireland in 1859 and was educated at the Church of England Diocesan School, Waterford, and Queen's University, Belfast; he took the M.D. degree of the old Royal University of Ireland in 1878 and the M.Ch. two years later, after serving as resident at the Royal Infirmary, Belfast. In the early 'eighties he was in turn medical superintendent of the Mill Road Hospital, Liverpool, and honorary assistant physician to the Stanley Hospital, Liverpool. He then sailed for Australia and made his home in Sydney, and in 1886 began his long career as gynaecologist to the Sydney Hospital. In 1914 he was appointed surgeon to the Coast Hospital at Sydney. Dr. Worrall had been a member of the British Medical Association for 60 years and represented his Division at the Annual Meeting of 1907 at Exeter. In 1933 he published a paper in the *British Medical Journal* on total hysterectomy for non-malignant conditions, describing the technique of a method first performed by him in 1914 and for the 532nd time in 1932. He was a Founder Fellow of the Royal Australasian College of Surgeons, and an Honorary Fellow of the American College of Surgeons.

Dr. R. L. Worrall writes: My father, the late Dr. Ralph Worrall, whom I assisted at many operations, was distinguished by his medical judgment and human sympathy as well as by his technical skill. Among his contributions to gynaecology was his method of total hysterectomy, whereby removal of the cervix still left intact the central attachments of the pubo-cervical and sacro-cervical ligaments, these helping to preserve the structure of the vaginal vault after the operation. Towards the end of his career my father was invited by the Mayo brothers to visit their clinic at Rochester, and while in the United States on this visit he was elected an Honorary Fellow of the American College of Surgeons. He spoke in the highest terms of the American surgery which he saw, and was much impressed by the comprehensive efficiency of the Mayo Clinic. My father was a man of many interests, and did not let specialization narrow his field of medical and cultural vision. To the end of his active life he combined theoretical study with practice, taking a keen interest in all the major advances of medicine. I am much indebted to him for many things.

The Services

NAVAL AWARDS

The George Medal has been awarded posthumously to Surg. Lieut.-Cmdr. R. M. Bremner, R.N., for great bravery and devotion to duty in saving life.

The King has granted unrestricted permission to Surg. Lieut.-Cmdr. J. C. Moor, R.N.V.R., to wear the War Cross (Third Class) conferred upon him by King George of the Hellenes for services to the Allied cause.

The Royal Naval Volunteer Reserve Officer's Decoration has been awarded to Acting Surg. Cmdr. A. H. Shelswell, R.N.V.R.

ARMY AWARDS

The King has granted unrestricted permission to Lieut.-Col. (Acting Col.) A. J. Beveridge, O.B.E., M.C., and Capt. W. M. Burgess, R.A.M.C., to wear the Norwegian Military Cross conferred upon them by King Haakon of Norway in recognition of services in the cause of the Allies.

CASUALTIES IN THE MEDICAL SERVICES

Lieut.-Col. AILWYN HERBERT CLARKE, M.C., R.A.M.C., died from heart failure on June 23 in a prisoners of war hospital in Italy. He was born on March 4, 1893, the youngest son of the

Rev. H. S. Clarke of Weybridge, and received his professional education at St. Thomas's Hospital, qualifying M.R.C.S., L.R.C.P. in 1916. He served in France in the war of 1914-18, gaining the M.C., and in 1921 took a permanent commission in he R.A.M.C. Between 1923 and 1927 he saw service in Egypt, n the Sudan, and at Shanghai, in 1928 he served with the British Army of the Rhine; and in the following year he was posted to India, in the Punjab, where he remained until 1935. After a brief spell in England he went to Egypt in October, 1935, and remained there until the end of 1936, when he returned to England. On the outbreak of the present war he first served for a few weeks on a hospital ship and then was stationed at a Scottish general hospital until June, 1940, when he was posted to Egypt, being taken prisoner a few months later. He leaves a widow. He had been a member of the B.M.A. since 1924.

Capt. **MARTIN DUNSMORE WINNING**, R.A.M.C., was killed on active service in Burma in March. He was born on March 12, 1912, and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1938. He entered the R.A.M.C. as temp. lieut. in February, 1940, and was promoted capt. a year later. His home was at Kilmarnock. He was a member of the B.M.A.

Surg. Lieut. **JAMES YOUNGER WOODHOUSE**, R.N., who died suddenly on July 21, was educated at the University of Durham, where he graduated M.B., B.S. in 1925. After holding appointments at the Royal Victoria Infirmary, Newcastle-upon-Tyne, at Sunderland Royal Infirmary, and at Wallsend, he entered the Royal Navy as surg. lieut. in 1929, but relinquished his commission in 1933 and entered into partnership at Malton, Yorkshire. He re-entered the Royal Navy in July, 1939. He leaves a widow and one son.

Surg. Lieut. **WILLIAM PHILLIPS**, R.N.V.R., who was previously reported missing and who is now presumed to have been killed, was born on April 3, 1912, the third son of Mrs. Phillips of Burnham Market. He qualified M.R.C.S., L.R.C.P. in 1938 and had held the post of house-surgeon at West Norfolk and King's Lynn General Hospital. He entered the R.N.V.R. as prob. temp. surg. lieut. in May, 1940. He was a member of the B.M.A.

Prisoner of War.—Major I. A. B. Cathie, R.A.M.C.

Missing.—Temp. Surg. Lieut. A. P. Curtin, R.N.V.R.

DEATHS IN THE SERVICES

Lieut.-Col. **CLEMENT MALLINS**, I.M.S. (ret.), died at Worthing on July 29, aged 87. He was born on May 15, 1855, and was educated at Trinity College, Dublin, where he graduated M.A., M.B., M.Ch. in 1877, proceeding M.D. in 1888. He also took the M.R.C.P.I. in 1881 and the D.P.H. of the London Colleges in 1891. Entering the I.M.S. as surg. in 1879, he became lieut.-col. after twenty years' service, and retired in 1899. His Indian service was spent mostly at Hyderabad. He took part in the Tirah campaign on the North-West Frontier in 1897-8, gaining the Frontier medal with a clasp. He rejoined for service in the war 1914-18, serving in England for two years on a medical board at the War Office. He was a brother of the late Surg. Henry Mallins of the Bengal Service.

Medical Notes in Parliament

Diabetes in Death Classifications

On July 28 Mr. **LEACH** asked the Minister of Health whether there had been any change in the nomenclature of deaths in respect of certificates attributing death to diabetes and one or more other diseases. Mr. **BROWN** replied: In years before 1940 the statistical classification of deaths in respect of certificates attributing the cause to diabetes in conjunction with one or more other diseases was decided by means of rules giving the precedence of one disease over another as laid down in the Registrar-General's *Manuals of the International List.* These rules gave a high precedence to diabetes over other diseases. From 1940 classification in such cases has been carried out in accordance with the order of statement of the various causes on the certificate by the certifying medical practitioner, with certain exceptions laid down in the *Manual* issued in 1940. Since diabetes is frequently certified as merely a contributory cause of death, in association with another disease considered by the certifier as more important, the effect has been to reduce the number of deaths classified to diabetes in the statistics of cause of death, and the corrective factor to be applied to numbers of deaths in years before 1940 is 0.69. In the recent quarterly returns of the Registrar-General, the necessary correction had been applied to the diabetes deaths there shown for 1938 and 1939.

X-ray Examination of Recruits

On July 28 Mr. **HEWLETT** asked the Secretary of State for War what would be the estimated cost of x-ray examination of recruits on enlistment so as to avoid subsequent controversy over borderline cases. Sir **JAMES GRIGG** said that in view of the many uncertain factors he could give no reliable estimate of the cost. The difficulty of introducing any such scheme would be primarily in the shortage of the necessary apparatus and personnel.

Mortality from Pneumonia

On July 28, Mr. **ERNEST BROWN** told Mr. Leach that the number of deaths from pneumonia (all forms) registered in England and Wales from 1931 to 1941 were: 1931, 34,914; 1932, 30,743; 1933, 31,259; 1934, 29,751; 1935, 27,843; 1936, 28,890; 1937, 30,331; 1938, 27,467; 1939, 23,403; 1940, 29,195; and 1941, 26,418. The figures for 1931-9 were corrected to agree with the 1940 classification of deaths, and differed from those published in the Registrar-General's *Statistical Review* Part I, Table 6.

Proposed Transfer of V.A.D.s to A.T.S.

On July 28 Sir **JAMES GRIGG**, replying to Major Milner and Squadron Leader Fleming, said he received last week a deputation representing the British Red Cross Society and the Order of St. John of Jerusalem on the question of the proposed transfer of V.A.D. nurses to the A.T.S. As a result he proposed to invite these organizations to appoint representatives to a committee to be set up under an independent chairman to consider the relationship of mobile V.A.D.s to the Army. No final decision had yet been taken on the proposed transfer, and would not be taken until the committee had reported.

National Milk Scheme Grows

During a debate on agriculture and food, in the House of Commons on July 28, Mr. **MABANE** stated that the national milk scheme had progressed very well indeed; the percentage of the possible beneficiaries—expectant mothers and children—taking advantage of the scheme had risen from 70 to 87%. There were now 3,022,000 persons taking advantage of the scheme.

Glasgow Small-pox Cases

On August 4 Mr. **GROVES** asked the Secretary of State for Scotland if he was aware that a delay of 17 days occurred before Glasgow doctors were informed of the existence of dangerous and infective cases of small-pox; and why, although local general practitioners advised the local authorities of the seriousness of the position, no action was taken. Mr. **JOHNSTON** said that on June 14 the medical officer of health of Glasgow sent a letter to medical practitioners informing them that 6 members of the crew of a ship which arrived in the Clyde on May 29 had since contracted small-pox, that contacts were under surveillance, and that practitioners should inform him if any suspicious case came to their notice. All possible action to prevent the disease from spreading had been taken immediately the ship arrived, including the vaccination of the crew and passengers, and up to the date of that letter there were no cases in the city and therefore no need for a general vaccination campaign. The first case in the city itself appeared on June 25, and the decision to initiate a general vaccination campaign was reached on June 28. All needful publicity measures were taken immediately, and vaccination centres throughout the city were opened and began work on July 1.

On the same day Mr. **JOHNSTON**, replying to Mr. A. Edwards, said that the number of cases diagnosed as small-pox in Glasgow since the arrival of the ship was 40. Of this number, 9, including the original case, were members of the crew and 1 was a passenger. All the crew and passengers were vaccinated on May 29. Information as to the revaccination of passengers after May 29 was not available, but some members of the crew who remained in Glasgow were revaccinated on June 11. The original case was not recognized as small-pox until the patient was admitted to hospital in Glasgow, at which time the ship had not yet docked. The Port Health Authority, which was also the public health authority of Glasgow, was aware of the diagnosis before the ship docked at Glasgow. The medical officer of health was advised immediately the case was recognized as small-pox.

Venereal Disease in Forces

On Aug. 4 Sir **JAMES GRIGG** informed Mr. George Griffiths that special attention was being given to the spread of venereal disease among the troops; the necessary lectures were being given regularly, and precautionary facilities were available in all camps and barracks. The propaganda activities of the British Social Hygiene Council had recently been taken over by the Central Council for Health Education, and he would discuss with the Minister of Health the issue to each member of the Forces of their literature on this question. The incidence of venereal disease in the A.T.S. was very low indeed.

Medical Services in West Indies

During a debate on Colonial affairs in the House of Commons on August 4 Dr. Morgan said the medical services of the West Indies were disgraceful. Wonderful work was being done by medical men—general practitioners of exceptional calibre in the port medical work—by which they were keeping infective diseases away from these colonies. But when it came to internal conditions over which the medical men had no control, preventive work was being kept at a minimum, and they were concerned merely with ameliorative treatment for the relief of symptoms. The medical men were helpless in that they could not drain swamps to prevent malaria, dig latrines to prevent hookworm disease, or produce reservoirs for a good water supply. These conditions resulted from the Colonial medical policy of the Government. In the Colony of Trinidad, with a population of nearly 500,000, tuberculosis was rampant, as it was in Jamaica, yet there was no tuberculosis sanatorium. He understood that in Trinidad money had been subscribed privately to a considerable amount for a tuberculosis sanatorium, and they were simply waiting for a Government subvention to build the sanatorium.

Mr. Macmillan said it was not a question of voting money for a sanatorium but of finding a ship to take the materials over. As the position improved the Government would press forward with greater energy because of the disappointment of having all their plans and schemes held up by the harsh necessities of war.

Incidence of Pneumonia

Replying on August 6 to Mr. Messer, Mr. Brown said that although one drug in particular used in chemotherapy had lowered the fatality rate in controlled series of cases and proved its value in certain kinds of pneumococcal infection, the complications of pneumonia were such that it would not be justifiable as yet to look for any substantial effect on mortality from the disease in all its forms. Mr. Brown furnished Mr. Messer with the following table:

	Cases of Acute Primary and Influenzal Pneumonia Notified	Deaths from Pneumonia (all Forms)	Deaths from Influenza with Pneumonic Complications
1932	57,401	30,743	5,716
1933	65,009	31,259	10,744
1934	51,483	29,751	2,505
1935	46,901	27,843	3,325
1936	46,167	28 890	2,830
1937	55,896	30,331	8,910
1938	45,160	27,467	2,179
1939*	42,312	23,403	3,588
1940*	47,875	29,195	4,852
1941*	50,942	26,418	2,880

* Including non-civilians.

Further asked the relation between the number of cases of acute primary and influenzal pneumonia notified and the actual incidence of these conditions, Mr. Brown said that as there was no other reliable evidence of the incidence of pneumonia than that afforded by statutory notification he could not give the desired information. He did not believe there was substantial failure to notify pneumonia. Medical opinion was that there was over—rather than under—notification, and that conditions that could not strictly be described as pneumonia were so described.

London Medical Schools: Admission of Women

In answer to Prof. A. V. Hill on August 6 Mr. Bevin said he knew some medical schools in London did not accept women students. Whether such schools should accept them was a question for consideration by the Committee on Medical Schools. Prof. Hill suggested that the Minister should refuse to reserve any more men to begin the study of medicine in these schools unless the schools agreed to take in a proportion of women. Mr. Bevin said he must take all relevant facts into sideration before he agreed to reservations. No one regretted more than he the rigidity of the medical trade union rules.

High-frequency Apparatus

Sir Francis Fremantle inquired on August 6 what steps had been taken to enable medical practitioners to obtain release of their apparatus and resume treatment by ultra-violet and deep-ray therapy, as urged by a deputation from the Parliamentary Medical Committee and the British Medical Association. Mr. Grimston announced in reply that under a Home Office Order issued in the previous week these medical practitioners were now free to apply to the Post Office for a permit to use the apparatus in question. Permits would normally be granted subject to the provision of screening to an approved specification in order to avoid electrical interference with essential communications. A Press Notice (see *Supplement*, August 15) issued by the Home Office gave full information.

Medical Examination for Naval Flying Duties

In reply to Admiral Sir Murray Sueter on August 5 Mr. Alexander said there was no difference between the method and severity of the medical examination for entry for Naval flying duties and that for flying duties with the R.A.F. Before appointment to Medical Boards all medical officers underwent a special course of instruction in the medical examination for fitness for flying. There was close liaison between the medical departments of the R.A.F., and R.N. regarding the medical standards and methods of examination of candidates. Medical Boards received instructions as necessary. In cases of doubt regarding the medical fitness of a candidate for Naval flying duties, the case was referred to a civil or Service specialist.

Organized Science in the War Effort

Sir John Anderson told Mr. Stokes on August 6 that the Scientific Advisory Committee had not been asked to make a report on the organization of the higher direction of our scientific effort in the war. Certain representations to the Government by leading members of the Scientific Advisory Committee and Engineering Advisory Committee were under consideration.

Captain Plugge and other Members have tabled a resolution calling for a whole-time Central Scientific Technical Board.

Sale of Tuberculous Cows.—Mr. R. S. Hudson said on Aug. 6 that he was unaware that certain agricultural papers gave advice suggesting the sale in the local markets of cows suffering from tuberculosis and other infectious or contagious diseases. Slaughter with compensation, as in the case of foot-and-mouth disease, was impracticable.

Nervous Diseases and Army Service.—Captain York on Aug. 6 asked the Minister of Pensions to set up a research committee to consider what diseases, including epilepsy and petit mal, were brought on by Army service in cases where no previous history of the disease was evident Sir Walter Womersley replied that there were in being an adequate number of research committees and other expert bodies which he consulted on the connexion of various diseases with Army service. One of these committees was consulted at the outbreak of this war with regard to the diseases mentioned.

Civilian Doctors with the Army.—In a reply to Mr. Beaumont on Aug. 6, Mr. Duncan Sandys said that where civilian medical practitioners were employed full-time to look after sick military personnel, the latter had always an officer responsible for their administration and discipline. It was therefore unnecessary to grant honorary commissions to full-time civilian medical practitioners for this purpose.

Osteopaths.—Mr. Hannah asked on June 6 what public recognition was given to osteopaths and whether in the event of their being liable to service any use was made of their healing ability. Mr. Brown answered that in view of the recommendations in the report of the Select Committee of the House of Lords on the Osteopaths Registration and Regulation Bill, 1935, Parliament had not thought fit to confer any official recognition on osteopaths or to accord them any of the rights specially accorded to registered medical practitioners He understood that the Services did not make use of the special manipulative technique of osteopaths.

Notes in Brief

Accidents reported under the Factories Act in the last three months of 1939 were: 465 fatal, 68,980 non-fatal; in 1940 1,372 fatal, 230,607 non-fatal; in 1941 1,646 fatal, 269,652 non-fatal; in 1942 (January to June) 699 fatal, 153,087 non-fatal. The figures for 1942 are provisional and subject to correction.

Mr. Brown has under immediate consideration the release from the Emergency Hospital Scheme of a further 200 beds for tuberculosis cases in Wales.

The number of mental defectives under guardianship in England and Wales at January 1, 1939, and January 1, 1940, were 4,531 and 4,723 respectively.

Up to the end of June pensions had been awarded for disabilities in the gastro-intestinal group in slightly over 10,000 cases discharged from the Forces as invalids.

The number of disabled persons to whom pension is being paid by the Ministry of Pensions is approximately 448,000, of whom nearly 38,000 are in receipt of pension at the rate for total disablement. Included in the total figure are 32,500 limbless cases.

Medical News

Sir Harold Scott will retire on August 31, 1942, from the post of Director of the Bureau of Hygiene and Tropical Diseases which he has held since 1935. The Secretary of State for the Colonies has appointed Dr. Charles Wilcocks, the present Assistant Director of the Bureau, to be Acting Director, with effect from September 1, 1942.

The College of Physicians of Philadelphia awarded the Alvarenga Prize on July 14, 1942, to Dr. Edwin J. Cohn, Professor of Physiological Chemistry, Harvard University, in recognition of his distinguished contribution to our knowledge of blood proteins. This Prize was established by the will of Pedro Francisco DaCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883, to the author of " the best memorial upon any branch of medicine, which may be deemed worthy of the prize."

The Minister of Health has concurred in a recommendation submitted to him by the Medical Personnel (Priority) Committee that teaching bodies should be advised to abandon for the duration of the war " all medical postgraduate courses which require whole-time attendance of medical men and women for a considerable period." In a circular letter to deans of medical schools asking that this recommendation should be brought before the management body, the Minister states that he holds the view that any student who is fit to follow such a course of instruction, even though he may perhaps be unfit or ineligible for military service, should undertake work of such a nature as would result in the release of another medical practitioner for service with His Majesty's Forces.

Dr. Elsie V. Crowe, F.R.C.S.Ed., is now officially presumed to be a prisoner of war in Sumatra.

Dr. Juan P. Garrahan, a Buenos Aires paediatrician, has been awarded the 1941 prize of the Buenos Aires National Academy of Medicine for his article on " Prothrombin, Vitamin A, and Haemorrhage in the Newborn Infant."

Dr. Rudolph Matas, emeritus professor of surgery at the Tulane University of Louisiana, has been presented with the medal of Havana, the highest distinction conferred by that city in commemoration of Dr. Carlos I. Finlay.

A French institute for human research has recently been founded in Paris in the building of the Rockefeller Institute, with Dr. Alexis Carrel as director.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week a reduced incidence was reported for each of the notifiable diseases with the exception of puerperal pyrexia, of which 6 more cases were recorded. The largest of the decreases were those of measles 341, acute pneumonia 61, diphtheria 60, scarlet fever 60, dysentery 37. The returns for cerebrospinal fever were the lowest since the first week of 1940, and the notifications of acute pneumonia were the lowest for almost a year.

The largest fluctuations from the totals of the preceding week for whooping-cough were those of Yorks West Riding, Middlesex, and Staffordshire, where increases of 47, 43, and 24 were recorded.

An increase in the incidence of measles occurred in London and Yorks West Riding, where the cases were 45 and 67 in excess of the previous week's total.

The notifications of dysentery, 64 cases, were the lowest weekly total since last August. The only local outbreak of any size was that of Birmingham C.B., 12 cases.

In *Scotland* the incidence of measles, which had been at a fairly constant level for a month, fell, and the lowest weekly total since the end of February was recorded. Of the 52 cases of dysentery 25 were notified in Edinburgh.

In *Belfast* the epidemic of measles appears to be ending; 74 cases were notified compared with 118 in the preceding week.

Small-pox

No further cases of small-pox had been notified in Glasgow during the beginning of the month. The total cost incurred by the city as a result of the outbreak is estimated to be between £50,000 and £60,000.

Returns for the Week Ending August 8

The notifications of infectious diseases in England and Wales during the week included the following number of cases: scarlet fever 1,340, whooping-cough 953, diphtheria 580, measles 5,619, acute pneumonia 413, cerebrospinal fever 77, dysentery 82, paratyphoid 15, typhoid 6.

No. 30

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 1.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	69	5	28	2	2	147	8	34	1	5
Deaths		—	1				1	—		
Diphtheria	650	33	161	65	13	821	38	126	20	22
Deaths	12	—	2	1	—	20	—	2	1	—
Dysentery	64	9	52	2	—	149	4	—	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	1	1		—	2	—	—		—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						24	—	2	8	3
Deaths						—	—	—	1	—
Erysipelas		—	48	8	4		—	43	5	1
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years . ..				119						
Deaths	42	11	10	9	4	50	2	13	9	1
Measles	6,476	740	144	53	76	3,330	96	63	152	1
Deaths	3	1	1	—	1	2	—	—	1	—
Ophthalmia neonatorum	81	4	34	1	1	78	2	16		—
Deaths . ..										
Paratyphoid fever ..	6	2	6	—	—	254	1	33	—	—
Deaths	—	—	—	—	—	5	—	—	—	—
Pneumonia, influenzal*	418	24	4	—	4	455	15	6	1	—
Deaths (from influenza) . ..	6	14	1	—	—	8	16	1	2	4
Pneumonia, primary ..			112	17				127	17	
Deaths				5	5		—		7	—
Polio-encephalitis, acute	4	—				2	—			
Deaths . ..		—					—			
Poliomyelitis, acute ..	9	—	2	2	—	29	—	7		—
Deaths			—					—		
Puerperal fever ..	—	—	17	2	—	1	1	20	1	—
Deaths		—					—			
Puerperal pyrexia ..	160	12	19	—	1	104	7	16	1	—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths ..										
Scarlet fever	1,456	73	253	41	19	895	34	99	42	28
Deaths	—	—	1	—	—	—	—	1	—	—
Small-pox	—	—	7		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever . ..	9		2	16	—					
Deaths			1	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,116	104	10	50	12	4,369	259	41	99	24
Deaths	4	2	2	3	1	22	2	4	—	—
Deaths (0–1 year) ..	264	37	59	29	25	299	23	62	18	7
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,764	505	514	157	117	3,854	465	560	165	128
Annual death rate (per 1,000 persons living)			11·6	10·5	†			12·2	11·0	†
Live births	6,430	705	849	471	294	4,507	336	832	399	184
Annual rate per 1,000 persons living ..			17·6	31·4	†			16·9	26·5	†
Stillbirths	234	34	26			167	11	33		
Rate per 1,000 total births (including stillborn)			30					38		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Blood Injection in Tuberculosis

Dr. J. H. FLETCHER (Merthyr Tydfil) writes: May I use your columns to inquire whether any attempt has been made in the cure of tuberculosis to administer to the patient repeated systematic intramuscular injections of blood (of same blood group) as that of the patient) taken from a cured person or from a healthy individual whose family history shows no evidence of the disease, with the object of transferring the immunity from the cured or healthy to the sick, as is now advocated and practised in the treatment of measles?

Castor Oil in Infective Hepatitis

Dr. E. K. RULE (South Perth, Western Australia) writes: It was with interest that I read Dr. J. L. Newman's article on an outbreak of infective hepatitis in the Lavant Valley (Jan. 17, p. 61). I should be glad to know if the doctors in charge of these cases made any observations with regard to the administration of castor oil. While staying at a country town in Victoria recently I encountered a similar epidemic, and my own family and those of my neighbours suffered from the disease in varying degrees. In all of those cases in which castor oil was administered I noticed that the patients became rapidly worse and signs of biliary obstruction supervened, whereas there was no such sudden change in those not receiving castor oil. In the former the effect was so marked and the appearance of the clay-coloured stools so immediate that I felt convinced it was the castor oil which at least precipitated the obstructive symptoms. If this observation is confirmed it would seem to have an important bearing on preventive treatment, since castor oil is so frequently administered to children suffering from nausea and vomiting.

Income Tax

Service Pay: Basis of Assessment

T. N. is assessed for 1941-2 on (*a*) his civil earnings for the year 1940-1, and (*b*) his official emoluments for the year 1941-2. Is this correct?

⁂ Yes. As the Service appointment did not begin until August, 1940, 1941-2 is the second financial year since commencement, and by statute tax on the emoluments is chargeable on the basis of the current year's earnings. As the civil earnings are regarded as coming from a continuing source, the legal basis is the previous year—which will, of course, continue to apply if and when T. N. returns to the practice.

LETTERS, NOTES, ETC.

Quinine in Malaria

Dr. R. J. MARSHALL writes: During the four and a half years spent by me in Spain from 1893-8 as assistant medical officer to the Rio Tinto Co., part of my time was taken up in studying microscopically the various types of malarial fever so prevalent there. They were principally of the benign type, tertian and quartan I found that the best results in treatment were obtained by administering quinine in *one* daily dose of 30 grains about 2 hours before the expected rigor. This is following the advice of the Italian observers Marchiafava and Bignami, whose book was published by the Sydenham Society. According to them the young parasites are most vulnerable at the moment of birth. I seldom found a dose of this size cause any unpleasant symptoms, and the results were much more effective than when the drug was given in divided doses. This can easily be verified experimentally in a case where there is a double infection. A single dose of 10 grains given 2 hours before one attack may for several days cut out a recurrence of this attack or modify it considerably without affecting the other.

Scabies

Dr. W. F. BENSTED-SMITH (Newton Ferrars), writes: It may be well to call attention to a common and often unrealized centre of infection—the local dance hall. I am impressed by the number of cases in clean homes which are possibly contracted in this way. It probably accounts also for a number of those infected on leave.

An Interesting Breech Delivery

Dr. W. L. MACDONALD (Charlottetown, P. E. I) writes: I was called one night about 2 a.m and informed by an excited woman that Mrs. A. had her baby while sitting on the toilet seat. I asked her to get the baby out before it drowned. She said she couldn't get Mrs. A. off the seat. I dressed, drove about a mile to the house, and found Mrs A. still sitting on the toilet. On helping her off I found the baby head-first in the toilet water, blood, etc. After extracting the baby feet first and giving it a slap on the bottom, I was much surprised to hear it give a lusty cry. Its life was saved by the placenta remaining intact *in utero*, and the cord not breaking.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for August 20, 1842:

" The Chairman said he had next to call on them to drink a toast to which he anticipated a prompt and most enthusiastic response —it was that of the founder of the Association, Dr. Hastings. When they remembered that ten years ago the members of the medical profession in the provinces were without any common bond of union (hear, hear) ; that although they possessed within themselves the elements of great strength, of moral energy, and of high character, yet these were of little use, because they were never found joined together for any practical purpose (cheers) ; when they remembered, also, that it was to Dr. Hastings they owed the formation of this great Association in which, for the first time, they had found that bond of union which they had long so much required—which had given to them an amount of influence, and produced among them a degree of harmony which had never before existed—which had the effect of bringing together the members of the same profession from one end of the kingdom to the other to meet at some common point, where, old friendships were renewed and new friendships formed, never afterwards to be forgotten—which had furnished them with an inducement sufficiently strong to draw them for a season from their homes, in order that they might interchange feelings of mutual friendship and good will, and unite not merely to uphold the honour and dignity of the profession, but also for the more extended diffusion of scientific knowledge, and so to benefit mankind; when, he repeated, they bore in mind that it was to Dr. Hastings, the secretary and founder of the Association, that they owed these manifold advantages, he was sure they would need no stronger motive to induce them to drink this toast with all the honours which it was possible for them to bestow upon it. (The toast was drunk with the most enthusiastic cheering, which was repeatedly renewed.)

In his reply Dr. Charles Hastings said, among other things, " It is a proud distinction to me to be considered the founder of this noble institution ; and when ten years ago I commenced, in conjunction with many friends I now see around me, the formation of this Association, I little dreamt of its ever attaining the eminence it has already acquired. During those ten years, Sir, our Association, like the noble oak of the forest, has struck its roots deeply into the midland counties, and has thrown out vigorous branches to the north and to the south, to the east and to the west During this comparatively short period what have we done? I am aware that this question has been sometimes asked tauntingly—but what have we done? We have every reason for answering this question ; not indeed in the spirit of self-glorification, but with truth and modesty, in order that we may place our claims to public confidence on their true footing In reply, we have every year published a volume of " Transactions," and that these ten volumes form a rich treasury of practical information ; and more especially, we have done more towards accomplishing that very desirable object, the procuring a medical topography of England, than had previously been effected. We have thus, in a scientific point of view, raised the character of the provincial profession, who heretofore, notwithstanding many eminent men had arisen among them, had no claim as a body to any distinction. We have also, during the last year, succeeded in supplying to every member of our Association a weekly journal [the *Provincial Medical Journal*, forerunner of the *British Medical Journal*] as a vehicle by which all discoveries made in this active and experimental age are conveyed to the remotest villages in England, and a boon is thus conferred on suffering humanity."

Taken from an account of the dinner held at the anniversary meeting of the Provincial Medical and Surgical Association in Exeter.

BRITISH MEDICAL JOURNAL

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A CLASSIFICATION OF NERVE INJURIES

BY

H. J. SEDDON, D.M., F.R.C.S.

Nuffield Professor of Orthopaedic Surgery, University of Oxford

In 1863, during the fiercest days of the American Civil War, Dr. W. A. Hammond, Surgeon-General to the Federal Armies, ordered the establishment of a unit for the observation and treatment of injuries of the nervous system. A signal result of this instruction was the appearance in 1864 of a little book by Weir Mitchell, Morehouse, and Keen, *Gunshot Wounds and Other Injuries of Nerves.* This gave an account of the first organized study of nerve injuries, and in it we find not only the most perfect description of causalgia, a condition that will always remain associated with the name of Weir Mitchell, but descriptions of nerve injuries as we see them to-day. These enthusiastic workers laid a good foundation for all that has followed during the succeeding 80 years. But the means of investigation at their disposal were very limited, open operations were rare, and the syndromes described are not quite sufficiently clear-cut to serve as a guide in diagnosis and prognosis.

The enormous number of nerve injuries dealt with during the last war gave to neurologists and surgeons a very clear conception of the results of division of a nerve, but one gets the impression that they were so preoccupied with the repair of nerves so seriously damaged as to require resection and suture that there was hardly time to investigate the great mass of cases in which something less than complete division was present, cases in which spontaneous recovery usually occurred. So far as nerve injuries are concerned this war has been more leisurely.

It is the purpose of this preliminary communication to describe three well-defined types of nerve injury, types so distinctive that it has been found convenient, and indeed necessary, to apply labels to them and make them the basis for a clinico-pathological classification. It might be foolish to claim that every nerve injury can be fitted into this classification, but from the study of 460 cases at the Oxford Centre it has become evident that the majority can be so classified provided one realizes that a combination of lesions is not infrequently present as the result of a single injury.

Clinical Signs of Damage

The clinical manifestations of damage to a peripheral nerve may be considered under two headings.

1. *Those due to Loss of Function:—*

   Efferent: Paralysis of muscles; sudomotor paralysis: pilomotor paralysis; vasomotor paralysis.

   Afferent: Loss of tactile sensibility; loss of pain sensibility; loss of thermal sensibility; loss of joint and postural sensibility; loss of deep sensibility.

2. *Those due to Perversions of Function:—*

   Efferent: Muscle twitching (fasciculation); muscle spasm; abnormal sweating; vasomotor disturbances.

   Afferent: Paraesthesia; apparently spontaneous pain, and pain quite outside the range of normal experience; abnormal responses to heat and cold.

In contemporary clinical practice there is no question whatever that in frequency and importance the first group of phenomena far outweigh the second, and it is with loss of function alone that this classification is concerned.

Although, as has been said, there is a fairly clear understanding among clinicians and experimental workers about the sequence of events following complete anatomical division of a peripheral nerve, there is considerable confusion when we come to examine those numerous cases in which function is lost although anatomical continuity of the nerve is more or less preserved. No clear distinction has been drawn between those intraneural lesions that are followed by complete peripheral degeneration and those in which the rate of recovery is so rapid that degeneration could not possibly have occurred. The well-known term "physiological interruption" conjures up no clear pathological picture, and it is inaccurate in that no interruption of conductivity can properly be called physiological. Similarly, the terms "concussion," "compression," and "contusion" are equally vague; for although they may give a hint of the nature of the cause they do not describe the effect of the injury on the nerve itself.

At a meeting of the Association of Physicians held in April, 1941, I propounded the following classification:

1. Complete anatomical division of a nerve.
2. A "lesion in continuity," in which more or less of the supporting structure of the nerve is preserved but there is nevertheless such disturbance of the nerve fibres that true Wallerian degeneration occurs peripherally.
3. "Transient block."—A minimal lesion producing paralysis that is incomplete more often than not; it is unaccompanied by peripheral degeneration and recovers rapidly and completely.

These three syndromes are well known to neurologists, and discussion centred chiefly on terminology. It may be argued with justification that "lesion in continuity" is ambiguous and might well include "transient block": for there is no doubt that in transient block the nerve is in continuity. It was therefore suggested by Prof. Henry Cohen that distinctive names should be given to these three types of nerve injury so that confusion might be avoided. He writes:

"Etymologically these words indicate the ideas they are intended to convey, and they have not previously been used—so that the field for them is clear.

"1. *Neurotmesis* (τμῆσις, a 'cutting' which implies a separation of related parts), which describes the state of a nerve that has been completely divided. The injury produces a lesion which is in every sense complete.

"2. *Axonotmesis:* Here the essential lesion is damage to the nerve fibres of such severity that complete peripheral degeneration has followed; and yet the sheath and the more intimate supporting structures of the nerve have not been completely divided, which means that the nerve as a mass of tissue is still in continuity.

"3. *Neurapraxia* (ἀπραξία, non-action) is used to describe those cases in which there is a short-lived paralysis—so short that recovery could not possibly be explained in terms of true regeneration."

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The classification is partly morphological, though in each case the clinical behaviour is characteristic. The three types of lesion have been produced experimentally, and work of this kind has contributed considerably to our understanding of them.

It is not proposed here to give more than an outline of the characteristics of the three types, since full descriptions will be published shortly (by me, on neurotmesis, axonotmesis, and neurapraxia; and by W. B. Highet on mixed and incomplete lesions, which are grouped together as *dissociated* paralyses). The classification is presented in brief in the hope that it will prove helpful to clinicians in sorting out their cases of nerve injury.

Neurotmesis (Division of a Nerve)

The clinical and pathological picture presented by complete division of a nerve is so familiar that no more than the briefest description is necessary. At the *site of damage* a swelling which is called a "neuroma" appears at the end of the central stump; it consists of a mass of scar tissue and new nerve fibres in no way different from what is seen in an amputation neuroma. The swelling is sometimes palpable and tender. A swelling also appears at the end of the peripheral stump; it is called a "glioma," is composed of Schwann cells and fibrous tissue, is much smaller than the neuroma, and is rarely palpable clinically.

In the *distribution of the nerve* there is complete sensory and motor paralysis; the affected muscles degenerate and waste, and respond to electrical stimulation with the characteristic reaction of degeneration. The only difficulties in diagnosis are anatomical—in cases where some anomaly in distribution may lead the clinician to believe that the lesion is an incomplete one.

For all practical purposes recovery never occurs in the absence of surgical repair. If suture is followed by regeneration, signs of recovery appear in anatomical order; this is best seen on the motor side, where a regular march of recovery in muscles is often observed. The quality of recovery is always short of perfect, not only because of irreversible degenerative changes in end-organs and muscle but because of confusion at the suture line.

Axonotmesis (Lesion in Continuity)

If a nerve is crushed heavily with forceps all the nerve fibres are broken, but the connective tissue of the nerve survives to some extent; although the gap in the nerve fibres may be quite noticeable at first it is followed by a flowing together of the fibre protoplasm above and below, so that when observed a few minutes after removal of the instrument the lesion, which at first was nothing more than a thin ribbon of connective tissue joining central and peripheral stumps, has filled out to almost normal diameter. There is probably no case in which the connecting function of connective tissue is of greater importance; for it is found that, although the peripheral stump degenerates completely, spontaneous regeneration invariably follows after such an experimental lesion.

Now, it often happens that a nerve is damaged in a somewhat similar way by a "near miss," or pressure from one of the fragments of a fractured bone—in fact, by any injury that fails to divide the nerve completely. It is not to be expected that the accidents of daily life or warfare produce lesions as uniform as those produced in the laboratory: the nature and degree of violence are variable, and so is the extent of the damage done. The lesion exposed at operation may be the familiar fusiform neuroma or nerve spindle: more frequently (as in the experimental lesion) there is little to see beyond slight swelling or constriction, perhaps perineural adhesions and a little thickening of the epineurium. However, in general, the behaviour of lesions of this type is characteristic. The lesion is called "axonotmesis" because its essential feature is complete interruption of nerve fibres with preservation of more or less of the supporting structure of the nerve. After a period of several weeks or a few months new fibres manage to make their way through the scar tissue at the site of the lesion, and regeneration then proceeds in an anatomically orderly fashion down the peripheral stump. In experimental animals (rabbits) the rate of regeneration is faster after axonotmesis than after neurotmesis, but we are not yet sure that this is the case in man, although there is some evidence to suggest it. What is quite certain is that functional recovery is far better, and it is reasonable to suppose that this is due to the growth of fibres into their old pathways; some of them may go astray, but the majority are guided by the endoneurium and perineurium into their old channels. Everyone is familiar with the excellent spontaneous recovery that generally follows radial paralysis complicating fractures of the humerus, and this is the best example of axonotmesis in clinical practice.

It cannot be emphasized too strongly that there is no clinical difference whatever between the paralysis resulting from axonotmesis and that following neurotmesis. Seeing that peripheral degeneration is complete one could not possibly expect to find any, and indeed there is none. How, then, are the two conditions to be distinguished? There are three possible ways.

Experience teaches us that certain injuries are likely to cause neurotmesis, while others are more likely to cause axonotmesis. Radial paralysis complicating a gunshot wound of the arm is likely to be due to neurotmesis, in which case recovery will not occur unless the nerve is sutured. On the other hand, a closed fracture of the humerus involving the radial nerve almost always produces axonotmesis: by the time treatment of the fracture is completed there is generally some sign of recovery. On can therefore make a shrewd guess from knowledge of the nature of the injury. The second way is to wait until sufficient time has elapsed for spontaneous regeneration to occur. If signs of recovery fail to appear, then neurotmesis may be suspected and the nerve should be explored. This has been the general policy in the past, but the time of waiting has been too long; it is clear that if the lesion is in fact neurotmesis valuable months will have been wasted. No harm comes from exploring a nerve, and it has become our practice to carry out exploration in every case in which regeneration has not appeared within the calculated time.* This brings us to the third and only precise method—i.e., exploration. Riddoch has repeatedly emphasized that we should regard operative exposure of the lesion as a necessary step in the establishment of the diagnosis. Provided that the operation is carried out by a competent surgeon who is familiar with every detail of the neurological picture, and provided his approach to the nerve lesion itself is conservative rather than radical, exploration is a commendable procedure. It may reveal a somewhat unexpected neurotmesis; it may reveal axonotmesis, in which case the surgeon and the patient know what to expect —i.e., spontaneous regeneration.

Neurapraxia (Transient Block)

Recovery from certain nerve injuries is remarkably rapid—indeed, so speedy that it cannot possibly be explained in terms of axonal regeneration. Lesions of this type, like axonotmesis, may be produced by any injury that does not actually sever the nerve, but the violence is not of a high order. Tourniquet paralysis, Saturday-night paralysis, crutch paralysis, are all familiar examples—though sometimes these injuries may be sufficient to produce true degenerative changes.

Since the condition is essentially a clinical syndrome it is best to describe its clinical characteristics first: (*a*) the paralysis is predominantly motor; (*b*) there is little wasting; the electrical reactions of the muscle persist unchanged; (*c*) subjective sensory disturbances—numbness, tingling, pins-and-needles, burning—are common; (*d*) objective sensory disturbances are generally partial, often minimal, so far as touch, pain, heat, and cold are concerned; (*e*) loss of postural sensibility and vibration sense are common; (*f*) loss of sweating is unusual. Muscle tone is said to be retained, but this has not been our experience.

It is clear, then, that the lesion is a dissociated one: the motor and proprioceptive fibres suffer more than those subserving other functions, and there is a physiological explanation for this. Recovery, which can be predicted with absolute confidence if examination reveals this syndrome, is fairly rapid, beginning usually after two to three weeks and complete within six to eight—though I have seen a few cases in which complete restoration of function was delayed until the fourth month. The progress of recovery is irregular;

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* A paper dealing with rates of regeneration will be published within the next few months.

it follows no anatomical order—it may appear suddenly throughout the whole distribution of the affected nerve, and resembles nothing so much as the wearing off of the effects of local anaesthesia. In the few cases in which it is delayed it is still much more rapid than the fastest recovery from axonotmesis, and would demand a rate of growth of axons quite unknown in clinical or laboratory experience. Furthermore, the preservation of normal excitability of muscles is clear evidence against Wallerian degeneration of the nerve below the lesion, and we now have evidence on the motor side that the affected nerve is not only capable of conducting impulses but in fact does so, though no contraction of the muscle can be detected clinically. There is therefore a disturbance of conduction (which can be produced experimentally) that impedes the transmission of impulses but does not destroy the axon. Recovery is always perfect.

Neurapraxia is a non-committal but adequate description of this non-functioning of a nerve. Neurapraxia is produced by cocainization of a nerve, by mild degrees of refrigeration, and by slight injury.

Comment

It is obvious that by no means all nerve injuries can be classified under these simple headings; the accidents that produce them are not uniform in their effects unless the violence is great. An injury may affect the fibres of a nerve in varying degree, and the clinical picture will then be more complex. A lesion may be made up by a combination of any of the following: (*a*) neurotmesis; (*b*) axonotmesis; (*c*) neurapraxia; (*d*) normal fibres.

Indeed, neurapraxia is a lesion in which a certain number of normally functioning fibres are always present. Leaving this aside, there are no fewer than eleven possible combinations of these lesions, each with its own clinical characteristics! In complicated lesions of the brachial plexus, for example, the picture may be so mixed that precise diagnosis is impossible, though there is often plenty of scope for light-hearted speculation. We have seen almost every one of the possible combinations, and do claim that none of the phenomena of interruption of a nerve that we have so far encountered required other explanation. This is a very difficult field of clinical inquiry, and it is not proposed to discuss it here, seeing that the various combinations of lesions form the subject of a paper that will shortly be published by W. B. Highet, who has investigated all the cases of dissociated paralysis seen at the Oxford Centre since its inception in June, 1940.

CAROTINAEMIA

BY

S. ALMOND, M.D., M.R.C.P.
Honorary Assistant Physician, Salford Royal Hospital, Honorary Physician, Manchester Victoria Memorial Jewish Hospital; Consultant Physician, Leigh Infirmary

AND

R. F. L. LOGAN, M.B., Ch.B.
Resident Medical Officer, Salford Royal Hospital

We have recently observed 5 cases showing pigmentation of the skin pronounced enough to warrant provisional diagnoses, by the attending practitioners, of "jaundice," "pernicious anaemia," "haemolytic anaemia," and "cholelithiasis." This pigmentation can only be properly described as "carroty," and while in the mild cases it is most obvious in the naso-labial folds and the palms of the hands, in the more advanced cases it is a generalized body tanning. The condition is due to the excessive consumption of carrots, though it has been recorded when other lipochrome foods are eaten in quantity.

The Literature of Carotinaemia

The term "carotinaemia" for the orange pigmentation of the skin observed after the excessive consumption of carrots and other vegetables was first applied by Hess and Myers in 1919. The observation of this skin discoloration in diabetics whose diet consisted mainly of foods rich in yellow lipochrome—fruit, vegetables, butter, and eggs—was made by von Noorden (1907), who considered the condition to be a diabetic manifestation. Moro (1908) noted that normal infants developed a similar pigmentation when carrots were added to the diet. Van den Bergh and Snapper (1913) showed that there were lipochrome pigments circulating in the blood of diabetic patients with the orange pigmentation, and that these pigments were identical spectroscopically with those of carrots and other vegetables. Salomon (1919) referred to this pseudo-icterus in non-diabetic patients whose diet largely consisted of the foods mentioned, and the gradual disappearance of this pigmentation with abstinence from such foods. Stoeltzner (1919), commenting on Kaupe's observation (1919) that nurslings lost their yellow coloration when their high carrot diet was stopped, observed that the number of similar children had increased during the last war. He called it a "pseudo-icterus" and thought a high tomato diet might produce a similar pigmentation.

Greene and Blackford (1926) and Stoner (1928) discussed the condition under the heading of "carotinaemia." Boeck and Yater (1929) used the term "xanthaemia" for the circulation in the blood of lipochrome pigments (thereby excluding bile pigments) and "xanthosis" for the visible presence of these yellow pigments in the skin. They found xanthaemia in all their nephritics and in most diabetics, and even in most "normal" cases examined. However, xanthosis was present in only 10% of the renal and diabetic cases and in only 3% of other cases. All these patients with stained skin had eaten excessively of lipochromic foods.

Stannus (1929) called the discoloration "hyperlipochromia," and concluded that it resulted from the failure to oxidize the carotinoid pigments in the body. He first reported carotinaemia in myxoedema, and Wendt (1935) noted the condition in some cretins. Bomford (1938) confirmed the presence of carotinaemia in some cases of myxoedema on a normal diet. On thyroid medication the lipochrome index fell to normal. He remarks that as the colour of cream is due to lipochromes, the description of the myxoedematous facies as a "strawberry and cream" complexion is not without justification.

The Present Series of Cases

Our interest in carotinaemia was first aroused by the visit of a clerk's wife on account of "jaundice," though her sclera was contrastingly white. In the spring months further cases were referred as "pernicious anaemia" and "haemolytic anaemia"; the woman with "gall-stones" was visiting her husband, an in-patient with acute nephritis, when the ward sister drew our attention to her carroty complexion. None of these patients had symptoms of ill-health, though the curious discoloration was a source of anxiety.

Careful histories were extracted to find the actual pounds of carrots consumed per week (see Table). As kitchen standards of quantity are given vaguely in pinches, spoons, and cups, we sought and obtained the number and size of the carrots, from which a correct estimate was made. These weights apply only to the raw carrots, as the other vegetables and cooked carrots were always eaten in pre-war helpings. During the

Table showing Amount of Carrots consumed Weekly

Occupation of Husband	Provisional Diagnosis (own Doctor)	Raw Carrots		Other Veg and Eggs	Icteric Index	Serum Bilirubin (mg./100 c.cm.)	On Normal Diet Fading		Other Medical Conditions
		lb. per Week	Threshold Months				First Noticed (Weeks)	Complete (Weeks)	
Lorry-driver	Gall-stones	8	8	—	10	0·1	3	6	Cholecystectomy, 1932
Clerk ..	Jaundice	6	6	+++	8	0·3	2	4	Microcytic anaemia
Shop-keeper	Pernicious anaemia	5	7	+	12	0·6	2	4	Mitral stenosis
Corporal	Haemolytic anaemia	4	8	+	8	0·1	2	5	Microcytic anaemia
Baby ..		breast-fed	2	—	—	—	4	8	Healthy

winter carrots were cheap and easily obtainable, and "besides, they were so nice to munch." The lorry-driver's wife had been told "carrots were full of vitamins." The clerk grew so many carrots on his allotment that his wife felt she had to eat them. She liked the clean taste left in her mouth so much that she invariably carried one about in her pocket. Since June of last year the corporal's wife used to munch carrots, especially while preparing the family meals, in order to increase her vitamin intake during her period of gestation. A healthy baby was born at Christmas and thrived on the breast. It had no other treatment. In February the corporal noticed his wife and baby were carroty and sought his doctor's advice. Jaundice was diagnosed and the breast dethroned by the bottle. On a light diet and milk feeds the pigmentation gradually faded.

The time taken for saturation before the carroty skin was first noticed is tabulated as the threshold months. Each patient was thoroughly investigated for diseases which may have provided other factors; but they were quite healthy women, apart from one moderate case of mitral stenosis and the almost invariable hypochromic anaemia so prevalent in this area. These patriots of the "Kitchen Front" were congratulated on their heroic consumption both of carrots and of propaganda, and were asked to return to their basic helpings of vegetables, including carrots. On this moderation (it was not abstinence) the times in weeks of initial and then complete fading were noted.

Our threshold value corresponds approximately to that of a patient, quoted by Wood and Agnor (1941), who ate two carrots daily for a year. Kaupe's (1919) finding of carotinaemia in babies weaned on carrot soup, the lipochrome content of which must necessarily have been small, is in harmony with our baby's susceptibility in developing skin pigmentation after only two months on the breast milk of its carotinaemic mother. This is believed to be the first case reported of carotinaemia from the breast milk of an affected mother.

Laboratory Investigations

The routine estimations of icteric index and serum bilirubin were carried out in all cases. These revealed an obviously "jaundiced" serum of a high icteric index (on colour comparison with the potassium dichromate standard 1/10,000 dilution) but a serum bilirubin within normal limits. Obviously the orange colour was not due to bile pigment. However, the lipochromes are soluble in petroleum ether and the bile pigment in absolute alcohol, which will also precipitate the proteins in the serum.

This fact forms the basis of the test of Greene and Blackford, which we refer to as the three-layer test, to differentiate carotinaemia from jaundice. Equal quantities of serum, alcohol, and petroleum ether are shaken up in a tube. This may be left to settle, as the volatile petroleum ether, with its dissolved lipochromes, rises to the top as a distinct layer. If lipochromes are present in abnormal amount this top layer will show a definite yellow tinge which is pathognomonic of carotinaemia. The depth of colour may be compared with the potassium dichromate standard to give its lipochrome index. However, it is better to centrifuge the mixture in the tube. The precipitated proteins spin down to the bottom as a white curd, covered by the middle band of absolute alcohol with its dissolved bile pigments, on which the "true icteric index," or bile index, can be estimated against the dichromate standard. If this middle alcohol band is excessively yellow and is covered by a clear petroleum layer, then the sandwich is jaundiced and the bile index will equal the icteric index.

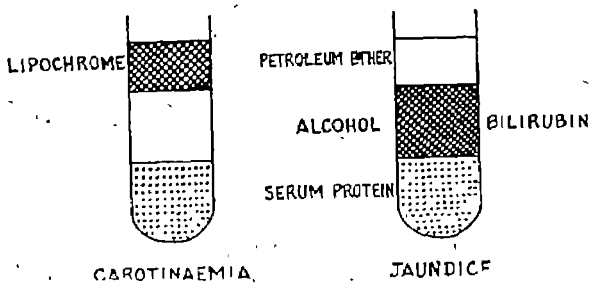

Diagram illustrating the three-layer test for the differentiation of carotinaemia from jaundice.

Icteric index	=	*Bile index*	+	*Lipochrome index*
(on whole serum)		(on alcohol layer)		(on ether fraction)

In a hypothetical case of jaundice and carotinaemia both layers will be quite yellow, and the degree of each pigmentation can then be estimated separately.

Carotene is the yellow colouring matter—the lipochrome—of carrots, spinach, palm oil, and nettles. It is a highly unsaturated hydrocarbon, $C_{40}H_{56}$, which exists in three forms—alpha-, beta-, and gamma-carotenes. These can be separated by filtering a light petroleum solution through a Tswett column of calcium hydroxide. Each form adsorbs out of solution at a different layer in the column. All three forms are precursors of vitamin A, but owing to its internal pattern one molecule of beta-carotene yields two molecules of the vitamin, while the alpha and gamma forms produce only one molecule. Thus the beta form has twice the physiological activity of alpha- and gamma-carotenes. Natural products, however, contain much more beta- than alpha-carotene and little, if any, of the gamma form. The isomer of carotene is lycopene, which is the colouring matter of tomatoes, rose hips, and bittersweet berries, but is inactive physiologically in not forming vitamin A. Carotene is the principal though not the only lipochrome in human serum. It is always associated with its hydroxyl derivative, a xanthophyll. Lutein is the xanthophyll of alpha-carotene, and is the lipochrome in egg yolk and green leaves. Thus the term "xanthaemia," of Boeck and Yater (1929) is more accurate than the popular carotinaemia.

The absorption of the lipochromes from the bowel is stated by Wood and Agnor (1941) to depend on the presence of dietary fat and the bile acids with which it is absorbed as a water-soluble diffusible complex. Curtis and Ballmer (1939) have shown that liquid paraffin interfered with this transport of carotene across the epithelium of the intestine. In the plasma the carotene is probably adsorbed to the albumin molecule and carried in colloidal suspension. The plasma proteins can be precipitated down by absolute alcohol, which itself dissolves bile pigments, while the lipochromes are soluble in petroleum ether, which floats lightly as a separate layer above the alcohol. This provides the basis for the three-layer test of Greene and Blackford. The conversion of carotene into vitamin A probably takes place in the liver.

Ralli *et al.* (1936) showed that the liver of a carotinaemic diabetic contained an increased amount of carotene. Pariente *et al.* (1936) theorized that in diabetes the conversion of carotene to vitamin A was impeded and that this resulted in a damming up of carotene in the liver and a diminished absorption from the blood. They neglected the additional factor of the high lipochromic diet usual in diabetics.

According to Wood and Agnor (1941), any excess of carotene is either destroyed or excreted via the sweat. They state that when excretion is unusually heavy the carotene is reabsorbed by the horny layer of the skin. Palmer and Kempster (1919) found the lipochromes in fowls in the rete malpighii and cornified layers of the skin. Greene and Blackford (1926) observed the concentration of pigment in the naso-labial folds, where sebaceous glands abound, and in the palms and soles, where cornified skin is thickest. We find that the soles of Lancashire housewives are undistinguished, but that the palms of our hospital cooks, after scraping carrots for dinner, were stained like T.N.T. workers. However, this direct staining from handling carrots could be washed off almost completely—in contrast with that from excessive intake, which was undiminished by washing. In our cases, in addition to the naso-labial folds and palms, the rest of the skin was almost uniformly tanned, but the sclera was contrastingly white. This immunity of the sclera in carotinaemia is the chief clinical sign in differentiating it from jaundice. The colour of the skin and the details of food intake are additional factors in clinical diagnosis.

Several of our patients noticed a deep orange colour in the urine. Attempted extraction of the colour with petroleum ether was unsuccessful, and no typical absorption bands were found spectroscopically.

Boeck and Yater (1929) discuss the wide variation in the appearance of xanthosis and xanthaemia in individuals on similar diets. To account for this, they believe that the rates of oxidation and excretion must vary widely. Bernheim (1926) fed large quantities of carrots to 3 patients, who quickly produced a high icteric index, which, however, fell to normal within 12 hours. In our cases the rate of metabolism seemed to be remarkably constant in the different individuals. The threshold quantity appeared to be a minimum of 4 lb. of excess carrots per week for a minimum period of seven months before skin pigmentation became visible. The rate of fading appeared to be equally constant once they returned to an average diet. Fading was first noticed in a minimum of two weeks and was complete within eight weeks. In view of Bernheim's finding of the rapid disappearance from the blood of excess lipochromes within 12 hours, it would seem that above the threshold quantity the body is unable to oxidize or excrete all the lipochrome, so that some pigment is slowly accumulating. The capacity of the body to eliminate lipochromes must be well above the normal requirements, as it takes a minimum of six months' accumulation before the high threshold is reached on such abnormal intake and before skin pigmentation is noticeable.

The findings of the remarkably constant threshold in the accumulation of pigment and of the steady rate of fading in normal individuals support the theories of diminished conversion of carotene to vitamin A in the liver of diabetics and poor urinary excretion in nephritics, as in both diseases carotinaemia occurs more frequently than in health.

Summary

Carotinaemia is a carroty pigmentation of the naso-labial folds and palms when mild and, when marked, a general body tanning except in the sclera, which distinguishes it clinically from jaundice. It is due to the excessive consumption of carrots and other lipochromic foods. The patients are healthy and do not require treatment apart from reduction to average consumption.

Four cases of carotinaemia are described in normal women after eating more than the threshold quantity of 4 lb. of raw carrots per week for a minimum period of seven months.

A baby fed only on the breast of its carotinaemic mother developed the condition within two months. This is believed to be the first case described.

The simple three-layer test of Greene and Blackford to differentiate between carotinaemia and jaundice is described.

We are indebted to Drs. S. Smithson and M. C. Welsh for allowing us to see and investigate their cases. We wish to thank especially Dr. M. L. Thomson for permission to investigate the case of the infant of the carotinaemic mother.

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W. E. Snell (*Tubercle*, 1942, **23**, 101) maintains that garden work is the main form of occupation for sanatorium patients for the following principal reasons: (1) it provides controlled exercise for patients under open-air conditions, and thus hardens them for return to a working life; (2) it relieves the boredom of institutional life and should provide the patient with a mental interest; and (3) the patient's labour theoretically provides some return to the institution. In any sanatorium of 300 beds about 50 patients will be available for garden work, consisting of the following groups of cases: (1) early or pleural cases for which no collapse therapy is indicated; (2) patients undergoing artificial pneumothorax and those convalescent from thoracoplasty; and (3) patients not suitable for artificial pneumothorax but whose general condition is good.

BEE-STINGS IN KENYA COLONY

BY

A. J. JEX-BLAKE, M.D., F.R.C.P.*

East Africa is a good place for studying the effects of bee-stings, because people living there are stung more often than those in England. This is in part because the common native bee, *Apis mellifica adansoni*, is more savage and eager to attack than the honey-bee of Europe, *Apis mellifica*, its near relative—for example, an expert bee-keeper of my acquaintance would often get as many as 50 stings a day while looking after her few hives of native bees—and in part because the bee population is large, the native inhabitants being apt to put up barrels, hollow pieces of tree-trunks, boxes, and other contraptions in trees anywhere and everywhere for the wild bees to hive in, the honey being used for beer-making. Further, these bees swarm all the year round, so that there is never a day when flying or settled swarms may not be met with out of doors or indoors. Finally, many East African houses, especially those that have been unoccupied for a time, acquire nests of bees in roofs, hollow walls, or under the floors that are very hard to get rid of when the house is occupied again. When they do attack, nests, hives, or swarms of native bees are apt to do so on the heroic scale. This is illustrated by the following 3 cases occurring in European settlers:

Cases of Massive Stinging: Recovery

Case 1.—A small man aged 75 was attacked by a swarm of bees in his garden. Between 200 and 400 stings were removed from his face and neck, and he was given an intravenous injection of 2 pints of 2% sodium bicarbonate solution. He showed no reaction from either the stings or the treatment, and no severe signs or symptoms.

Case 2.—A man aged 64 was attacked by swarms of bees and heavily stung about the face, neck, and hands. In 2 or 3 minutes he was overcome by violent diarrhoea and vomiting, and soon after that became unconscious. He was presently rescued and came to himself quickly. His face was so beset with upstanding bee-stings that he said he looked as if he had not shaved for 3 or 4 days. Over 300 bee-stings were extracted, and ammonia solution was dabbed on. He slept well with a sedative, and next day, apart from a little thickening and itching of the skin of the face and hands, felt quite all right.

Case 3.—A young woman set upon by swarms of bees was badly stung; she had attacks of diarrhoea and vomiting, and was rescued in a fainting condition. The number of stings extracted from her scalp, face, neck, chest, back, arms, and legs was at least 500, probably more—an hour and a half's work, including extraction of a sting from the very back of the tongue. Fine curved entomological forceps were used, and care was taken not to squeeze the venom-sacs during extraction. Dilute ammonia was applied, and the patient required a sleeping-draught and morphine. She kept to her bed next day and then recovered rapidly.

The numbers of the stings removed in these instances are those estimated by the medical men who removed them or by other observers, and there is no reason to believe that they have been exaggerated. The amount of venom injected by a single bee-sting is said by Phisalix (1922) to be 0.33 mg.: its active constituent is a protein. Case 1 suffered no more than a severe but passing inconvenience from the stings and must have had an exceptionally high tolerance of or immunity to bee-stings; Cases 2 and 3 can probably be taken as having the normal degree (if there is such a thing) of sensitiveness thereto.

Two Fatal Cases

The following two cases illustrate the fact that a man who has suffered no more than the normal transient local pain and swelling after bee-stings all his life may suddenly become hypersensitive to bee venom and be very near to death or even die when stung again.

Case 4.—A healthy man aged 45, passed fit for insurance 6 weeks previously, was stung 4 or 5 times while driving a swarm of bees out of his veranda; these stings gave rise to the usual transient painful swellings, as stings had done in previous years, but to no general symptoms. A fortnight later he was attacked by a swarm of bees while walking along a road, and was again stung on the face 4 or 5 times; he ran away, and in about 2 minutes collapsed and died. Artificial respiration, continued for an hour, was without effect.

Case 5.—This patient, a man aged 55, owned and lived on a sisal farm which chanced to have a particularly large bee population. For 20 years he had been stung at least a dozen times a year with no ill effects beyond slight and passing local swellings. A sudden change for the worse took place in this state of affairs. One day, while playing bridge on a veranda, he was stung in the leg. He felt very ill, collapsed in 2 or 3 minutes, was unconscious, cyanosed, and pulseless for 10 minutes, passed water and motions, and struggled violently on coming to. Twenty minutes later he was well enough to drive himself home in his car. During the next 9 months he had 10 more similar attacks on being stung; each attack was said to be more severe than the previous one. The last attack but one followed a sting on the forehead; the patient walked into the house, collapsed in half a minute, and was cyanosed and pulseless for 10 minutes. Two hypodermic injections of strychnine were given and the pulse slowly returned; while still unconscious the patient passed water and motions, as always happened in these attacks, had a violent rigor, and dripped with perspiration. He was placed on a couch and slept for 4 or 5 hours, waking up perfectly well. The eleventh and last attack followed a sting in the neck, and proved fatal in about 15 minutes.

Discussion

It seems reasonable to assume that in Case 4 the patient was sensitized or rendered hypersensitive to bee venom by the 4 or 5 stings he received a fortnight before his death. But in Case 5 there is, unfortunately, nothing to show why the patient suddenly became hypersensitive to bee venom 9 months before he died, after having been quite insensitive to it for 20 years. The sensitization in Case 4 was specific; in Case 5 it may have been specific, but the possibility of non-specific sensitization to bee venom (Foulkes, 1939; Bray, 1934; Oriel, 1936) should not be overlooked.

An explanation of sudden death occurring after wasp- or bee-stings often met with in medical literature (Dyke, 1941; Barber, 1941; Cummins, 1939) is that the sting has chanced to puncture a vein in the dermis, so that some of the venom enters the circulation direct instead of being fixed and destroyed by the skin. The cases detailed above lend no support to this notion. In Case 5 one cannot believe that the bees should have missed the veins a dozen times a year for 20 years and in the ensuing 9 months punctured them 11 times in succession. And in Cases 1, 2, and 3 it is hard to imagine that not one out of so many hundreds of stings should have struck a vein in the dermis. In fact, this theory of venepuncture is superfluous. A better explanation of such sudden deaths can be given in terms of idiosyncrasy, hypersensitiveness, allergy, or anaphylaxis. If the signs and symptoms observed in severe or fatal cases of bee-stings are compared with those recorded (Bray, 1934; Lamson, 1924) in severe or fatal cases of serum disease, as in the accompanying Table, the two are seen to be nearly identical, and death in each case can properly be set down to anaphylactic shock.

Severe Bee-stings	Severe Serum Disease
Restlessness, apprehension Unconsciousness	Restlessness, apprehension Vision completely lost Unconsciousness
General Symptoms	
Erythema, pallor Urticaria Giant urticaria Itching, local or general Numbness, tingling Generalized burning pain Sweating	Erythema, pallor Urticaria Large confluent wheals Itching, local or general Numbness, tingling Generalized sudden pain
Muscular System	
Uncontrollable twitching Muscular spasms Convulsions, rigor Transient paralyses of eye, pharynx, limbs Intense weakness	Twitching of face Spasms of arms and legs Severe convulsions, tonic and clonic Opisthotonos Dilatation of pupils
Heart and Lungs	
Anginal pain in chest Heart failure Heart beating after cessation of respiration Cyanosis Acute dyspnoea Cheyne-Stokes breathing Crowing respiration Respiratory failure	Pain in chest Heart failure, syncope Heart beating for 3 to 15 minutes after cessation of respiration Cyanosis Acute dyspnoea, choking cough Typical attack of asthma Respiratory failure
Digestive Tract	
Violent diarrhoea and vomiting Loss of sphincter control Inability to swallow	Violent diarrhoea and vomiting Loss of sphincter control

Summary

The frequency of bee-stings in Kenya Colony is noted. Three cases of multiple bee-stings with recovery and 2 fatal cases are recorded.

The suggestion that fatal cases occur when the sting penetrates a vein is discredited.

It is argued that death in fatal cases of bee-stings is due to anaphylactic shock, as it is in fatal cases of serum disease.

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INDIRECT RADIOTHERAPY*

BY

W. VIGNAL, M.D.Paris
Lieut.-Colonel, Fighting French Forces

Radiotherapy as ordinarily practised exerts a local destructive effect. Indirect radiotherapy produces good results by its effects on function, especially that of the sympathetic and glandular systems. Radiations act very differently on cells *in vitro* and *in vivo*. Their effects cannot be measured solely by the morphological changes which they produce; other less-known modifications have a great field of usefulness in treatment.

Cardiovascular Disorders

In *arterial hypertension*, which Vaquez showed to be due to excessive development of the suprarenal glands, irradiation of the suprarenal capsules has been widely practised since 1913. Generally speaking, in chronic constitutional hypertension with no evidence of nephritis or of any other assignable cause, irradiation does not reduce the blood pressure any more readily than do the simpler methods of rest and diet. On the other hand, it often greatly relieves the functional symptoms, such as headache, vertigo, spasm, and muscae volitantes. Similar results are obtainable with high-frequency current. Moreover, exacerbations of hypertension are quickly controlled by irradiation of the suprarenals, though the underlying condition is unaltered. The dosage is comparatively slight, and no change in the suprarenal tissues has been observed at necropsy. These apparently contradictory observations may be explained by Bard's differentiation of arterial hypertension into several varieties. Some of these he suggests are compensatory either for some known disorder like nephritis or for an unknown disturbance. To reverse the physiological changes, the cause, whatever it is, must be treated. On the other hand, hypertension due to a derangement of the mechanism controlling arterio-constriction is amenable to suprarenal irradiation.

Thrombo-arteritis obliterans falls into two classes: local, due to compression, embolism, or localized thrombosis; and general. Local forms may respond to various other kinds of treatment but never to radiotherapy; in the general group, cases which develop rapidly from infection and septicaemia do not respond to irradiation, but chronic and subacute cases

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* Translation abridged for publication.

—for instance, in young or old persons or in diabetics—can be notably improved and sometimes clinically cured. The results depend on the stage at which the lesions are treated. The best time for treatment is naturally when the symptoms are still at their mildest and the vascular system can respond to irradiation of the sympathetic nervous system.

Thrombo-arteritis generally attacks a large artery and always sets up a reflex vasoconstriction of the collateral circulation. The aim of treatment is not to restore circulation in the artery, for this cannot yet be done; it is to suppress the vasoconstrictor reflex and so allow the collateral circulation to continue to supply blood to the limb. Accordingly, irradiation is applied to the suprarenal area—i.e., between D 10 and L 2; to the periaortic plexus, which surrounds the iliac arteries; and to Scarpa's triangles and the popliteal spaces ("*carrefours arteriels*"). The pain nearly always disappears, though on the night after the first or second treatment the symptoms are aggravated. When the pain is associated with gangrene, radiotherapy is only palliative. On the other hand, irradiation acts on the vasomotor symptoms almost at once. The patient often notices during the first treatment a feeling of heat, which can be felt by the hand; the limb can also be much more readily warmed in bed or by an external source of heat. The oscillometric index hardly ever varies to correspond, and the claudication is reduced but never entirely banished.

On *trophic disorders and gangrene,* irradiation has an undeniable but an unreliable effect. The least favourable indications are torpid wounds and chronic gangrene in old persons. The results have, of course, to be assessed with discrimination. In sphacelus and gangrene the pain due to the arteritis is relieved, and frequently the gangrenous process is arrested and a drainage channel is formed; sometimes the condition may even clear up. In other cases the local pain due to the gangrene persists in spite of a strong impression that the process has been stopped or slowed. The limb will then have to be amputated; but the patient's condition may be much improved, as the operation can be performed under better conditions, sparing a larger portion of the limb.

Arteritis in old patients, especially when the calcified arteries are visible in the radiograph, gives the least encouraging results. Juvenile arteritis is the most favourable indication. In *diabetic* patients the most important requirement is to reduce the blood sugar. The prognosis for *moist gangrene* is always very bad.

Irradiation of the sympathetic also produces several effects apart from the changes in the pathological condition. In *Raynaud's disease* it has little action by itself but reinforces the action of diathermy. When the cervical region is included it will often clear up vasomotor symptoms due to *trauma* in which disturbance of the sympathetic balance produces vasoconstriction. Possibly it might have an equally beneficial effect on *pathological vasodilatation,* as in erythromelalgia: its action is polyvalent, and it produces always the effect opposite to that of the pathological condition.

There exists in most *cardiac disorders* a functional element which is susceptible to irradiation. Several workers, including Pruche and Bienvenue, give a small exciting dose to an area of the cervico-dorsal spine at the level of the stellate ganglion. The results are a toning-up of the myocardium, reinforcement of the action of digitalis, and diminution of the tachycardia; but no definite conclusion can yet be drawn from the relatively small number of cases treated.

Dermatoses

Gouin and Bienvenue found that the irradiation of *primary warts* would clear up secondary warts at a considerable distance. They suggest that the rays excite the nerve endings of the skin to produce, by way of the afferent fibres of the vegetative system, sympathetic reflex actions which modify the lesion. This theory does not seem to apply to the particular instance of warts, but has been borne out by their results in other skin disorders. Since 1924 they have treated *Wilson's lichen planus* by superficial irradiation of the interscapular region, the rays being centred on D 4 for lesions of the upper and on D 10 for lesions of the lower limbs. They give only one application, and if it fails they do not try another for three weeks. The evening after the treatment the pruritus is often aggravated for two or three hours, but by the next morning it completely disappears; during the next three or four weeks the papules flake off and disappear. Pautrier of Strasbourg uses a method which he calls medullary radiotherapy: he employs thicker filtration, a higher kilovoltage, and a larger dosage, given in two parts at intervals of three days. Broadly speaking, Gouin and Bienvenue limit the action to the cutaneous afferent fibres, while Pautrier's aim is to irradiate the roots or medullary ganglia of the visceral sympathetic system. His method is perhaps better adapted to cases of longer standing.

In *supramalleolar erythrocyanosis* Gouin and Bienvenue use either spinal or axial irradiation. When the skin disorder is associated with others, such as dysmenorrhoea or acne, they irradiate the arterial *carrefours;* if the menstrual trouble is predominant, they begin by spinal irradiation and irradiate the *carrefours* three weeks afterwards. The duration of *chilblains* can be considerably shortened by irradiation of the *carrefours,* and they may be prevented from recurring. If they have ulcerated before cicatrizing they will secrete copiously. They clear up a fortnight after irradiation.

Acrocyanosis is treated by irradiation of the *carrefours,* or, if this does not succeed, of the interscapular region or the lumbar curve as the case may require. In long-standing cases the suprarenal area should also be irradiated. Cure is hardly ever quite complete. In *eczema with lichen formation* the methods both of Gouin and of Pautrier have succeeded brilliantly. During the war of 1914-18 Delherm obtained remarkable results in *causalgia* by irradiating the various spinal sympathetic branches and the vascular *carrefours. Schulze's acroparaesthesia* has also been cured or much improved by the same method; and it will often mitigate *pain in amputation stumps.*

In *diabetes mellitus* indirect irradiation brings about two interesting effects. Desplats of Lille reported that it reduced the glycosuria; and in some cases irradiation is followed by a sudden rise in excreted sugar followed by a gradual fall which lasts a long time. In severe diabetes with emaciation, on the other hand, irradiation, when it has any effect at all, makes matters worse. Irradiation of the pituitary gland will often render insulin-resistant patients sensitive. Obviously it acts on the sugar-regulating function of the anterior lobe, but in order to be effective the hormone of this lobe must have adrenaline associated with it.

In *menstrual troubles* not due to any lesion or anatomical abnormality, irradiation of the *carrefours* gives interesting results. The disorder of ovarian function responsible for these troubles often coincides with facial acne, pruritus, or eczema of the genital region. Desplats, irradiating the suprarenal area instead of the lumbar curve, obtained good results alike in this class of disorder and in those associated with the physiological or surgical *menopause.* Usually a single treatment is sufficient; if it is not, a second and sometimes a third are given, at intervals of eight days.

Asthma has been treated by irradiating various portals of entry, including the thorax, the thorax and spleen, the pituitary, the pancreatic region, and the bulb. The exponents of these different techniques adduce their successes to confirm a variety of aetiological theories; the benefit is probably due to a non-specific protein shock.

In *Graves's disease* associated with sympatheticotonia, an inverted oculo-cardiac reflex, and a basal metabolism only slightly above normal or even a little below it, neither irradiation of the thyroid nor surgery gives any relief; the only effective treatment is irradiation of the suprarenal area.

Mechanism of Action

As the very small dosage produces no anatomical change it must modify function. The glandular secretions have been shown to be increased or reduced by it—a somewhat disturbing observation, for histologists (except for the doubtful results of R. Isaacs) have never yet been able to demonstrate that *x* rays stimulate cellular metabolism. On the other hand, radiations are known to modify, *in vivo* and *in vitro,* the fluid media of the body. Certain organic compounds—e.g., cholesterin, the fats, and amidin—are split up by hydrolysis; and the viscosity of the colloids is increased, according to dosage, up to the point of gelation. Richard Seyderhelm, by injecting previously withdrawn blood, could prevent or cure the anaemia induced in an animal by the injection of saponin. It seems permissible to assume that these chemical changes, and perhaps also others as yet unknown, affect the glandular system without producing any appreciable anatomical alteration. They naturally vary according to the nature and degree of the disorder.

Through all the portals of entry employed the rays have access to the sympathetic nervous system. Radiotherapy therefore can modify the function of the sympathetic, and also of its perivascular plexuses, in various ways according to the dosage and the degree of excitability of the nerves. Gouin and Bienvenue produced by irradiation of the sympathetic the same reactions in the blood and the same clinical and therapeutic phenomena as Leriche produced by surgery. Moreover, besides the endocrine glands, which secrete their products into the blood, P. Masson has demonstrated the existence of endocrine tissues which secrete directly into the nerves. These two actions, humoral and nervous, proceed together. For instance, adrenaline acts by exciting the sympathetic nerves. Comparative anatomy and embryology show the close association of chromaffin with the sympathetic, and experimental physiology shows the close interaction of certain hormonal influences with corresponding neural factors—"sympathetico-glandular synergy." It is therefore easily conceivable that radiotherapy applied to the sympathetic and glandular systems may excite modifications which produce the beneficial effects that have been noted. As yet no one knows why or how it restores a disturbed balance by acting on that phase of the reciprocal vegetative function which happens to be impaired. This and many other difficult questions remain to be answered, and the answers will be as interesting as they are valuable.

TREATMENT OF PHOSPHORUS BURNS

BY

A. THELWALL JONES, M.D.

A notable increase in the incidence of phosphorus burns must be expected under war conditions, and the article by E. W. Godding and H. E. F. Notton in the *Journal* of April 4 (p. 433) is therefore timely and useful. There are several points in this article which deserve further comment. It should be stated that the "official treatment" which they critically examine has been based on the practice gradually established through long clinical experience within the chemical industry and is the result of careful observation over many cases. These authors are under a misapprehension on one minor issue, as they assume that the copper sulphate treatment is designed chemically and completely to destroy the phosphorus particles left in the affected area after the preliminary washing. This is not the primary object, which is rather to destroy minute particles and to make obvious, by blackening, the larger pieces so that they can be removed mechanically. There is no present clinical evidence that the concentrations, both of alkali and of copper sulphate, suggested "officially" are inadequate, and indeed the extant case histories indicate that they are well chosen. Godding and Notton have done well, however, to stress that the alkaline treatment must be thorough, and the importance of this feature is borne out by my practical experience. A novel problem associated with present conditions is the satisfactory treatment of phosphorus burns under field or Service conditions. Here the practice found good enough in industry would often be difficult to apply with the requisite speed, and a satisfactory field dressing would be a valuable contribution to the casualty services. The powders suggested by Godding and Notton may prove of value in this connexion, and should certainly be given a thorough trial on human cases; it may be possible to get the requisite experience industrially. One further caution is necessary: Godding and Notton experimented with material from S.I.P. (self-igniting phosphorus) grenades, and this is not strictly comparable to the phosphorus as encountered in industry, though the effects may reasonably be assumed to be similar. The following notes on the treatment of phosphorus burns may be of interest:

Characteristics of the Burns

Burns caused by phosphorus have long been recognized as particularly severe and troublesome lesions. They have these characteristics: (*a*) the initial pain is severe; (*b*) a greyish area is produced almost immediately at the site of the lesion, and blistering is rare; (*c*) sepsis is particularly apt to ensue; (*d*) healing is prolonged, and the resulting scar is often thin and atrophic. During the past ten years I have had the opportunity of studying burns arising from a variety of chemical irritants and corrosives. Generally, the severity of burns is proportionate to the chemical nature of the causative agent, and may be placed in the following order: (1) hydrofluoric acid, (2) phosphorus, (3) sodium sulphide, (4) caustic soda, (5) sulphuric and other acids.

Method of Treatment

The essential factor in the treatment of all chemical burns is the immediate flooding of the area affected with water or sodium bicarbonate solution. It is necessary to organize an adequate first-aid service for this purpose. Buckets of water, running water, eye-wash bottles, and, in special cases, baths must be instantly available. Experience has indicated that immediate flooding with water and *prolonged soaking* in *warm* sodium bicarbonate solution is the essential feature in treatment.

Altogether 65 cases of burns caused by phosphorus have been observed, the records of which are set out in the accompanying Tables. (In every case the time taken to heal is recorded as a period which elapsed before the employee was able to return to normal work without *any* dressings.) Several methods

Cases treated with Sodium Bicarbonate, Copper Sulphate, Acriflavine Emulsion (1/1,000), and Boroseptic Ointment

Age	Date of Burn	No. of Burns	Area Affected	Degree	Total Size (sq. in.)	Days Absent from Work	Days taken to Heal	Comments
22	24/1/39	4	Fingers	3	2¼	Nil	30	
34	14/3/39	1	R. fore-arm	3	8	,,	17	
34	14/5/39	1	Eyelids, face	2, 3	9	Hosp. 28	17	
29	29/6/39	1	Heel	3	6	30	22	
46	8/6/39	1	Ankle	3	4	16	10	
27	9/7/39	4	Wrist, fingers	2	2	Nil	30	
36	14/7/39	4	Neck, chest	2, 3	5¾	,,	49	Skin eruption with acriflavine
36	14/10/39	1	Forearm	3	1¼	Hosp. 81	79	Sensitive thin scar. Skin eruption with acriflavine
42	26/10/39	1	Finger	3	1¼	Nil	19	
41	12/11/39	1	,,	3	¼	,,	17	
42	16/11/39	1	Palm	3	¼	,,	4	
30	17/11/39	2	Fingers	3	¼	,,	18	
25	13/12/39	1	Arm	3	6	,,	25	
34	18/12/39	4	Hand, fingers	2, 3	1¼	,,	17	
—	10/1/40	2	Fingers	2	¼	,,	12	
46	6/2/40	4	,,	3	6	,,	4	
32	8/2/40	1	Hand	2	1	,,	4	
37	24/2/40	1	Forehead	2	¼	,,	9	
23	7/3/40	1	Finger	3	¼	,,	11	
36	14/3/40	1	Hand	2	¼	,,	7	
33	15/3/40	1	Forearm	3	1¼	,,	23	
46	28/3/40	1	Finger	3	¼	,,	12	
36	2/4/40	1	,,	3	1	,,	18	
35	10/4/40	3	Fingers	3	1¼	16	24	
34	25/4/40	1	Forehead	3	4¼	Nil	60	
68	13/5/40	2	Forearm	3	1⅓	,,	24	
47	15/5/40	1	Wrist	3	1	,,	16	
42	23/5/40	2	Fingers	3	1	,,	8	
29	2/6/40	1	Hand	3	4	,,	35	
29	2/7/40	1	Finger	3	¼	,,	20	
36	4/8/40	3	Arm, forearm	3	32¼	,,	32	Skin eruption with acriflavine
45	21/11/40	1	Palm	2, 3	¼	,,	18	
38	25/11/40	1	Thumb	3	1¼	,,	27	
24	25/11/40	2	Wrist, hand	3	1¼	,,	39	Given light work
25	28/11/40	3	Wrist, fingers	2, 3	3	,,	33	,, ,,
37	29/11/40	1	Thumb	2	¾	,,	8	
—	4/12/40	3	Fingers	3	2	,,	24	

Cases treated with Sodium Bicarbonate, Copper Sulphate, Picric Acid, and Boric Ointment

Age	Date of Burn	No. of Burns	Area Affected	Degree	Total Size (sq. in.)	Days Absent from Work	Days taken to Heal	Comments
35	10/11/33	1	Foot	2	1	Nil	8	
36	13/11/33	1	Eyelid	3	½	,,	17	
37	14/11/33	1	Thumb	2	¼	,,	7	
47	15/11/33	1	Forearm	3	¼	,,	12	Sepsis
35	20/11/33	2	Fingers	3	1	,,	13	
42	25/11/33	1	Finger	3	1¼	,,	12	
34	28/11/33	3	Hand, fingers	2	1¼	,,	5	
33	30/11/33	2	Fingers	2	½	,,	7	
37	1/12/33	1	Hand	3	½	,,	21	
35	4/12/33	1	Wrist	3	¼	,,	10	
—	25/8/35	2	Fingers	3	1¼	,,	18	
—	28/8/35	3	,,	3	1¼	,,	15	
34	2/9/37	1	Hand	3	1¼	,,	42	

*Cases treated with Sodium Bicarbonate, Copper Sulphate, and Burnogel**

Age	Date of Burn	No. of Burns	Area Affected	Degree	Total Size (sq. in.)	Days Absent from Work	Days taken to Heal	Comments
28	20/2/37	2	Hand, thumb	3	3	Nil	19	
41	1/3/37	1	Hand	3	5	27	31	Sepsis—ichthyol substituted
45	28/5/37	1	Forearm	3	1	Nil	19	
43	3/9/37	4	Arm	3	2¼	,,	29	Pain - ichthyol substituted
38	12/11/37	1	Knee	3	30	12	28	Ichthyol used when healing
36	17/11/37	1	Calf, leg	3	5	Nil	43	,, ,,
29	12/2/38	1	Thumb	3	½	,,	15	
36	5/5/38	1	Left heel	3	2¼	32	35	Thin scar Sepsis—ichthyol substituted
40	17/5/38	6	Fingers, thumb, cheek	3	6	Hosp.	43	Thin scar. Off work 60 days
35	17/10/38	1	Finger	3	1	Nil	18	
34	15/11/38	1	Hand	3	12	51	59	Pain after 2 days — ichthyol substituted
38	10/6/39	1	,,	2	1¼	Nil	10	
39	20/8/39	1	Ankle	3	6	36	48	Ichthyol required

* Copper guaiacol sulphonate, 0·2% ; acriflavine, 0·05% ; benzamine borate, 0·1% ; perfume and jelly base, ad 100%.

Cases treated with Sodium Bicarbonate, Copper Sulphate, and Tannic Acid

Age	Date of Burn	No. of Burns	Area Affected	Degree	Total Size (sq. in.)	Days Absent from Work	Days taken to Heal	Comments
40	18/1/37	2	Two fingers	3	1¼	Nil	32	Painful
21	3/2/37	1	Hand	2	¼	24	5	,,

of treatment have been tried, and as a result of the experience gained the following procedure is advised:

(1) Immediately flood the affected area with water.

(2) Thoroughly flood and wash with warm sodium bicarbonate solution (roughly two tablespoonfuls to a pint of water). Pick off with forceps any obvious particles of phosphorus disclosed by examination in the dark.

(3) Swab the affected area with 1% solution of copper sulphate and make a further exploration for phosphorus particles so revealed. Soak the affected area (immerse if possible) in warm sodium bicarbonate solution for a prolonged period. The duration of this soaking depends upon the size and depth of the burn—i.e., small burns 1/2 hour, large burns 1 to 2 hours.

(4) Dress daily with acriflavine emulsion 1/1000. Burns near the eyes are best treated by a mask of lint soaked in sodium bicarbonate solution renewed four-hourly.

(5) Immediately healing begins (7 to 10 days) boroseptic ointment (P. D. & Co.) provides a very satisfactory dressing, and its use can be continued until the scar produced is sound.

Tannic acid and other coagulants do not give satisfactory results, as is also the case in the treatment of all chemical burns. Acriflavine emulsion has the disadvantage that in some individuals local and generalized skin eruptions may be produced. A daily inspection will detect such lesions at an early stage, when boroseptic ointment should be substituted.

As a result of such treatment results are obtained which compare favourably with a similar series of burns caused by caustic soda and sulphuric acid. Healing is slower and scars are thinner in burns caused by phosphorus.

RELATION OF PYOGENIC SKIN INFECTIONS TO THE SKIN-CARRIER RATE

BY

N. H. MARTIN, B.M., M.R.C.P., F.I.C.

*Major, R.A.M.C.**

Bacteriological investigations have demonstrated that a fraction of the presumed healthy population carry potentially pathogenic staphylococci on their wrists. The actual proportion of carriers varies from 5% found by Nimmo-Smith (1941), examining R.A.M.C. personnel, to 19.5% found by Gillespie, Devenish, and Cowan (1939), examining students. Devenish and Miles (1939) appeared to show that a previous history of pyogenic skin infection was not given by a significantly higher percentage of skin carriers than normal.

The Present Investigation

The object of the investigation was to discover whether or not the carrier rate varies with the part of the body sampled, and if there was a significantly higher carrier rate in people suffering from pyogenic skin infections as judged by multiple swabbing. The series investigated consists of group A, 140 patients suffering from pyogenic infections of the face or neck, and group B, 100 individuals having no demonstrable pyogenic lesions. An effort was made at first to ascertain whether or not individuals of group B had at any time suffered from pyogenic skin infections. This was abandoned because it was clear that they were not equally reliable as witnesses. So far as the inquiry went there seemed to be no evidence of a significantly higher carrier rate among those giving a previous history of skin infection.

Technique.—Three swabs were taken from each person. The first swab was from the upper lip in group B and from the upper lip where possible in group A, but in every instance at least one inch from the nearest demonstrable lesion. The second swab was taken from the right wrist in right-handed people and from the left wrist in left-handed people. The third swab was taken from the chest in the midline opposite the second rib. At each site an area of 2 sq. cm. was sampled with a broth-impregnated swab which was stroked over that area 30 times in 30 seconds. The swabs were immediately plated out on blood agar and on gentian-violet agar at 37° C. for 24 hours. The plates were then examined, and selected colonies of staphylococci were subcultured and tested for their ability to form coagulase. At the same time their ability to form pigment was noted. The coagulase test was chosen as a basis for assessing pathogenicity; and it was observed that 5 out of 151 strains isolated from group A failed to produce any pigment though they were coagulase-positive. McFarlan (1938) showed that a number of non-pathogenic strains of the staphylococcus would ferment mannitol, and this test was not carried out. The plates containing gentian violet were used for the isolation of streptococci.

Discussion

The results are shown in tabular form. There is in the series under review a significant increase in the "complete carriers" of potentially pathogenic staphylococci in group A. Though this may be, and probably is, a transient phenomenon, the carrier area appears to be extensive. A comparison of the carrier rate for the face, wrist, and chest in each group shows that in group B it varies, being highest, as might be expected, on the face. In group A the variation though present is not so marked, the difference between face-carrier rate and chest-carrier rate being 13.2%, compared with 24% in group B.

There appears to be a significant rise in the incidence of β-haemolytic streptococci on the face in group A, but not elsewhere. Here again recovery of the organism varies with the area sampled. The figures seem to demonstrate that the presence of a localized skin lesion produces a wide-spread increase in pathogens on the normal skin. If this be so it must materially alter our conception of the results to be expected from localized forms of treatment for pyogenic skin infections.

Table of Skin Carriers

	Carrying Coag. + Staphs.		Carrying β-haemolytic Streps.	
	Group A	Group B	Group A	Group B
Face only ..	13·1%	15·0%	6·5%	3·0%
Wrist only ..	8·0%	3·0%	1·4%	1·0%
Chest only ..	3·6%	1·0%	Nil	Nil
Face and chest ..	5·1%	4·0%	Nil	Nil
Face and wrist ..	8·0%	12·0%	0·7%	1·0%
Chest and wrist ..	4·3%	2·0%	Nil	Nil
Face, wrist, and chest	30·7%	7·0%	1·4%	1·0%
Total face ..	56·9%	38·0%	8·6%	5·0%
Total wrist ..	51·0%	24·0%	3·5%	3·0%
Total chest ..	43·7%	14·0%	1·4%	1·0%

My thanks are due to Col. R. Rees for permission to publish this paper.

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Medical Memoranda

A New Diagnostic Sign in Sciatica

Sciatica in form of neuritis or neuralgia presents a problem of grave importance on account of its frequency and chronicity. The loss of working days due to the condition is considerable.

Very often sciatica reveals itself only as a pain along the course of the sciatic nerve, without objective symptoms, such as alterations in knee- or Achilles jerks, trophic changes, etc. The surest indication of the existence and intensity of sciatica is the sign of Lasègue. This consists in an increase of pain when an attempt is made to extend the leg with the thigh flexed. The intensity may be measured by the angle at which the pain arises. Putti terms this L+++ if the pain is felt before the leg reaches 45 degrees with the axis of the thigh, L++ at 45 to 90 degrees, and L+ at 90 degrees and complete extension. The Lasègue sign is the result of stretching of the affected nerve. Several other signs depend on the same cause—i.e., the sign of Neri (flexion of the head, producing sciatic pain), and that of Goldthwait (flexing the thigh to a point of tolerance with the knee flexed, and then forced extension of the knee). To these we must add the contralateral sign of Lasègue, described by Montard-Martin and Parturier, and by Bechterew.

Lasègue's sign is very reliable, but in my opinion is too often positive. There are two reasons for this. First, as Bragard has shown, often purely muscular changes of the thigh in form of thickenings (*Muskelhaerten*) give a positive Lasègue sign (*Pseudolasègue*) in the absence of nerve involvement; secondly, certain individuals, for purposes of malingering, try to deceive the physician by false statements—many of them being acquainted with the Lasègue sign.

In many years' experience I have always controlled the Lasègue sign by the sign of Bragard, which I regard as of great diagnostic value. It consists in considerable increase of pain when a sudden dorsal flexion of the ankle is performed at the point where pain begins. Personally I employ the classical sign of Bragard plus this modification: at the point where pain disappears on lowering the leg, a sudden dorsiflexion of the ankle produces pain in the formerly painless leg.

My new phenomenon is as follows. The leg, flexed at the hip-joint and extended at the knee, with the foot in dorsiflexion, is slowly raised. In the case of sciatica a point is reached at which pain arises (first stage); a sudden extension of the foot now causes the pain to disappear instantly (second stage). This is a reversed Bragard sign.

I hope the new sign here described will be of help to physicians not only for the diagnosis of sciatica but also for revealing cases of malingering.

A. J. MESTER, M.D.

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Reviews

MEDICINE AND SOCIOLOGY

Society and Medical Progress. By Bernhard J Stern. (Pp 264 $3 00 or 18s 6d) Princeton Princeton University Press; London: Oxford University Press 1942.

Mr. Bernhard Stern, although a social scientist working outside the medical profession, proves in his *Society and Medical Progress* that he has paid close attention to the interactions between medicine and sociology. His first chapter on the slow emancipation of medicine from magic and its congeners does, however, give rather too depressing a view of that delay. Thus an epoch which produced Heberden's *Commentaries* can hardly have lacked clinical observation and scientific reasoning so much as is here suggested: on the other hand the reasons for the decline of medicine between Galen and the Renaissance are clearly stated in the quotation from Vesalius. As the author points out, medicine cannot develop and never has developed in isolation, for its progress is circumscribed by that of ancillary sciences and by the environment of the age. Urbanization has introduced new problems, as has the increasing proportion of elderly people. "Grave challenges are inherent in the new situation which medical science has helped to produce by its increasing efficacy. Medicine has not been able to provide economic security for the aged whose lives it has prolonged; that is not its province; but as he goes on to say, it has alleviated the mental suffering of populations in other ways than by the control of epidemics and the lowering of death and disability rates. One striking example is the new knowledge of nutrition, which is enabling this country to stand up to the strain of war to an unexpected degree. Yet as a rule the humanitarianism of the medical man has been mainly directed towards individuals; he has often ignored the larger social implications of his work. That, however, is tending to alter in the face of the present dangers to civilization.

The book closes with an interesting analysis of the factors that offer resistance to medical change; some internal, others external to the profession. Thus medical education has not really made up its mind whether it wishes to develop specialists or students whose training will enable them to develop competence to evaluate and use new methods as they arise. Obviously, we might urge that both are needed. Of ancient internal causes of delayed progress none was stronger than the contempt for the use of the hands, as Allbutt so vigorously insisted. More permanent causes are the reliance on authority and the dislike, by no means confined to medicine, of new ideas which challenge that authority. The external causes are antiscientific, romantic approaches to life and thought, which are not isolated phenomena but reflect the temper of intellectual life prevailing at the time. This in the last analysis he regards as related to the social and economic developments of the day.

NEURO-ANATOMY

Neuroanatomy By Fred A Mettler, M D, Ph D (Pp 476, illustrated 37s. 6d.) London· Henry Kimpton 1942

This is a superbly illustrated volume, which Prof. Mettler states "has been written to meet the needs of the medical student beginning instruction in neuro-anatomy and to prepare him for the demands which will later be laid upon him in his clinical training." The text is divided into two parts: (1) dealing with the topography and morphology of the central nervous system; (2) the microscopic anatomy of the nervous system. Although the author declares that no pretence of originality is made for any of the material presented, there is much which will be new to readers who have not made a special study of particular sections of the subject, such as that on the diencephalon and the structures related to it. This section is chiefly based upon data from Papez and Aronson, and is illustrated by schemata redrawn from these authors' work on the diencephalon of *Macaca mulatta*.

An enormous amount of material appears to have been used in the production of *Neuroanatomy*, as is indicated by the literature cited in a very full list of selected references. The outstanding feature of this work is, however, the production and illustration of a large number of specially planned dissections and of serial microscopical sections prepared by the Weigert and Nissl methods. Illustrations of the latter have been placed for comparison side by side, and all are fully and clearly labelled. From the standpoint of the medical student beginning the study of neuro-anatomy certain comments seem necessary. (1) There appears to be some danger of confusion arising from the great wealth of minutely described topographical details, and one would like to find further guidance in the way of introductory notes indicating the more important facts and principles, a knowledge of which is essential for medical practice. (2) A short introductory account would be welcome of particular organs or systems, such as the hypophysis or cerebellum, indicating their main functions, with reference to, and in explanation of, their anatomical relations. (3) Some brief allusions to the developmental history and comparative anatomy of particular organs and parts would enhance the general interest of the subject and give a scientific explanation of certain anatomical facts and peculiarities of the mammalian brain, such as the evolution of the corpus callosum, the nature of the septum pellucidum and its cavity, or the course of the spinal accessory nerves.

Neuroanatomy may be regarded as an authoritative work, which is beautifully illustrated and includes, in one volume, a clear description of the subject as a whole, and also embodies an account of important recent contributions to the anatomy of particular regions of the central nervous system that will be of great value to nerve specialists.

CARE OF THE PREMATURE INFANT

The Premature Infant: Its Medical and Nursing Care. By Julius H. Hess, M.D., and Evelyn C. Lundeen, R.N. (Pp. 309; illustrated. 21s.) Philadelphia, Montreal, London: J. B Lippincott. 1942.

A book on *The Premature Infant* by Prof. Julius H. Hess is sure of a welcome, and in this new volume, with its subtitle "Its Medical and Nursing Care," he has been assisted by Miss Evelyn C. Lundeen, who is the supervisor of the special department of the Sarah Morris Hospital, Chicago, where so much valuable work on the premature baby has been done. It is over 20 years since Dr. Hess first published his well-known work on this subject, and the present volume, containing as it does a certain amount of material from that book, may be regarded as a sort of sequel in which the practical implications of his earlier teaching have been fully worked out. Thus details are given of all the procedures recommended, and chapters on incubators, on home care, and on feeding, for example, are full of well-tried and useful practicalities. Something might have been included about intracranial disturbances other than haemorrhage, nor is there any mention of the use of thyroid gland or oestrogen as a possible metabolic stimulant in the early days of life. These are, however, minor matters in a large subject, and all having the care of premature infants will find much of value to study in this book. Properly mastered, the methods advocated should go far to reduce the neonatal mortality as effectively in Great Britain as it has been reduced in Chicago.

SCIENCE OF PERSONALITY

Foundations for a Science of Personality. By Andras Angyal, M.D., Ph.D. (Pp 398, $2.25 or 13s 6d.) New York: The Commonwealth Fund; London: Oxford University Press 1941.

This dissertation on personality postulates that the subject must be studied as a whole and not simply as an aggregation of parts. This does away with the antithesis of body and mind and formulates them as different aspects of study within the whole. Personality is essentially dynamic and not static, and the chief trends within it which react and interact are the tendency to greater self-determination (autonomy) and that towards conformity with the dictates of superindividual wholes, such as society and culture (homonomy). The first tends to impose the intrinsic determination of the individual upon a widening realm of events (aggression); the second tends to fit the individual into schemes of culture, religion, etc. (submission). Obviously in man the specific channels for expression of personality are extremely diverse and more or less defy classification.

Dr. Angyal discusses the integration of the personality and disturbances of this and attempts to define the systems which make up the personality. A complete view of the personality, however, can only be obtained if the time dimension (the biography) is also taken into account. In handling segmental data (physiology, psychology, anthropology, etc.) each of these should be related to the whole and not to each other (e.g., psychology to physiology). The subject is dealt with from the philosophic point of view and so may not be very easy reading for many medical men, but it is important in the understanding of the main object of medical study—the human being.

Notes on Books

Ornithologists of the United States Army Medical Corps, by Colonel EDGAR ERSKINE HUME of the U.S. Army Medical Corps is published at Baltimore by the Johns Hopkins Press, price $5. It is not easy to understand the purpose of this book, which can have little appeal to British medical readers and bird lovers. It is a record of the lives of thirty-six U.S. Army surgeons, each of whom is the subject of a chapter containing references to ornithological contributions. Most of the biographies deal with the stirring times when the U.S. Army was on active service winning the great west from hostile Indians, and are interesting in that respect. The growth of the American Army Medical Department from a handful of officers in the 'fifties to the huge organization it now is can be traced throughout these lives. There is, however, not much information of value to those of us who are keen on birds, and, indeed, there is little that requires to be said, for the immortal pioneer work of Audubon, Wilson, and Nuttall has placed American ornithology on a high plane and has been followed by a host of scientists who have done work of distinction in recording accurate observations on birds. The volume is well illustrated with photographs of the doctors and the forts where they were stationed. Most of the birds described are not indigenous to this country. Colonel Hume, who is a military medical historian, says in his introduction that he "cannot himself claim knowledge of ornithology, but only admiration from a respectful distance." American medical officers will nevertheless find this book about their predecessors very readable.

Tropical and Sub-Tropical Diseases, by Dr. C. H. BARBER, is published as one of the Oxford War Manuals at 5s. by the Oxford University Press. The stated aim of this pocket compendium is to serve the needs of medical men in the Forces over-seas. Its scope is wide and 60 diseases and morbid conditions are given in the table of contents. The space allotted to each varies from 20 pages (malaria) to 8½ lines (myiasis). There are some strange omissions. Nothing is said of *Cordylobia* infestation, a real pest in the last war and already troublesome in this, or of the dosage and course of pentavalent compounds of antimony in kala-azar, yet room is found for accounts of goundon and ainhum, neither of which is likely to give rise to any urgent problem. Possibly due to hasty compilation, there are some muddled and confusing statements. Thus on p. 25 the oddly named species "*Culex Fatig.*" and "*Culex P.*" are shown as genera, and on p. 134 it is stated that the "diurnal periodicity" of microfilariae coincides with that of "the chief insect vector . . . namely, the *Stegomyia mosquito*, or Culex fatigans (*Aëdes variegatus*). In the Pacific Islands, however, this periodicity does not obtain." This is a hard saying. The lack of system in writing zoological names, as in the foregoing extracts, is general throughout the book; sometimes the author follows the directions of the International Rules, sometimes not, and the resulting patchwork is most unpleasing to the trained eye. In view of the expressed object of the compendium, medical officers of the Army would be well advised to stick to the official "Memoranda on Medical Diseases," etc., until something better than this Oxford War Manual comes along.

The public schools of this country are going through difficult times, and the relative advantages and disadvantages of day schools and boarding schools are under keen discussion in the Press. What will come of it all remains to be seen, but meanwhile the 53rd annual issue of the *Public and Preparatory Schools Yearbook* has been published by H. F. W. Deane and Sons at 10s. 6d., and fulfils its useful task of supplying information to the parents of to-day. No fewer than 30 public schools and 158 preparatory schools for boys have had to move their quarters owing to the war. Temporary addresses, with cross-references to the normal home of each school, are given and brief details of altered arrangements. The schools listed in this yearbook are those represented at the Headmasters' Conference or belonging to the Association of Preparatory Schools. It also contains particulars about the universities and some guidance on careers.

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MECHANICS OF THE CIRCULATION

Those who begin to study the circulation often find themselves in difficulties about its mechanics, and, to surmount these, many attempts have been made to study it by means of models. Most teaching schools have some sort of a model illustrating the factors concerned in the maintenance of the arterial blood pressure—i.e., the output of the heart together with the peripheral resistance and elasticity of the vessels—but no one has yet produced a model that demonstrates satisfactorily all the changes possible in the living animal. The latest attempts are those of L. Bayliss,[1] and of Price, Sloan, and La Rochelle.[2] The latter, indeed, have from a study of their model gone so far as to say that the concept of a disparity between blood volume and vascular capacity does not bear analysis, and criticize on this account even the possibility that shock may be due to such disparity, forgetful, apparently, that a model can be made to prove anything. As a guide to model makers it is, then, not out of place to indicate what is required.

First, a pump is necessary which will not only vary its rate, stroke, and force, but will fill in the first third of diastole in virtue of the venous pressure, for without this it is not possible to illustrate properly the law of the heart and the full effects of rate on output. Without this facility the output per beat is reduced whenever the rate is increased, because the filling is reduced. Such a pump was not used by those referred to. But that is not to say, as pointed out by Starling, that the output of the heart per minute is necessarily a function of the rate, for if the venous pressure is low the heart may need all its diastole to fill. In some circumstances, such as after very severe haemorrhage, the filling may be so slow that slowing of the heart may actually cause a slight rise of arterial pressure. It is also very difficult to construct a pump which will automatically vary its force according to the amount of blood in the heart at the beginning of systole so that there is an increased output per beat in approximately the same systolic time as a smaller output. In these days a simple model is available in the form of a stirrup pump made to discharge into the pail, but it does not show the infinite variation of the circulation.

The effects of cardiac failure and reduced cardiac output are easily shown on a model or on an animal by increasing the pericardial pressure or by stimulating the peripheral end of the vagus. There is a rise of venous pressure, which in the model is accompanied by a fall of arterial pressure, but in the animal or man, in whom such failure is a common feature of cardiac disease, the arterial pressure does not fall until all the vasomotor compensation has been called into use. In man we see the engorged veins of chronic venous congestion standing out in a pallid skin. It is possible, too, that a high venous pressure may eventually interfere with the emptying of the coronary sinus and cardiac nutrition. Increased cardiac efficiency has the opposite effects both in the model and in the animal, but for reasons given later this is difficult to demonstrate unless the heart has first been rendered inefficient.

In the majority of models, simple or elaborate, the effects of simple changes in the peripheral resistance are also easy to show. A decrease results in a fall of arterial pressure accompanied by a simultaneous rise in venous pressure that is the same as in cardiac failure, but with the difference that all degrees cause the fall of arterial pressure and the rise of venous pressure coincides with it. A fall of resistance is brought about by a minute dose of acetylcholine, a rise by clamping the aorta. Most of the other procedures and drugs which affect the peripheral resistance complicate the issue by affecting the capacity of the circulation. This variable capacity of the circulation was unknown until it was demonstrated by Dale with Richards and Laidlaw,[3] [4] and Krogh[5] demonstrated that capillaries, normally closed, might open and soak up the blood like a sponge, greatly diminishing its return to the heart. But as the capillaries contribute to the peripheral resistance it is necessary to construct a model which will incorporate these features. An increased capacity is produced by histamine, by amyl nitrite, after asphyxia, and, normally, after severe exercise. There is not only a fall of arterial pressure but also a fall of venous pressure, which may, however, be preceded by a rise due to the fall of peripheral resistance if the capacity does not increase so rapidly as to mask it. As the return of blood to the heart is reduced vasomotor compensation ensues, and there is a rapid recovery of the peripheral resistance (due to arterial and arteriolar constriction); the arterial pressure recovers appreciably through the venous does not. The arterial constriction shows itself in a rise in the velocity of the pulse rate for a given internal pressure (McDowall).[6] This cannot easily be imitated by any model. A similar return of the arterial but not the venous pressure is also seen after slight haemorrhage. The significance of any given changes in the intact circulation can be interpreted only when they are compared with the results from the study of blood flow, limb volume, and perfusion resistance, and in this the paper of Dale and Richards[3] is a model worth studying. Wiggers has also made extensive studies of this problem from the shape of the pressure pulses obtained by means of the Frank's capsule.

The administration of amyl nitrite gives an interesting series of changes which may be analysed thus. First, accompanying the fall of arterial pressure is a large fall of venous pressure due to increased capacity, preceded, maybe, by a short-lived rise due to reduced peripheral resistance; but at the stage when the height of arterial pressure depends largely on the arterial compensations there is a rise of venous pressure only. When the increased capacity of the circulation is caused by a generalized loss of vasomotor control there is a fall of arterial and venous pressures, but the arterial compensation is absent. This state is produced experimentally by sections of the spinal cord in the neck which cuts off the sympathetic supply to the body, and is probably present in the ordinary faint and in the neurogenic variety of shock. Recently, McDowall[7] has pointed out that the fall of peripheral resistance may be a major factor in those cases of shock which fail to respond to the transfusion of blood or plasma. Moreover, in the intact animal the pulmonary circulation may affect the greater circulation. Thus intense pulmonary constriction may cause a delayed rise of venous pressure from failure of the right heart, as with histamine, in which case it masks the early effects of increased capacity. Similarly, sudden rapid constriction of pulmonary vessels may cause falls in arterial pressure. The reverse may also occur. Respiration lso affects the resistance and capacity of the pulmonary essels. The resistance is increased and the lung capacity decreased by expiration, while the reverse occurs in inpiration. Their effects on the arterial and venous pressures lo not coincide exactly with the pulmonary change, but are lightly delayed. It has to be remembered, too, that usually hanges in the heart rate are accompanied by changes in he vessels. Thus in a faint vessels are dilated (except the kin) while the heart is slowed; the reverse occurs in the xcitement and early exercise. Drugs, also, often produce ffects on both heart and vessels—e.g., adrenaline and ligitalis. Further, there is a vast number of venous and arterial reflexes by which rises and falls in pressure affect oth the heart and vessels. Models cannot imitate these, or all are not completely understood. Finally, we must onsider other unknown factors in the circulation, such as he psychological. At the moment, one of the most puzzling roblems is that the heart rate so commonly falls in donors vhen blood is given, when all past experiences, both xperimental and clinical, would lead us to expect that it would rise. Thus we see how inadequate models of the irculation are liable to be; they can be of value primarily to illustrate a fact already derived from a study of the experimental animal.

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[1] *J. Physiol.*, 1940, **97**, 429.
[2] *Johns Hopk. Hosp. Bull.*, 1942, **70**, 26
[3] *J. Physiol.*, 1918, **52**, 110.
[4] Ibid., 355.
[5] *Anat. and Physiol. of Capillaries*, 1929, 2nd ed., New Haven: Yale Univ Press.
[6] *Quart. J. exp. Physiol.*, 1925, **15**, 181.
[7] *British Medical Journal*, 1941, **2**, 75.

THE SCIENTIFIC LIFE

It is possible to hold two wholly different views of the qualities and circumstances favourable to success in scientific research. More than 300 years ago Francis Bacon formulated a grand, or grandiose, scheme which was to reduce scientific discovery to laborious but unimaginative team-work. Bacon's plan received the support of a few *philosophers* who were not themselves scientific workers, but, with the doubtful exception of Robert Boyle, none of the great researchers of his age had much use for Bacon's plan, and Harvey spoke of it with gentle sarcasm. That continued to be the attitude of most researchers down to our own time. They did not hold that discovery was a mere matter of luck, but they did think, with Pasteur, that chance helped people whose minds were ready to be helped and that fine original work in science depended on the freedom of the human spirit, that the utilitarian aspect of any proposed investigation was about the last which should be *given weight in choosing one's subject*. This attitude was never approved by practical men, and recently some writers who have to their credit considerable achievements in pure scientific research, and therefore cannot be reproached with ignorance of the way in which discoveries are made, have explicitly or implicitly condemned it. One of them reviewed Prof. G. H. Hardy's *A Mathematician's Apology* with almost theological acrimony. This was not surprising, because Prof. Hardy had explicitly maintained that the useful parts of mathematics were rather dull and the "real" mathematics of "real" mathematicians almost wholly useless, and *actually said that if a mathematician* or a chemist or even a physiologist "were to tell me that the driving force in his work had been the desire to benefit humanity, then I should not believe him (nor should I think the better of him if I did)."

The neo-Baconians have naturally a very different plan from that of Bacon, but are equally insistent upon fruits and equally scornful of what seem to them useless or unprofitable researches. Dr. John R. Baker in *The Scientific Life*[1] may not enrage the neo-Baconians quite so much as Prof. Hardy—he is not sure that mathematics and logic belong to science—but he will annoy them a good deal. He is satisfied that the statements "Science is a product of human demands" and "Science has evolved from crafts and industry" are simply untrue, that scientific research can no more be planned or organized than the writing of symphonies or poems, and that amateurs—*real* amateurs of science—are the salt of the earth. A *via media* is possible, indeed suggested by Dr. Baker. It is this. The neo-Baconians are not really talking about science at all in the sense that Harvey or Newton would have given to the word, but technology, and technology can be planned and organized. The neo-Baconians have no difficulty in showing that technology, or applied science, has not been well planned in this country; but Dr. Baker's contention is that pure science—namely, scientific work done because the worker either loved his work or was driven to it by a daemon—cannot be organized or planned at all, and that without such pure science technology must eventually perish. He evidently thinks that a remark made by the Soviet Ambassador to the British Association on September 27, 1941—"We in the Soviet Union never believed in pure science"—was not wise but foolish. Probably the neo-Baconians might retort (1) that nothing they can do will stop those with a daemonic urge to pure research; (2) that there is a sufficient capital of pure scientific knowledge still unapplied to occupy a great many more able second-rate people in technology than are at present employed. But totalitarianism has made great strides in this generation. One might add to Dr. Baker's numerous examples of pure researchers Hermann von Helmholtz. He was educated for the medical profession at the expense of the State; almost his first and one of his fundamental contributions to science was a memoir on mathematical physics (a subject not included in his university training and studied by him in his spare time because it interested him). The Prussian Government of almost a century ago was influenced by the judgment of real scientists and allowed Helmholtz to pursue an academic career to the glory of pure science and, in due course, technology. One may doubt whether the military authorities of either Potsdam or Moscow in 1940 would have learned with satisfaction that an assistant surgeon to the regiment of Hussars spent a great deal of time perusing the works of mathematicians. That, however, brings us to a last point to be had in mind when we try to judge impartially the merits of the current controversy. We should not forget that the authors whom Dr. Baker flagellates were writing under the shadow or in the presence of war and disaster when technology is of more *immediate* importance than science (to the ordinary politicians, of course, science and technology are synonyms, but science is thought to be a more flattering term). Something must be allowed for emotional stress; zeal and arrogance are not easy to distinguish. Very few of those who survive the war will look back with complaisance to all they said or wrote during its currency.

THE WERNICKE SYNDROME AND VITAMIN B_1 DEFICIENCY

Wernicke in 1881 described a syndrome characterized by ophthalmoplegia, clouding of consciousness, and ataxia, resulting from acute haemorrhagic polioencephalitis superior. The lesions are confined to the periventricular grey matter of the brain, which shows small foci of degeneration and varicose deformities of the blood vessels. Recently the disease has been attributed to a conditioned deficiency of vitamin B_1, as the majority of the cases diagnosed were the result of alcoholism, and most of the symptoms cleared up promptly on treatment with aneurin.

The syndrome may be associated with a combination of several nutritional deficiencies. However, an interesting confirmation of the view that aneurin deficiency is the principal causative factor of the disease comes from the observation of Wortis *et al.*[1] that patients with the Wernicke syndrome were unable to metabolize pyruvic acid normally. They showed a high fasting level of blood pyruvate, the figures being 1.44–3.63 mg. per 100 c.cm., as compared with 0.77–1.7 mg. per 100 c.cm. for normal subjects. When these patients were loaded with glucose an increase of their blood pyruvate occurred which lasted 4 to 5 hours, whereas healthy subjects under the same treatment showed only a transitory rise. After aneurin therapy the fasting level of blood pyruvate came down rapidly to normal, but the response to glucose loading became normal only after prolonged treatment. These experiments provide an interesting example of the use of a carbohydrate tolerance test for detecting vitamin B_1 deficiency, a possibility first suggested by Harris and co-workers at Cambridge.[2]

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[1] London: George Allen and Unwin, Ltd. (7s. 6d.)

The Wernicke syndrome has a perfect analogy in the so-called Chastek paralysis of silver foxes which occurs as a result of feeding large quantities of raw fish. The disease is also characterized by anorexia, weakness, progressive ataxia, and spastic paraplegia. Post-mortem findings showed a striking similarity in the lesions of the central nervous system to those found in Wernicke's disease. That aneurin deficiency is the cause of Chastek's paralysis has been established beyond doubt by the work of Green and his co-workers[3] in America and Kringstad[4] and other workers[5] in Norway and Sweden. The American observers were able to produce the paralysis at will by feeding the silver foxes on a diet containing more than 10% of raw carp. They were also able to prevent the appearance of the disease by supplementing the diet with large quantities of aneurin, exceeding 10 mg. per animal per day. These results indicate that raw fish has the singular property of inactivating aneurin, either by destruction of the vitamin or by a process of adsorption which renders it unavailable to the animal. The first theory finds support in the work of Spitzer *et al.*,[6] who incubated raw carp entrails with aneurin and observed a destruction of 50 to 100% of the vitamin in 15 minutes. Thus it appears there is an anti-aneurin factor or factors in raw fish, destroyed by cooking. The existence of antivitamin factor is not limited to aneurin. At least two other examples of antivitamins have been found in connexion with biotin and vitamin E. The antivitamin of biotin is present in raw egg white, from which it has been isolated in the form of a protein which has received the name "avidin." Avidin acts by combining with biotin to form a stable complex which is not available to the organism. An antivitamin E factor has been found in cod-liver oil which is capable of destroying the vitamin when the two are fed together. Possibly still other antivitamin factors may be brought to light. A knowledge of these factors may be of great value in explaining many as yet obscure nutritional diseases.

HYPOGLYCAEMIA FROM PROTAMINE INSULIN

Recent correspondence and articles in this *Journal* have raised the question whether insulin hypoglycaemia in diabetics is becoming more frequent in both its minor remediable forms and its occasional fatal outcome, and whether the use of protamine-zinc-insulin is responsible. Ever since insulin has been used minor hypoglycaemia has been common, but recorded fatalities have been surprisingly rare, perhaps because seldom published, as they mostly depend on a discreditable and avoidable mistake on the part of either patient or doctor. But the increased incidence of grave hypoglycaemia since the introduction of delay-action protamine insulin is understandable and merits discussion.

The effect of a reduction of blood sugar falls on the central nervous system, and the mechanism and pathological results are becoming known. Glucose is the main if not the only, fuel of the brain, and its metabolism and vital process stop without it. If the blood-sugar supply is cut off by insulin for a few hours (say 4 to 8) irreversible nerve-cell changes may occur which cannot be removed by the restoration of the blood sugar—fortunately an extremely rare event. Now soluble insulin, in use for 20 years, often causes hypoglycaemia in inappropriate doses by its quick and strong action, usually 4 to 6 hours after injection; but the effect is so short-lived that prolonged hypoglycaemia is unlikely, and spontaneous recovery tends to occur even without the administration of sugar, although it should be given promptly on diagnosis. In contrast, the prolonged action of protamine-zinc-insulin, although probably causing hypoglycaemia less frequently, keeps the blood sugar low when hypoglycaemia occurs, prevents spontaneous recovery, and is more likely to damage brain cells. In the vast majority of such incidents, however, glucose or sugar (1 oz.) produces complete recovery, but may have to be repeated to prevent relapse. Another danger with protamine-zinc-insulin is the temptation to give too much unless the limitations of its action are realized. It is weak in its action, and the active insulin liberated from the depot injection is often too little to prevent glycosuria after meals, although it clears the sugar during the night's starvation. If the dose is raised in an attempt to control the day's glycosuria, it has little effect except to cause hypoglycaemia at night, often just before breakfast. It is usually unwise to give more than 30 to 40 units of protamine insulin without careful investigation, and no more should be given than is sufficient to clear the urine secreted before breakfast. If on this dose heavy glycosuria occurs by day, added soluble insulin must be given and not more protamine insulin. The occurrence of hypoglycaemia at night has led some doctors to abandon the use of protamine insulin and to put their patients back on two doses of soluble insulin. When, however, the nature and action of protamine-zinc-insulin are appreciated and it is properly used, there seems no reason to withhold the benefit from most patients of only one injection a day instead of two.

Another, and preventable, cause of hypoglycaemia is the mistakes that arise from confusion over the different strengths of insulin solutions on the market—namely, 20, 40, 80 units per c.cm. Serious mistakes, too, are caused by the wide diversity of markings on syringes used for the injection of insulin: it is not uncommon to find some less intelligent diabetics taking twice or half the number of units intended by the doctor. Such errors could be minimized by the use of a standard insulin syringe throughout the country, and it is most important that the actual dose should be checked and demonstrated to each patient, not merely as so many units but in marks on their own syringe of the strength of insulin prescribed.

Another, and probably the main, cause of insulin hypoglycaemia is the fact that the best dose of any type of insulin, even on standard diets, is not a uniform but always an individual one, and a dose that may cause hypoglycaemia in one patient may be insufficient even to prevent diabetic coma in another more severe case. The establishment of the optimum dose in some cases requires a short period of close study which cannot be carried out at home, nor indeed in most general hospitals. In many cases, therefore, imperfect treatment magnifies the difficulties of insulin treatment and obscures its benefit, so that chronic invalidism may persist where a full and useful life could be achieved. This state of affairs can hardly be rectified until sufficient centres for skilled diabetic treatment are available to provide in- and out-patient treatment for many, if not for most, diabetics.

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[1] *Arch. Neurol Psychiat.*, Chicago, 1942, **47**, 215.
[2] *Biochem. J.*, 1939, **33**, 1346.
[3] *J. Nutrit.*, 1941, **21**, 243; 1942, **23**, 165.
[4] *Nutr. Abstr. Rev.*, 1941, **11**, 48.
[5] *Skand. Veter. Tidsk.*, 1938, **28**, 144.
[6] *Proc. Soc. exp. Biol. N.Y.*, 1941, **48**, 376.

HAEMOPHILIA IN ANIMALS

Haemophilia is a well-known disease among white races, and occasional cases of varying authenticity have been reported in men with skins of other colours. A. G. Hogan, M. E. Muhrer, and R. Bogart[1] suggest that a similar disease may occur in another species of mammal. A number of related animals in a herd of swine died from haemorrhage, either spontaneous or after minor trauma. The ordinary bleeding time, the platelet count, and the prothrombin time were all normal in the affected animals when compared with normal members of the same herd. The clotting time of venous blood was greatly prolonged, and the platelets, unlike those from normal animals, were slow to agglutinate and disintegrate *in vitro*. Thus the haematological findings are those of human haemophilia, but unfortunately no mention is made of the sex of the affected swine or whether any of them had haemarthroses. If this disease of pigs is in fact the haemophilia it seems to be, the fundamental lesion which has baffled so many investigators of human haemophilia ought soon to be uncovered.

A. L. Copley and J. L. Lalich[2] tried to produce a haemophilia-like condition experimentally by the injection of heparin into mice. The animals tended to suffer from spontaneous haemorrhages, and had a prolonged clotting time, a normal platelet count, and a bleeding time usually normal. As all the evidence goes to show that the prolonged clotting time in human haemophilia is not due to an anticoagulant in the blood, it is *a priori* unlikely that the heparinized mice suffered from anything really like haemophilia, and an examination of the experimental evidence, which is collected in a rather misleading table, does not support the authors' interpretation of the data. For instance, it is stated that the prothrombin content of heparinized blood, like that of haemophilic blood, is normal.[2] Anyone who has ever tried to estimate the prothrombin in heparinized blood by the one-stage method knows how very differently from haemophilic blood heparinized blood behaves. The spontaneous haemorrhages do not resemble those found in human haemophilia either. The animals developed haematomata at the site of subcutaneous injection of heparin, but no attempt seems to have been made to control the *p*H of the heparin, which is usually strongly acid. A few mice which had been heavily heparinized licked the clot away from the site of the puncture which was made for determination of the bleeding time, and then suffered from prolonged bleeding which occasionally proved fatal. This is actually in contrast to what happens in haemophiliacs, in whom the clot is not firm enough to prevent spontaneous resumption of bleeding. The really striking point in these experiments is that the bleeding time was usually normal in the presence of a greatly prolonged clotting time. This is doubly significant, because the bleeding time was estimated by puncturing the tail vein, which would tend to give a long bleeding time, and the clotting time was estimated on capillary blood, which, because it is contaminated with tissue juice, gives a relatively short clotting time. The fact that the bleeding time was often less than one two-hundredth of the clotting time in these heparinized mice is further support for the view put forward so cogently by R. G. Macfarlane[3] that haemostasis is first secured by vascular contraction and is only secondarily dependent on the coagulation of the blood.

TRANSFUSION OF BOVINE PLASMA AND SERUM

Experience in treating the casualties of total war has emphasized the need for combating shock by the transfusion of fluids with a high protein content: human blood, plasma, and serum have all proved their worth. In this country there has been no lack of human material; in the U.S.A. it has been felt the demand might outrun the supply. Attention has therefore been directed to the use of bovine plasma and serum. The first detailed published report[4] from the University of Minnesota describes the use of bovine products in 120 cases. As the authors state, the incidence of reactions was sufficient to contraindicate any clinical use of whole bovine serum or plasma. Both were shown to contain haemolysins and haemagglutinins to human red cells. Most of the haemolysins and about 50% of the haemagglutinins could be removed by adsorption on human red blood cells. By so doing the incidence of reactions was reduced from 66.6% to 24.5%. A preliminary skin test was done on all patients, using 0.1 c.cm. of 1 in 10 dilution of serum with normal saline. In a preliminary series of observations patients who showed pronounced skin wheals were found not to take serum well and were therefore not used subsequently. Following the skin test 0.1 c.cm. of bovine serum diluted to 1 c.cm. with normal saline was given intravenously. Several hours later, if no reaction occurred, 1 c.cm. diluted to 10 c.cm. with normal saline solution was given intravenously; next day 5 c.cm. diluted to 10 c.cm. was given, and, somewhat later, 50 c.cm. diluted to 100 c.cm. If no reaction occurred, amounts of 250 c.cm. diluted with an equal amount of saline or 5% dextrose were injected, the rate of administration being slow. About 50% of reactions were febrile in character, usually indicated by a chill one-half to 1 hour after the start of the injection. Other reactions, such as immediate urticaria, oedema of eyelids, flushing of skin, backaches, gastro-intestinal upsets with diarrhoea and vomiting, dizziness, and severe anaphylactic reactions, made up the remainder. No significant difference was found between serum and plasma. Three severe anaphylactic reactions occurred with extremely small doses of 2 c.cm., 0.1 c.cm., and 0.1 c.cm. respectively. Skin tests gave no indication of this sensitivity. Delayed reactions, characterized by generalized urticaria, oedema, and gastroenteritis, occurred in about 60% of patients 3 to 10 days after the final injection. They lasted 48 to 72 hours. The majority of the patients suffered from inoperable carcinoma; two patients with shock were treated with success. Six patients were given re-injections of whole bovine plasma and serum after variable intervals, and these showed an anaphylactic type of response.

The authors suggest that the preparation of a satisfactory product of bovine albumin from which the globulin fraction has been eliminated completely may prove a safe and satisfactory blood substitute. Milton E. Veldee[5] has recently reported that E. J. Cohn[6] has prepared such an albumin fraction from human serum which has given satisfactory results on clinical trial. The advantages of the fractionation of human serum which has proved its value when given in bulk are not altogether clear, but the value of such treatment in the case of a foreign serum are more obvious, and further reports will be awaited with interest.

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[1] *Proc. Soc. exp. Biol. N.Y.*, 1941, **48**, 217.
[2] *Amer. J. Physiol.*, 1942, **135**, 547

[3] *Quart. J. Med.*, 194 **10**, 1
[4] Kremen, A. J., Hall, H., Koschnitzke, H. K., and Stevens, B., *Surgery*, 1942, **11**, 333.
[5] *Amer. J. Publ. Hlth.*, 1942, **32**, 289.
[6] *Chem. Rev.*, 1941, **28**, 395

DEVELOPMENT OF THE EMERGENCY BLOOD TRANSFUSION SCHEME

BY

L. W. PROGER, M.R.C.S.

Medical Officer in Charge of Blood Transfusion at the Ministry of Health

Peacetime Service.—In this country the blood donor has always regarded his work as a voluntary social service. Twenty years ago, in Camberwell, Mr. R. L. Oliver founded the association of voluntary donors which later became the British Red Cross Transfusion Service—the first of its kind in the world—and this led to the development of a number of similar organizations throughout the country. These organizations undertook to provide hospitals with accredited donors of the required blood group at short notice, and their members were prepared to attend the hospitals at any hour of the day or night. Contributions could be made towards the cost of the service, but the donors were always volunteers. The introduction of blood storage at many of the large hospitals during the past six years was an important advance in technical methods, since tested blood could always be kept ready for an emergency case, and it was no longer necessary to call donors at inconvenient hours. However, the use of individual donors remained general until recent times, and is still the method of choice in the treatment of certain cases.

Pre-war Preparations.—During the months of political tension after September, 1938, recent advances in transfusion methods were constantly under discussion, especially in view of the success achieved in the Civil War in Spain, where stored blood was carried to Army medical units in the field and was also used for the treatment of air-raid casualties in the large cities. It seemed clear that the quantity of blood required under the conditions of modern war would be beyond the scope of the peacetime donor services, and that special arrangements would be required. London, with its vast concentrated population dependent on a complex system of transport and supply, presented a transfusion problem of special importance, and the Medical Research Council undertook to establish, on behalf of the Ministry of Health, four Blood Supply Depots in the outer suburbs. These depots, which are still under the direct control of the Council, were designed to store blood collected from panels of voluntary donors enrolled in the Home Counties, with the object of supplementing the local arrangements of hospitals in the central area, which were more likely to become disorganized. At the same time arrangements were made to establish an Army Transfusion Service, and it was agreed that since this service would enrol all the available donors in the South-Western Counties it would also supply the emergency needs of the civilian hospitals in the area.

The First Year of War.—From the outset stores of blood were available, and during the early months of the war the four London depots were enabled to perfect their arrangements and to carry out valuable research work on the storage and preservation of blood. At the same time the voluntary transfusion organizations throughout the country increased their activities, and emergency blood stores were established in many of the large cities. On the outbreak of war the Army Transfusion Service was faced with the problem of transporting blood to the B.E.F. in France—a problem made all the more difficult by the fact that blood cannot be stored for more than 2 to 3 weeks, and special precautions have to be taken against the damaging effects of shaking in transit. A large reserve store could not therefore be built up so long as there was no demand for its use. On the other hand, the service had to be prepared at any moment to start bleeding large numbers of donors. It speaks highly for the success of the organization that during the first three days of the invasion of the Low Countries approximately 800 bottles of blood were dispatched to France, enabling the forward medical units to be adequately supplied and the base store to be replenished. Although the forward units were soon isolated from further supplies, some 500 transfusions were given during the retreat from Belgium and the evacuation from the beaches under the most adverse conditions.

Introduction of Plasma and Serum as Substitutes for Blood

In America experimental research on blood substitutes has demonstrated that plasma—the fluid portion of blood after removal of the red cells—provided a reliable substitute for whole blood, and had the advantage that it could be stored for many months without deterioration. In addition, its recovery avoided the wastage of blood which was not used within the safe storage period, and, moreover, plasma could be safely given to patients of any of the four blood groups. This discovery was of the greatest importance, especially to the armed Forces which required supplies in distant theatres of war. The first American product—plasma-saline—had certain theoretical disadvantages in that the method of preparation required considerable dilution, which not only doubled the weight and bulk to be transported but also increased the volume of the effective dose to be administered. Moreover, Federal Government regulations required that antiseptic should be added to ensure sterility, and many considered that this might be injurious to debilitated civilian casualties. Investigations continued, and the Army Transfusion Service developed a method by which undiluted plasma could be bacteriologically filtered, thus ensuring a clear sterile product which could safely be transported over-seas without the need for refrigeration. The value of serum—the fluid separated from blood after it has clotted—was being investigated by the Medical Research Council, especially in relation to the treatment of shock resulting from air-raid casualties and burns, and this also proved to be a valuable substitute for whole blood. Serum is more easily filtered than plasma, and has similar keeping properties, but, since the blood has to be specially drawn for its preparation, it does not have the advantage that plasma has in being a natural recovery product from the blood stores.

The Regional Scheme

After the capitulation of France and the return of the B.E.F. in June, 1940, the position called for urgent review, since no part of the country could now be regarded as more than relatively immune from air attack. The Ministry of Health therefore undertook to co-ordinate and extend, where necessary, the blood transfusion services throughout England and Wales, with the primary object of ensuring that an adequate supply of transfusion fluids and standard apparatus was made available for the treatment of casualties. Nine Regional Blood Transfusion Officers were appointed. The schemes developed under their direction, with the organizations set up in the London area by the Medical Research Council and the Army Blood Transfusion Service centred in a South-Western town, cover the whole of England and Wales. Similar organizations have been established in Scotland and Northern Ireland. The schemes developed by the Regional Blood Transfusion Officers provide for financing the enrolment and testing of the additional donors required to meet emergency needs, the supply and distribution of the standard apparatus, and the establishment of laboratories for the preparation of the apparatus and the filtration of plasma and serum. Thus, during the past year there has developed a unified scheme in which the voluntary donor associations, the hospitals, the local authorities, and the Ministry of Health are co-operating with the fighting Services to provide a nation-wide emergency transfusion organization. Adequate blood stores are being maintained at important points throughout the country, so that every casualty hospital can obtain supplies to supplement its own resources. Plasma is recovered from these stores, so that wastage is reduced to a minimum, and, as stocks of plasma are built up, so each hospital will have its own reserve. Thus even the remotest hospital will have transfusion fluids ready for immediate use, leaving time for blood to be brought from the nearest stores should this be required.

Research work is co-ordinated by a representative committee of the Medical Research Council, which keeps in close touch with work going on in the Dominions and America, so that each centre is kept informed of the most recent developments.

Introduction of Dried Plasma and Serum for Transfusion

The preservation of unstable fluids such as milk by drying has been the subject of investigation for many years. More recent research, both in America and in this country, has shown that even more unstable fluids may be preserved without change by drying from the frozen state, and this knowledge has now been turned to the use of the Transfusion Services. In January, 1940, the Medical Research Council extended its experimental serum-drying unit, since it was foreseen that a demand for dried transfusion fluid by the fighting Services would arise. This unit had developed a process whereby large volumes of serum or plasma could be treated and a high degree of dryness obtained. The method of drying from the frozen state reduced protein changes to a minimum, and tests indicated that the dried product was capable of preservation for many years without deterioration. Moreover, the dried product could be quickly reconstituted for use by the addition of the appropriate quantity of distilled water.

When the Ministry of Health Regional Blood Transfusion Scheme was under consideration in July, 1940, the Wellcome Trustees offered the M.R.C. a grant to meet some urgent national need. The Council suggested that the grant should be used to provide another drying plant. Towards the end of the year the Army Blood Transfusion Service arranged to set up a similar plant to meet the growing needs of the oversea Forces. In conjunction with the Medical Research Council they devised an improved method for the freezing of the plasma or serum in the standard bottle preparatory to the drying process. By rotating the bottle at a high speed in a low-temperature cabinet the fluid was forced on to the sides of the bottle and freezing occurred almost instantaneously. This spin-freezing method produces a better-quality dried product which redissolves more readily than that produced by earlier methods. A supply of transfusion fluids is thus assured in a form which can be dispatched to any part of the world.

Working Arrangements

Co-operation with the Fighting Services.—Close co-operation has been maintained with the transfusion officers of the Army Command areas, from whom much assistance has been obtained during the period of development. The Royal Naval and Air Force Medical Services have also adopted for emergency transfusions the dried products, which are especially suited to their requirements. Arrangements have been made whereby the Home Stations of the R.A.F. may use the facilities provided under the Regional Scheme, so that adequate supplies of stored blood and plasma will be available. The R.A.F. Mobile Transfusion Team is giving valuable assistance in maintaining supplies.

The Large-scale Bleeding of Donors in Wartime.—In normal times a donor can always be found to attend at a hospital when needed, but, when dealing with the large numbers required to build a reserve of plasma and to maintain war emergency blood stores, sufficient donors are seldom able to attend during working hours, as the hospital may be a considerable distance from their work. Moreover, even the large hospitals cannot always be relied upon to provide the necessary staff and accommodation without interfering with their normal duties. For this reason mobile teams have been established; these can set up bleeding centres at places convenient to the donors, such as first-aid posts, village halls, cottage hospitals, or at factories. Even in these difficult times factory managements have been most helpful, and in many cases the factory organizes its own donor panel and provides on regular days the agreed number of donors from members of the staff chosen so as not to interfere with production.

Publicity Campaign for Donors.—Hundreds of thousands of volunteers have been enrolled and many thousands have already given their blood, some on more than one occasion. The difficult task of launching publicity campaigns strong enough to attract the number of donors required and yet restricted to the desired locality has been successfully accomplished with the valuable assistance of the Press and local voluntary associations. Donors sometimes remark that, while their services have not yet been called upon, active campaigns for more donors are proceeding in other districts. It will be appreciated, however, that the donor panels should bear some relation to the density of the population. To provide for the constant movement of the population, for local disturbances due to air raids, and for other factors which interfere with the attendance of donors at the centres, the panels must be larger than the needs of the moment appear to justify.

Donors' Obligations.—The calling up of large numbers of donors, the assembly of the necessary staff and equipment at the bleeding centre, and the distribution of the blood collected is a complicated matter involving much clerical work and planning in advance. This is not always appreciated by donors, who may think, especially in quiet periods, that their services are not really needed. It occasionally happens that only half the number of donors called arrive at the bleeding centres. This may result in the team of doctors and nurses being kept unoccupied for several hours, the work of the filtration laboratory staff being held up, a promised consignment failing to be sent to the drying plant, or a group of hospitals being kept short of supplies of fresh blood. In addition, there is the extra clerical work in tracing the absent donors and rearranging their index cards. With adequate donor panels it should not be necessary to call a volunteer more than twice a year provided all the donors are prepared to do their utmost to attend when required.

The Present Position

Full advantage has been taken of the relatively quiet period during the past twelve months to build up stocks of plasma, so that even the remotest hospital will have its own emergency reserve. Improvements in the filtration process have been introduced, and contributions are being made towards the supply of dried products for the fighting Services. One of the effects of these emergency measures, and the wider understanding of modern methods, has been the increasing use of transfusion in the treatment of the ordinary sick and injured in the hospitals. Although the need for building up of emergency plasma stocks has now largely been met, the blood stores must be maintained. This will entail the continued bleeding of donors, but now that the filtration and drying processes are in full operation there need be no fear that the blood will be wasted.

Accurate figures have been difficult to obtain, but the following estimates give a fair picture of the present position:

Up to the end of 1941 over 800,000 donors had been enrolled, but, for a number of reasons, a large proportion of these are not always available on the active lists. During the last half of 1941 some 180,000 pints of blood were collected. 32,000 pints of this blood were used in hospitals for the treatment of both Service and civilian patients, including war casualties; the remainder has been converted into plasma or serum. Over 10,000 pints of this plasma and serum have been used for transfusions, a proportion has been dried for the use of the Navy and Air Force, and the remainder has been distributed among the hospitals to provide an emergency reserve. In addition to this, the Army Transfusion Service has collected over 100,000 pints of blood for the preparation of dried plasma for the use of Army medical units over-seas, apart from the provision it has made for supplying civilian hospitals in the South-Western Region.

Success depends in a large measure on the maintenance by the donors of that spirit of voluntary social service shown so conspicuously by the first associations of twenty years ago.

The Chartered Society of Massage and Medical Gymnastics is arranging to hold its annual congress on Friday and Saturday, September 18 and 19, in the Great Hall of B.M.A. House, Tavistock Square, W.C. On September 18 at 2 p.m. Prof. J. A. Ryle will lecture on "The Re-making of Man"; at 3.30 Prof. F. R. Fraser will lecture on "The Place of Rehabilitation in the Treatment of Patients," and at 6 Lord Horder, President of the Society, will give the founders' lecture on "Rehabilitation: the Part Played by Physical Medicine." On September 19 at 10 a.m. Surgeon Lieut.-Commander J. Bunyan will lecture on "The Treatment of Wounds and Burns by the Envelope Method," illustrated by a film, and at 11.30 Dr. Vaclav Benes on "Physical Training Organization in Czechoslovakia." These meetings are open to all medical practitioners. The annual general meeting, open only to members, will be held at 2 p.m. Further particulars may be had from the secretary, C.S.M.M.G., Mount Lodge, Amersham, Bucks.

DEHYDRATION OF FOODS

The Nutrition Society and the Food Group of the Society of Chemical Industry held, in the Great Hall of B.M.A. House, their first joint meeting on July 25. The occasion was notable for this itself, indicating collaboration in those areas of scientific and technical inquiry where the territories of nutritionists and food technologists overlap. The meeting was also of particular interest in that it provided an occasion for members of the scientific staff of the Food Investigation Board (of the Department of Scientific and Industrial Research) to report to an expert audience the results of work on which they have been engaged during the last three years, work that may have a profound effect on the nutrition of the people, in peace as well as in war.

Sir EDWARD APPLETON, Secretary of the Department of Scientific and Industrial Research, who took the chair at the morning session, drew attention to the part played by his Department in arranging and supporting the laboratory work necessary as a foundation for subsequent technological development. Dehydration processes were to be regarded as a means of avoiding the annual importation of 3 million tons of water included in imported foods. It had the further advantage of making possible the storage of foodstuffs at ordinary temperatures without refrigeration, as well as facilitating transport, which Sir Edward described as "storage on the move." He also referred to the effect of pre-drying treatment and to the quality of the raw material as having an important influence on the finished product, and necessitating scientific investigation just as much as conditions during drying and methods of packing. In this connexion he quoted Sir William Hardy's famous dictum that you must be clear about the biology before you come to engineering. Sir Edward paid a tribute to Mr. ERIC BARNARD, Director of Food Investigation in the Department, to Dr. FRANKLIN KIDD, Director of the Low Temperature Research Station at Cambridge, where the technical work is being carried out, and to Dr. LESLIE HARRIS, Director of the Dunn Nutritional Laboratory in Cambridge, who collaborated by arranging for the conduct of tests to ensure that the processes used should not lead to serious loss of nutritive value. Assistance had also been received from firms and individuals in industry, and Sir Edward hoped that this collaboration would continue.

Principles and Practice

Dr. FRANKLIN KIDD then outlined the principles and practice of food dehydration. He emphasized the importance of giving the fresh foods a preliminary heat treatment before submitting them to any of the approved processes of dehydration. The destruction of enzymes, especially those catalysing the decomposition of vitamins, was probably the chief effect of this blanching or scalding, but the preservation of good appearance and palatability would seem also to be partly due to that treatment. Dr. Kidd emphasized the need for reducing the volume as well as the weight by processes of dehydration, so that transport space might be minimized. Stabilization of dehydrated foods was secured by the exclusion of oxygen and moisture, and sometimes by the use of antioxidants during processing; exclusion of certain catalytic metals, particularly copper, was also sometimes potent in improving quality and stability. Attention had to be paid both to upper and to lower limits of temperature, as well as to the need for removing moisture as rapidly as possible. Of the various methods of drying, to which Dr. E. C. BATE-SMITH called attention in the second paper, warm-air drying in tunnels appeared at present to be the most practical.

Results with High-protein Foods

Dr. BATE-SMITH then presented a paper of which he, Dr. E. M. CRUICKSHANK, and Dr. J. G. SHARP were co-authors. After describing six different types of drier, three of them steam-heated, with or without vacuum, and the other three dependent upon moving currents of air, he dwelt briefly on the special features of meat and eggs, determined by the fact that they were high-protein foods and not primarily sources of heat-labile vitamins. The drying of meat at 80° C. in properly constructed plant and with proper control involved no losses in palatability or in the biological value of the protein and only small losses of aneurine, in which meat (except pork) is, in any event, not particularly rich. The technique of drying makes it impossible to dry meat except when relatively finely minced, and the dried meat products so far made available are, therefore, limited to use in dishes like mince and cottage pie. As those attending the meeting had an opportunity of establishing for themselves during the lunch interval, the palatability of these dishes made with dehydrated food is no whit less than that of the corresponding dishes made with fresh meat. The need for dried egg powder to be "soluble"—that is, for it to reconstitute with water to something as close as possible in physical properties to the mixed white and yolk of fresh eggs—sets a limit to the processes available for drying. Spray drying conserved the whole of the fat-soluble vitamins in egg, though it involved some losses of aneurine, but the best commercial products from America were equal in nutritive value to equivalent quantities of home-laid fresh eggs. Assessment of palatability, a complex phenomenon, had been made possible by the use of tasting panels, which gave unexpectedly uniform results. Certain problems still awaited solution, particularly the varying deterioration during storage, some samples being stable for periods of a year or longer and others losing their attractiveness fairly rapidly. Storage in closed containers was essential in order to exclude moisture, but it had not been found necessary to pack egg powder in an inert gas.

Dr. G. A. REAY of the Torry Research Station, Aberdeen, describing the work on the drying of fish conducted under his direction, said that freezing methods had not been found satisfactory, although they marked a very great improvement on traditional methods of slow sun- or air-drying. By roller-drying a fish "lace" was produced, and certain types of this had been found very suitable for fish-cakes. In general, however, kiln-drying in the kind of heater used for kippering had been found the best method when following an appropriate period of pre-cooking. Minced fillets were treated in this way, and the resulting product permitted, as was shown by figures that Dr. Reay quoted, a very large saving of storage and transport space. During the discussion on this part of the meeting, Mr. NEVILLE WRIGHT of the New Zealand High Commissioner's Office referred to the immense saving in shipping space that would be effected if more dried meat were produced in the Dominions and shipped to this country in the dehydrated form. Much work needed to be done, and a good deal was already in hand, to bridge the gap between laboratory experiments and commercial production. Data on plant design were not yet available, and it would be well to secure close collaboration with engineering firms with a view to producing the most suitable plant in the shortest possible time. Investigation was also required into the engineering side of packing dehydrated foods. Mr. Wright made a strong appeal for an international exchange of information on these and allied matters.

After Dr. A. S. MACFARLANE had spoken about the theoretical advantages and the practical difficulty of freeze-drying and the bulkiness of dehydrated foods that was essential if they were to reconstitute properly, Dr. R. T. COLEGATE, demonstrated the difference between air drying and high-vacuum drying with an exhibit of vacuum-dried gluten having a phenomenally high volume-to-weight ratio and yet easily broken down into a powder. This demonstration evoked considerable applause from an audience that was obviously now prepared not only to consume its lunch, but also to samples dishes made with dehydrated foods. This was done after contributors to the discussion had replied, and the dishes made from reconstituted dried meats, dried carrots, dried cabbage, and dried potatoes were highly praised. Bench demonstration in the morning of rehydration of cabbage reminded one very much of the "magic gardens" in the tumblers of one's youth, but differed in that the latter have no characteristic aroma. A similar demonstration with a block of dehydrated potatoes, which was rapidly converted into a good dish of the mashed vegetable before the eyes of the expert and critical audience, was one of the features of the afternoon's meeting, when the chair was taken by Dr. H. E. Cox, Chairman of the Food Group, in the unavoidable absence of Dr. L. H. LAMPITT.

Value of Pre-heating

Discussing the dehydration of vegetables, particularly of cabbage, but also of carrots and potatoes, Dr. W. J. R. Allen said that the preservation of colour and of ascorbic acid in cabbage appeared to be effected by similar means, including scalding before drying, use of sulphite, and choice of appropriate drying temperatures. Dr. L. W. MAPSON, who, with Dr. J. BARKER, was co-author of this paper, when replying later to the discussion, emphasized the importance of the technique of serial scalds, whereby there was built up for the pre-heating process a solution sufficiently rich in ascorbic acid and other solutes to prevent serious loss from the batch of material being scalded. Particularly interesting was the suggestion that the boiling of carrots in water previously used for the boiling of carrot tops and then strained could actually provide the consumer with a cooked carrot containing more vitamin C than the raw root. Dr. Allen stated that no loss of carotene occurred during the proper drying of carrots, and that the strain of potato used must be taken into account when determining the technique of drying, for this affected the final product. He also gave the warning that losses of aneurine, as might have been expected from chemical considerations, unlike those of ascorbic acid, were not mitigated by the use of sulphite. Mr. L. U. CHARLEY, who opened the discussion on this paper, emphasized that dehydration offered possibilities of saving food that might otherwise go to waste, and instanced the possibility of using the outer leaves of cabbages, which appear to be very much softened by the dehydrating process, and the large and mis-shapen carrots which normally may not find a market. Mr. T. RENDLE laid stress on the importance of pilot plant work, and Mr. B. G. MCLELLAN on the possibilities of domestic drying. In his reply, Dr. Mapson also indicated how the use of dried foods, by expediting procedure in canteens and other communal kitchens, might effect a further saving in nutrients that were progressively destroyed on the hot-plate.

Sir JOSEPH BARCROFT presented a final paper on the place that dried foods might and ought to have in the general food economy of nations. In his opinion, desiccation of foods, because of the considerations that had been put forward at the meeting, would put a premium on quality; only the inefficient and unscrupulous producer of fresh food need fear competition from the new technique. Sir Joseph also discussed the two different kinds of glut, the seasonal and foreseeable, and the casual and unpredictable, and expressed the view that the use of dehydrated foods in the kitchen might at one and the same time make communal feeding easier, and help to put the family as an institution on its legs again. Squadron Leader T. F. MACRAE followed this more theoretical consideration with some practical data on experience of dehydrated foods in the R.A.F. He was able to show, from experiments with considerable numbers of personnel as well as from laboratory tests, that these foods are not at all inferior in palatability or nutritive value to fresh counterparts. Indeed, it would not be going too far to claim that the dehydrated foods, as consumed, had a higher content of ascorbic acid and were less liable to be left on the plate than were the cooked fresh foods.

Dr. JOHN HAMMOND discussed the effect of the possible bearing of dehydration, with an adequate and planned distribution of dehydrating plants, on agricultural production, and anticipated that it might well lead to increased food production in hitherto unexploited districts. In the absence of refrigeration, shortage of storage space in certain countries had been a bugbear to those planning post-war relief work, and dehydrated foods might help to save the situation. Greater availability of semi-prepared foods might help to reduce the drudgery of household labour and lower the cost of high quality food, thus also making out-of-season products available to people of moderate incomes.

The chairman, Dr. H. E. Cox, in closing emphasized that the subject presented two main problems: the post-war problem, when considerations of costing and economics would play an important part in determining the scope of food dehydration; and the food problem of the present time, when it was a matter of extreme urgency to use all methods so far available to conserve the food of the nation and maintain its nutritive value. This concluded proceedings that had obviously been of outstanding interest; the Great Hall was full, and at certain times there were numbers of members or visitors in the gallery or standing at the back of the hall. Something approaching 500 people must have attended in the course of the day, and these included a very high proportion of those most active in the parallel fields of nutritional research and food technology. The day's work was of value not only for the old information that it summarized and the new that it made public for the first time, but also for the contacts that it initiated or renewed between groups of workers, all of whom are essential for the full application of scientific knowledge to the problem of nutrition and human health.

DIPHTHERIA IMMUNIZATION CAMPAIGN

The Government is opening a campaign for more complete immunization of the child population against diphtheria. To inaugurate the campaign in the London region the Ministry of Information summoned a press conference at County Hall, when addresses were given by three medical officers of health. Dr. W. Allen Daley, medical officer of health of the London County Council, said that in 25 out of the 29 metropolitan boroughs immunization was now carried out at the schools, either by the county council or borough council medical officers, while school medical officers, nurses, and teachers were co-operating to induce parents to sign the consent form. He estimated that 36% of the children now in London were protected against diphtheria, a great advance on the position in 1937, when the figure was 5.3%, but far below the 75% which would be judged satisfactory. He mentioned the examples of Scotland (where the figures were 54% for the "under fives" and 71% for school children), of Montreal and Hamilton in Canada, and of New York. In New York an intensive campaign was begun in 1929, when the deaths from diphtheria were 463 in the year, and by 1940 they had declined progressively to 10. In the county of London the notifications, which were just over 7,000 in 1936, fell to under 2,000 in 1940, and the deaths from 226 to 40, but there was a rise in both notifications and deaths in 1941. Dr. Daley's remarks were supported by Dr. H. Geffen, president of the Home Counties Branch of the Society of Medical Officers of Health, who, speaking of a total of 57 districts in the Home Counties, with a child population of over half a million, said that 35% of those under 5 and 48% of those between 5 and 15 had now been immunized, but the important thing to secure was the immunization of the young child at the age of 1 year or thereabouts. Dr. Geffen said that there was some evidence that parents were deterred from giving consent owing to the experience of the father, if on active service, of an unpleasant inoculation for typhoid or dysentery. It should be emphasized in the campaign that antidiphtheria injections were practically painless and without unfortunate after-effects. He was asked if general practitioners could not be given the means of carrying out free immunization, to which he replied that he agreed in principle, but mass immunization at the municipal clinic was quicker, easier, and more economical. The general practitioner could not deal with large numbers at any one time, and therefore must be provided with a more expensive reagent and one more difficult to make than that which served the purpose of mass immunizations. Dr. G. Macdonald, as representing the Borough Medical Officers Committee, said that all the medical officers were enthusiastically behind the Ministry of Health in this campaign. Diphtheria immunization was beyond the stage of experiment, it was easy to administer, safe, and capable at the very lowest of protecting 90% of the child population submitted to it.

Full details of the Government's programme and a comprehensive guide on the planning of local campaigns are contained in a pamphlet which has been sent to all welfare authorities in England and Wales. The first part outlines the Ministry's central publicity, which will include advertisements in Sunday newspapers and a wide list of periodicals; broadcasts; editorial publicity; trailer films; and national displays in 1,200 shop windows during August. The second part deals with the facilities which are being provided to assist local authorities' publicity, including stereos for local newspaper advertising (which can be obtained free of charge from the Public Relations Division of the Ministry of Health); cinema slides; the sound film 'Defeat Diphtheria"; and a 4-page leaflet, a shop window poster, and a public transport vehicle bill produced by the Central Council for Health Education. Recommendations for local campaigns cover such points as timing and duration, press advertising, press conferences, and supporting material.

APPROVED NAMES OF DRUGS

The General Medical Council has approved names for certain substances which are now being produced, or are likely shortly to be produced, by British manufacturers, in some instances under licences granted by the Comptroller-General of Patents, Designs, and Trade Marks. These substances have hitherto been known under other names, which are given below together with the names now approved. The question of including them in the *British Pharmacopoeia* is under consideration, and if any of them is included the intention is that the approved name given below will be its official title.

Approved Names	*Other Names*
Dienoestrol	Di-*p*-hydroxyphenylhexadiene
Pheniodol	Biliselectan
Ethisterone	Ethinyltestosterone Lutocyclin Lutogyl Pregneninolone Progestoral Proluton C

It is hoped that the early publication of these approved names may lead to their general adoption.

RECENT ADVANCES IN DRUG THERAPY

In an interesting article on recent advances in drug therapy, L. S. Goodman (*Bull. N.Y. Acad. Med.*, 1942, **18**, 112) makes the following observations. The local use of sulphonamide drugs has somewhat overshadowed the fact that their oral administration is a useful prophylactic in the quiescent state of rheumatic fever, in scarlet fever contacts when the Dick test is positive, and in meningococcus carriers—among other conditions. Theophylline is an effective bronchial antispasmodic, as are the synthetic substitutes for atropine—namely, novatropine, eumydrine, syntropan, and trasentin. Referring to the various vitamins now in use, he stresses the need for employing them therapeutically only when there is a definite deficiency. Quinine has been found to be effective in the symptomatic treatment of myotonia congenita. Papaverine is a useful vasodilator in the emergency treatment of arterial embolism. Goodman points out that the newer and purified digitalis glycosides (e.g., the lanatosides A, B, and C) are more expensive than digitalis leaf, and that the burden of proof that they are better than the leaf still rests on those making such a claim. Benzedrine, he notes, is especially useful in the treatment of narcolepsy, and may prove a valuable adjuvant to phenobarbital for epilepsy and to the belladonna alkaloids for post-encephalitic Parkinsonism. He observes that no untoward symptoms have resulted from the treatment of threadworms with phenothiazine (the experience in this country is different). From 1929 to 1941 an extensive research on morphine was undertaken jointly by the National Research Council, the Narcotic Bureau of the U.S. Public Health Service, and the Universities of Virginia and Michigan. Of the many substitutes synthesized, the most promising was "metopon," a methyl derivative of dilaudid.

Goodman observes that the use of desoxycorticosterone or other cortical hormones in the prophylaxis and the treatment of shock is still a questionable procedure. He states that desoxycorticosterone increases the blood volume "by a renal mechanism." But the problem of shock is not loss of circulating fluid through the kidneys, but rather through widely dilated or injured capillaries. Until, therefore, it has been shown that the adrenal cortical hormones influence the distribution of body fluids by affecting the permeability of capillaries, their use in shock must be viewed sceptically.

Correspondence

Megaloblastic Anaemia of Pregnancy and the Puerperium

SIR,—In reply to the letter by Dr. M. L. Thomson (Aug. 15, p. 198), which criticizes our communication of July 11 (p. 31), we beg to submit the following observations.

1. We are in full agreement with the dictum that "discussion demands a clear definition of the 'megaloblast,'" but unfortunately, as your correspondent observes, "dissension exists on this point." We are indeed surprised to learn that Dr. Thomson proposes to confine the term "megaloblast" to the "haemoglobinated" classical megaloblast of Ehrlich. The type "A" megaloblast of Israels is described by this author as a large cell with dark blue (non-haemoglobinized) cytoplasm, which in pernicious anaemia may constitute as many as 41.8% of the total marrow cells in sternal puncture films. Your correspondent is apparently labouring under the impression that all large basophilic red cell precursors are "proerythroblasts." If this be so we would suggest that before undertaking to publicize the haematological doctrines of Israels he should seek further instruction from his mentor.

In our view the adjective megaloblastic as applied to marrow films is warranted when a high proportion of the red cell precursors are of a primitive type—i.e., large cells with abundant basophil cytoplasm and a large nucleus displaying a finely reticulated nucleoplasm. Such cells may appear occasionally in many conditions, but in our experience are only found in large numbers in anaemias due to deficiency of the liver principle. In his published descriptions Israels distinguishes his type "A" megaloblast from the proerythroblast solely by certain details of nuclear morphology. We are of the opinion that these distinguishing features are not sufficiently constant or well defined for their ready recognition. However, from the practical point of view this is of little importance, as the proerythroblast of Israels is not found in considerable numbers in marrow films except in conditions where megaloblasts also are numerous. Having exchanged slides and engaged in an amicable and, we trust, mutually helpful correspondence with Israels, we feel that although we may differ from him on certain cytological points of considerable academic interest we are unlikely to disagree over the recognition of a megaloblastic marrow film.

We admit that the value of our paper might have been enhanced to haematologists by the inclusion of photomicrographs and detailed cytological descriptions, but as the paper was addressed primarily to practising clinicians we did not consider that such a course was called for in view of the need for economizing in space, and, furthermore, because detailed illustrated descriptions of the erythroblast series of cells had recently been published by us in the *Quarterly Journal of Medicine*, to which a reference was given in our paper.

2. Your correspondent takes exception to the inclusion in our series of 3 cases in which sternal puncture was not done. That sternal marrow films were not available in these 3 cases is regretted by none more than ourselves. Perhaps we should have omitted these cases, but in view of the rarity of this type of anaemia of pregnancy we did not consider it unreasonable to include them, as in their peripheral blood findings, clinical features, and response to treatment they displayed such a similarity to the 13 cases in which the sternal marrow was investigated. We fully admit that in these 3 cases concrete proof of the anaemia being megaloblastic is lacking, and if Dr. Thomson chooses to regard a severe anaemia with a colour index of 1.33 which responded with a reticulocyte crisis to an injection of liver extract as normoblastic in origin, he is obviously entitled to his opinion. Presumably he refuses to regard his cases of Addisonian pernicious anaemia as megaloblastic unless sternal puncture has been performed.

3. Your correspondent inquires on what grounds was our Case 9 included as a megaloblastic anaemia. It was regarded as a megaloblastic anaemia because in the sternal marrow film large numbers of megaloblasts were present. Although many

normoblasts were also present in the bone marrow this is to be expected when the red cell count is over 3,000,000. The relative increase of normoblasts in association with a low colour index (0.75) was attributed by us to a dual deficiency of liver principle and iron, a combination which in our experience not uncommonly occurs.

The further criticism of certain of our cases in which sternal puncture could not be performed before the injection of liver extract had been started, we answer by stating that in each case the cytological findings were fully consistent with those observed by us in cases of Addisonian pernicious anaemia at varying time intervals after initiation of liver therapy.

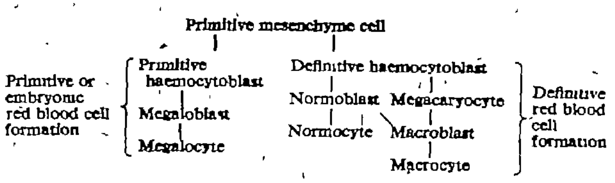
4. Your correspondent's dogmatic and unqualified statement that "the usual pernicious anaemia of pregnancy clears up after pregnancy" is, we consider, dangerous and unscientific, for unless it is realized that a considerable proportion of such cases may require intensive prolonged treatment and maintenance of life with blood transfusions, lives will be lost unnecessarily. It would be interesting to know upon what grounds he names such anaemias "pernicious," and whether he has studied their sternal marrow films.

In conclusion, we too would enter a plea. Although the history of haematology rivals that of theology in its sectarianism and doctrinal intolerance, surely the time has come when clinical haematologists should preserve a sense of proportion in their reactions to technical controversy. The heat engendered by discussions on cytological minutiae should not be allowed to obscure a clear appreciation of what is and what is not important in its practical application to diagnosis and treatment of diseases of the blood.—We are, etc.,

Edinburgh

L. S. P. DAVIDSON.
L. J. DAVIS.
JAMES INNES.

SIR,—Embryologists have for long recognized that in the mammal there are two types of red blood cell formation—the primitive and the definitive. The primitive is concerned with the development of primitive mesenchyme cells into primitive haemocytoblasts and thereafter into megaloblasts and megalocytes; the definitive with their differentiation into definitive haemocytoblasts and thereafter into macroblasts and macrocytes, normoblasts and normocytes. These changes may be represented schematically as follows:


Primitive mesenchyme cell
Primitive or embryonic red blood cell formation
Primitive haemocytoblast
Megaloblast
Megalocyte
Definitive haemocytoblast
Normoblast
Megacaryocyte
Normocyte
Macroblast
Macrocyte
Definitive red blood cell formation

Ehrlich held the view that in pernicious anaemia red blood formation had reverted to the primitive type; according to him also the megaloblast was a large haemoglobin-containing cell with a leptochromatic nucleus, which was to be found in small numbers in the circulating blood of patients with pernicious anaemia. This cell ripened into the non-nucleated form, the megalocyte. At a later date Nägeli described two other cells of definitive lineage—the macroblast and the macrocyte—as occurring in the blood in certain conditions. Where this takes place the marrow is organically and physiologically sound, but, owing to certain adverse influences, the removal of which brings about restitution to normality, it is for the time being functioning abnormally. In pernicious anaemia, however, with its megalocytic blood formation, the marrow is the subject of organic disease without known cause capable of removal.

Peabody, who was regarded as the authority on the subject, was of opinion that the predominant cell in the marrow in pernicious anaemia cases was the megaloblast. In 1928, however, I pointed out that his megaloblast was in reality a haemocytoblast; and later (1934) Turnbull expressed a similar opinion. There is, in fact, no justification historically, morphologically, or otherwise—indeed, on the contrary—for supplanting the haemocytoblast of the embryologist by the megaloblast of the haematologist in this setting.

In the diagram by Dr. M. L. Thomson (Aug. 15, p. 198), in which he presents schematically Israels's idea of red blood cell development, it will be seen that while the megaloblast is placed in a separate lineage from the normoblast, it is shown as ripening into the macrocyte, not the obvious megalocyte, to me a quite unintelligible procedure. It will be difficult, further, to justify the addition of the term "proerythroblast" (in place of the commonly employed "haemocytoblast") to the already overloaded and confused nomenclature. Again no distinction is drawn between primitive and definitive haemocytoblasts (proerythroblasts), with the result that, while the megaloblast has indeed been relegated to a separate lineage, the whole confusion arising from the idea that megaloblasts can develop into normoblasts still persists, the difficulty being merely shifted one stage backwards. Finally, while it may be supposed that the term "erythrocyte" in the diagram is really intended for "normocyte" I am unaware of any justification for the suggestion that the normoblast develops into the macrocyte.

Davidson, Davis, and Innes (July 11, p. 31) supply no evidence that the preponderant cell in the marrow of their cases is the megaloblast; and before the title of their paper can be justified it will have to be shown also that the condition they are dealing with is one concerned not with macroblasts and macrocytes but with megaloblasts and megalocytes. The facts are all against the possibility of this being realized.

Several other points, such as the function and fate of the megacaryocyte, the inner significance of anisocytosis with the simultaneous presence of megalocytes and microcytes, and the part played by deficit of liver agent in megalocytic and macrocytic anaemias respectively, could be elaborated, but as these have already been discussed elsewhere and are at present being dealt with again in an article in the Press, there is no necessity to consider them here.

—I am, etc.,

Aberdeen J. P. MCGOWAN.

SIR,—The article by Prof. L. S. P. Davidson, Dr. L. J. Davis, and Dr. James Innes (July 11, p. 31) is of great value to the obstetrician, as up to the present time few such thorough clinical investigations on that subject have been carried out. In 1931 I published one of the first follow-up cases of pernicious anaemia of pregnancy (*Zbl. Gynäk.*, 1931, No. 23, referred to in DeLee's *Principles and Practice of Obstetrics*, 1938). The case was that of a 25-year-old primipara, who was admitted to our clinic as a case of pre-eclampsia in labour. According to the history, the patient was well up to the third month. She then became pale and complained of dyspnoea on exertion, palpitations, dizziness. In the 10 days before admission she developed oedema of the ankles, headaches, and great weakness. The general examination of the very dyspnoeic patient made one think first of a decompensated mitral failure. The second stage of labour had to be shortened by forceps, followed by intravenous Ringer's drip infusion in view of the appearance of shock. Her condition improved. Urine: albumin+++, urobilinogen+++; stools: urobilinogen +++. The routine clinical examination after the confinement and the complete blood count showed most of the outstanding features of pernicious anaemia of pregnancy: R.B.C. 1,800,000, Hb 37%, colour index 1.02, W.B.C. 4,200, anisocytosis, macrocytosis, ovalocytosis, reticulocytes 110%. Under systematic liver therapy the patient was completely cured within four weeks and remained so, as the later post-natal examinations showed.

Such a case is important from the clinical point of view as many anaemic patients are often admitted to hospitals as cases of "toxaemia" or "congestive heart failure." It shows the need for early recognition of Aubertin's classical triad, "anaemia—dyspnoea—oedema," in routine ante-natal examinations, and, as the Edinburgh authors particularly emphasize, peripheral blood pictures and sternal marrow examinations in suspicious cases of anaemia in pregnancy. Labour brings about acute exacerbation of anaemia, which is the reason why early blood transfusions with vigorous haematinic treatment should be carried out after the diagnosis has been made.

The authors' proposal to replace the old-fashioned term "pernicious anaemia of pregnancy" by "megaloblastic anaemia of pregnancy" is certainly scientifically justified. The thorough differentiation of this type of anaemia from the cryptogenetic Addisonian–Biermer pernicious anaemia in view of the temporary duration has been pleaded formerly by obstetricians (Heim, 1923, Oettingen, 1924, in their works on pregnancy and pernicious anaemia).—I am, etc.,

Surrey County Hospital, Kingston-on-Thames WALTER SPITZER.

Treatment of Haemophilia

Sir,—Though the letter from Dr. R. G. Macfarlane and Prof. L. J. Witts (Aug. 1, p. 140) is most opportune in pointing the way to the management of haemophilia, it is necessary to admit that in this disease continued haemorrhage, even if slight, is a matter for serious concern and a source of great anxiety. The arrest of the bleeding at the site is an important part of the treatment and may be an urgent problem, and it is necessary to consider those measures which are ready to hand and can easily be applied. In the case which has led to this discussion it would appear that the bleeding was not arrested but was merely deviated, hence the extravasation into the tissues of the floor of the mouth and the fatal result. The course of events in this case emphasizes that, whatever measures are employed, it is essential that the bleeding should be arrested and not merely obscured. In order to bring this about in haemophilia some reliable haemostatic preparation must be brought into intimate contact with the bleeding area, and to accomplish this it is necessary to remove clots, debris, or soft oedematous granulations if they have had time to spring up. In my experience ordinary turpentine is an excellent haemostatic provided it is properly used. In the *Lancet* for July 31, 1915, I drew attention to the value of turpentine as a haemostatic, and was subsequently reminded by a correspondent that Billroth had extolled its virtues in his *Surgical Pathology and Therapeutics* (New Sydenham Society, 1877).

In dealing with a tooth socket the matter is quite straightforward. Under a good light the socket must be swabbed out until it is empty and as dry as the oozing will allow. A small strand of gauze or a strip of lint which has been soaked in turpentine and firmly squeezed out is then packed firmly into the socket. Any excess is cut off, and a small piece of folded dry lint or gauze is placed on top of the packed socket in order that it may soak up any excess of turpentine. It is only necessary to keep this pad in position for an hour or two. A conscious and intelligent patient may be able to hold it in position with the finger, thus exercising useful pressure; in other circumstances a rather bigger piece may be used and the jaws may be bandaged together, so that in this way the pad is kept in position and pressure is exercised. In about four days the socket plug will be found to be loosened by a slimy discharge, which follows the use of turpentine, thus enabling the plug to be easily withdrawn and without recurrence of bleeding. If, in the process of removing the plug, there should happen to be the slightest sign of recurrent haemorrhage the surgeon must be content to cut away that part of the plug which has already been loosened and the remainder must be left in position for another day or two. One other word of caution is necessary. The number of pledgets of lint or gauze must be carefully counted and recorded, for I have known a persistent sinus develop into the mouth as the result of a plug of this sort which was overlooked and left *in situ.*

I have used this plan in several cases of bleeding in haemophiliacs, not only from tooth sockets but from other situations, and with unvaried success. I therefore feel that I can recommend it as being convenient and efficient if properly used. Haemostatics like Russell's viper venom and some other preparations are stated to be very efficient, but they are not always readily obtainable, whereas turpentine is almost invariably to be had. Of course in these days the measures for the control of the haemophilic state will also be employed.—I am, etc.,

London, W 12 G Grey Turner.

Social Medicine

Sir,—We all welcome the establishment of a chair of social medicine as we welcome any new institution based on an ideal, but I trust that laymen who may chance to read recent letters on the subject will not get the idea that somehow the clinician or the laboratory worker has been to blame for the neglect of the subject hitherto. The profession has aways had those with ideals and willing to spend their energies freely in the public good. For example, the profession cannot be held responsible for the present state of affairs in regard to diphtheria, industrial fatigue, and tuberculosis. It surely ought not to be necessary for the Chief Medical Officer of the Ministry of Health to have to appeal to the public regarding immunization against diphtheria. Why it is not made compulsory only the politicians know, and meantime hundreds of children die annually from the disease!

In the same number of the *Journal* in which the new chair was announced (July 25) Dr. H. M. Vernon (p. 108) is reported as deploring the neglect of the investigations made during the last war in regard to industrial fatigue—made by official bodies at public expense. All who know anything of the subject are agreed that the application of many of the published findings would not only improve the health of the workers but would greatly increase our war output. Under the present wasteful system, which is responsible for the loss of millions of working hours, the workers, however, get more money, and the employers do not complain as it would otherwise go on the excess profits tax. We must not, however, decry this tax too much, for it is agreed that it has been chiefly responsible for the greatly increased facilities now given to medical officers. Many of the Government Departments are staffed by individuals so exhausted that they cannot be expected to administer as they ought and many are too tired to realize it. Increasing sick-leave will soon take its toll of those who really work hard too continuously.

With regard to tuberculosis the problem is more complex, but again is not so much one for the doctor as for the administrator and the public. Even if we could diagnose every case of tuberculosis in the country, what further could be done without a great change in the public attitude to the subject? It is too commonly forgotten that the young person who may feel quite well does not wish to be labelled tuberculous, while many a man with a positive sputum lives an effective life (and disseminates the disease presumably) for more than 20 years.

A first step in social medicine is the proper education of the public towards preventable disease, and we might begin in the universities, which ought to be the leaders of thought. There are still too many so-called educated people in the community who fail to recognize that a properly planned society, which is so essential in our overcrowded island, is impossible unless those who guide public opinion know more of the essential scientific facts upon which such a society must depend. All university students ought to have a compulsory course of social science, which would include instruction in the maintenance of health.

We must beware lest the new social medicine be relegated to the same academic obscurity as sociology or involved in party politics, for its recommendations will often run contrary to individual freedom. Let us hope that the new institution will not be another body crying in the wilderness, but will be a real source of inspiration to the public conscience.—I am, etc.,

King's College, London R. J. S. McDowall.

Trichlorethylene as a General Anaesthetic

Sir,—I was interested in the letter by Drs. K. G. Lloyd-Williams and D. Hewspear (Aug. 8, p. 170) describing temporary auricular fibrillation in a patient undergoing partial thyroidectomy under trichlorethylene anaesthesia. It is, of course, possible that the fibrillation was due to trichlorethylene, although up to the present electrocardiograms have shown that arrhythmias under this anaesthetic are usually caused by either auricular or ventricular extrasystoles. There are, however, two other factors in this particular case which seem to me more likely to have caused the condition

In the first place, the arrhythmia was first noticed "*immediately after intubation.*" Temporary arrhythmias quite commonly follow intubation, and this is one of the reasons why I abandoned endotracheal anaesthesia as a routine for unobstructed goitre operations. A considerable amount of work has been done on this subject, and it has been shown (Reid, L. C., and Brace, D. E., *Surg. Gynec. Obstet.*, 1940, **70**, 157) that arrhythmias are most likely to occur if intubation is performed under light anaesthesia and if the premedication includes morphine or one of its derivatives. The condition appears to be reflex in origin.

The second factor is adrenaline, which was used in the high concentration of 1 in 150,000. For many years I was accustomed to infiltrations of 0.5% novocain and 1 in 250,000 adrenaline, although tachycardia and arrhythmias followed fairly frequently. On one occasion fatal primary cardiac failure, probably ventricular fibrillation, occurred immediately after infiltration. I then tried reducing the adrenaline concentration, but found that the vasoconstriction became unsatisfactory.

Eventually, after a latent period of nearly 20 years, it slowly dawned on me that if the patient was anaesthetized with nitrous oxide and oxygen, the novocain not only performed no useful function, but was actually a nuisance, in that its vasodilator effect counteracted the adrenaline. On omitting the novocain, the adrenaline can be reduced to 1 in 500,000 in normal saline. If this solution is used for infiltration at least 20 minutes before the surgeon makes his incision, a practically bloodless field results, and I have never seen either tachycardia or arrhythmias result.

From the reasons given above I think it doubtful whether trichlorethylene itself caused fibrillation in this specific case, but at the same time our knowledge of the effects of the drug upon the cardiovascular system in man is far from complete and the publication of any additional data is valuable.—I am, etc.,

St. Albans, Herts C. LANGTON HEWER.

The Medical Curriculum

SIR,—The writer of the leading article under this heading (Aug. 15, p. 191) makes a number of statements which are at variance with the facts as regards both the final examination and medical education, at any rate in a progressive teaching hospital. If this was simply the expression of an individual opinion it would be of small consequence, but when published as a leading article in your *Journal* it has a different significance. From what the writer says it would seem that he has but slight acquaintance either with the final examinations or with the modern methods of medical education. He speaks of "bizarre cases," which he imagines are hunted up with great difficulty for the purposes of the final examination and then disappear either until the next examination or death claims them.

From an extensive personal experience as an examiner in medicine for the Conjoint Board, the Universities of Oxford and London, and the membership of the Royal College of Physicians, I can say that his statement with regard to the final examinations in medicine is quite erroneous. "Bizarre cases" are not wanted for final clinical examinations, and there is no difficulty whatever under peacetime conditions in finding any number of suitable patients from the ordinary hospital clientele. Under war conditions suitable cases can be found without difficulty in the sector hospitals.

With regard to clinical education, the writer suggests that the methods now in vogue differ hardly at all from the method of "walking the hospitals" as practised, I suppose, some 60 or more years ago. What a travesty of the truth! He speaks of an alternative in "the scientific or physiological approach for which many teachers hanker." Inferentially one must assume that this method is forbidden. But in my experience it is the one at present in vogue in any modern and progressive medical school. Surely, sir, if the teachers hanker for this method all they have to do is to employ it. I do not understand what the "synthetic method" may be, but if, as I suspect, it means spoonfeeding, it is surely to be deprecated. There are few who would not agree that the curriculum needs revision and that the scheme of medical education could be improved, but do not let us discard what is good in the existing order of things simply for the sake of something new and call the result progress. The writer, for instance, seems to think that clinical clerkships are to be deprecated, but surely the investigation of the patient by the student at the bedside is one of the most essential aspects of medical education.

I should like to end on a note of complete agreement with the writer when he says with regard to pre-clinical teaching that it is not clear why so little time is left for the study of the mind. The reason for this, and its cure, lie largely with the anatomists and physiologists. There are signs, however, that they are becoming conscious of the need for a thorough revision of the teaching of their subjects.—I am, etc.,

London, W 1. C. M. HINDS-HOWELL.

SIR,—Referring to your leading article on the medical curriculum (Aug. 15, p. 191), I think that the emphasis laid on the division of the curriculum into pre-clinical and clinical is unfortunate. The division is perhaps convenient in many ways, but it is wholly artificial and educationally unsound. It has done much to obscure for students the importance of scientific methods in medicine by the implication that once the official examinations in anatomy and physiology are passed there must be developed a new outlook and a new technique which comprise the mystical "art" of medicine. It has also set up a barrier against that close co-operation between anatomists, physiologists, and clinicians which is so essential in any sound scheme of medical education. The intelligent study of medicine is based on the application of principles common to anatomy, physiology, pathology, and ancillary subjects. Anatomy and physiology must continue to be taught after a student has begun hospital work, not as applied anatomy or applied physiology (as though the earlier work had no application to medicine), but as a natural continuation of the subjects.

Your article states: "It is also clear that life is too short for the medical student to learn everything from the fundamental or scientific standpoint, and it seems probable that he will have to get his scientific education and background in his pre-clinical years and devote the clinical years to the acquisition of technical skill." If this is accepted there seems to be no need for a "pre-clinical" period; let us revert at once to a complete system of apprenticeship so that more time may be available for the acquisition of these "technical skills" which appear to have no relationship to scientific method.

There can be no satisfactory advance in medical education until the curriculum is reviewed as a whole, and the teaching in different departments is correlated so that the student may see, so far as present-day knowledge will allow, a logical application of fundamental principles in the presentation of clinical work.—I am, etc.,

Faculty of Medicine
The University, Sheffield, 1. G. A. CLARK.

Urethral Instrumentation

SIR,—Both Mr. Clifford Morson (June 20, p. 771) and I (July 4, p. 25) were led by our own observations to deplore the ill results that follow upon inexpert treatment of cases of retention of urine. Mr. Morson proposed as a remedy more efficient training in the operation of passing a catheter, whereas I suggested that, as more than the operation itself was involved in the treatment of these cases, the patient should be regarded as an emergency and admitted to an institution.

Dr. Vincent Norman replied to my suggestion by minimizing the dangers of catheterization in the patient's home, and by stating that practitioners were fully aware of these dangers and accordingly took precautions against them. His arguments about the difficulty of admission to an institution at 3 a.m. do not, I am sure, hold with regard to a perforated peptic ulcer, and, therefore, should not apply to acute retention. I am prepared to admit that many institutions do not welcome these cases, and the fault lies often with the surgical staff; but then I am not out to attack practitioners but to find the best method of treatment of these patients. I am not a one-specialty man, and the remainder of his letter is thus irrelevant.

I could quote a number of cases illustrating how justified I was in my complaint, but will, for space reasons, cite the most significant one. A patient two years previously had had retention relieved by catheterization; his relief was great and his gratitude very real; he was not encouraged to have an operation. I saw him recently with chronic retention and a blood urea of 300 mg.%. He was probably a fit, healthy man with little renal damage when he developed retention previously. He was catheterized successfully in every way; in fact so excellent was this treatment that he was afterwards able to pass his water freely. Unfortunately the prostate continued to enlarge, and when admitted he was near to dying from uraemia. I should like to hear some opinions of the percentage of patients with retention who, after catheterization, pass their water freely, and have no more serious trouble beyond the slight prostatic symptoms so commonly met with in elderly men. In my experience a man who has developed retention will almost certainly require further treatment later.

I regard acute retention as almost an absolute indication for operation, in the same way that an attack of appendicitis is an indication for appendicectomy either then or later in a quiescent phase. If this is so, then the sooner operation is performed the better; these patients are getting older, and their kidneys are being progressively damaged. Catheterization then becomes a pre-operative treatment, and the surgeon should be permitted to express his views on how it should be carried out. In the *Collected Papers of the Mayo Clinic*, 1940, there is a report of 1,000 perurethral operations with a mortality of under 1%. The average age of the patients was 70, and 43 of them were over 80. On these figures Dr. Atkinson will agree that one should not too readily assume that a patient is too old for surgical treatment.

In brief, the ideal procedure should be to transfer the patient as rapidly as possible to hospital after having given a dose of morphine. There he should, after shaving, be catheterized with a rubber or silk web instrument with full aseptic technique, preferably in the theatre; the bladder should be decompressed gradually and then allowed to drain through a tied-in catheter. A house-officer dealing with one or more of these cases every week can be trained by the surgeon to carry out the manœuvre efficiently. In remote parts of the country such a plan may not be possible, and then I would agree that catheterization may become necessary. I would suggest that not more than 1 pint should be withdrawn and admission to an institution then arranged during the following 6 hours.—I am, etc.,

Reading GORDON L. BOHN.

Jung's Psychology

SIR,—Your sympathetic review of Dr. Jacoby's book *The Psychology of C. G. Jung* makes the following statement: "Jung does not in any way refer theoretical 'structure and function' of the psyche to the structure and function of the body; consequently [1] in some ways his teaching is more of a religion than a science, and is said to have wider application than 'medical healing.'" This, I think, requires comment, because it might well in certain circles damage the reputation of the medical psychologist who uses Jung's method in his work.

In the first place it is not true to say that Jung does not relate mental to physical structure and function. I may quote in this connexion an article published in your *Journal* in, I think, 1938, in which a report of a dream sent to him is quoted giving a diagnosis of organic disease in a particular part of the brain. I may also refer to a similar diagnosis in *Modern Man in Search of a Soul.* Other references will be found in *Contributions to Analytical Psychology,* while one of his followers, Prof. Heyer, has dealt with the gastric neurosis in his book *Organism of the Mind.*

It remains true, however, that analytical psychology is firmly based on the psychological standpoint, but there is no reason to think that Jung's work has produced something that is even "in some ways . . . more a religion than a science." Jung is simply a student of human nature, and his work is neither more nor less scientific than that of others who are interested in the same subject. It should be realized that Jung has created not a branch of medical psychology but a new method of studying the unconscious process, and it is only one aspect of his work that is concerned with psychotherapy. This is why analytical psychology has a "wider application than medical healing." He has investigated "normal" as well as "pathological" phenomena. In the course of his researches Jung came across essentially religious phenomena, but he has never gone beyond the strictly scientific standpoint of recording and classifying the phenomena which he has observed. He has no more created a religion than have the anthropologists.

The sort of mistake which is contained in your review may, to a certain extent, be laid at Jung's door, for his writings often presuppose a knowledge which only a few people possess. Conceivably he should be more elementary, but it is really the task of analytical psychologists to fill in the gaps which he leaves.—I am, etc.,

Nottingham. MICHAEL FORDHAM.

Scabies

SIR,—Dr. A. M. H. Gray (Aug. 8, p. 170) comments on the rarity of scrotal dermatitis as a complication of the treatment of scabies by benzyl benzoate. Approximately 8,845 persons have received this treatment at the Birmingham Public Health Department's scabies treatment centres during the past 18 months (6,413 by the spirit soap lotion and the rest by the *National War Formulary* emulsion). One case of scrotal dermatitis has been reported, and in this case the patient had followed up his benzyl benzoate treatment with a couple of hot strong lysol baths. The interest of this case lies in the fact that, had I not been able to see the patient personally and so learn the whole story, the dermatitis must necessarily have been attributed to the benzyl benzoate.

Dr. Gray mentions that the treatment cannot be carried out by the patient himself. This is often said; I wonder why. Surely there is one, and only one, essential requirement—that the emulsion should be applied to every part of the patient's skin (face and scalp excepted, of course). I should have thought that an intelligent patient, anxious to be cured, was perfectly capable of doing this. In fact it seems likely that the patient might be more thorough in the treatment of, say, his genitals (an important site of infection in the male patient) than would a trained attendant. I am not advocating self-treatment as a routine; my point is that success in treatment is proportional to the care with which the benzyl benzoate is applied, whether by attendant or by patient, and accordingly it is a method well suited to use by the intelligent patient in his own home under medical guidance.—I am, etc.,

Birmingham L. J. BACON.

SIR,—Your leading article (July 11, p. 44) should help to rouse the medical profession to attack the problem of scabies with a greater measure of success. For 250 years we have sheltered behind impressions and beliefs rather than facts. Surely this is why you find it "remarkable that scabies should be so difficult to control." We are often unable to trace the source of an infection; we are not sure of the length of the latent period before symptoms occur; we may be unable to confirm our diagnosis; and we cannot be certain that viable mites do not remain after treatment.

You rightly draw attention to the carrier or latent case who harbours live mites without rash or irritation. I do not, however, consider such persons alone to be insensitive to the parasite, as experiments with live mites burrowing and crawling on the skin lead me to seek some cause for the irritation other than the progress of the mites through the skin.

You refer to the need for suspecting vesicles near the hands or feet. For 6 months I examined the contents of vesicles in vain, until it was explained to me that the burrow, however short, lay in the cuticle superficial to the vesicle, and that the vesicle was deep to the entrance rather than to the active blind end of the longer burrows. There is evidence that this confusion between burrows and vesicles often leads to disappointing results in the search for the acarus and to errors in diagnosis in atypical cases.

Dr. Kenneth Mellanby, Major C. G. Johnson, and Mr. W. C. Bartley (July 4, p. 1) find that benzyl benzoate lotion with soft soap and spirit is effective in the treatment of scabies, but you mention this as the only sarcopticide to be compared with sulphur ointment. The dermatitis sometimes caused by this lotion does not occur when benzyl benzoate is employed as an aqueous emulsion with wax, or as a simple solution in spirit.

I agree that an increased accuracy of diagnosis is essential, though I believe that such an advance will only follow a keener interest in and search for the parasite. I admit that in the Army our diagnosis may not always be above reproach, but I am not a little disappointed when, after confirming the diagnosis in a soldier, I find that his small child has been attending the local clinic for the past three months with a "teething rash," and that his wife has irritating spots on her wrists and fingers which her doctor attributes to the new national flour.—I am, etc,

H. F. LUNN,
Captain, R.A.M.C.

Tietze's Disease

SIR,—Following the article on Tietze's disease by Drs. A. Morton Gill, R. Arden Jones, and L. Pollak (Aug. 8, p. 155) the following case may be of interest. In this instance the pain and swelling of the cartilages appear directly to have preceded an attack of pleurisy.

The patient, a labourer aged 35, was admitted to Guy's Hospital on July 5, 1942, complaining that 10 days previously he started getting pain over the right side of the sternum together with dyspnoea and inability to bring up sputum. He went to bed and 2 days later noticed a swelling developing just to the right of the sternum. On the 4th day he began to get pain in the left axilla over the 7th and 8th ribs. This second pain was pleuritic in nature. A few days after admission a doubtful rub was heard in the left axilla. Previous illnesses: chronic bronchitis many years; about 3 attacks of asthma each winter. No family history of tuberculosis.

On July 23 he was transferred to a war hospital. He is still somewhat short of breath, but the pleurisy has subsided. He complains of an aching pain on the right of the sternum which is made much worse by deep breathing. He is a lean man with sallow complexion; intelligent; all finger-nails are nibbled to the moons. Blood pressure 130/90. Mouth, some pyorrhoea. Chest movement, largely up and down. Poor air entry with scattered low-pitched rhonchi. Very tender over the right 4th, 5th, and 6th costal cartilages, which are slightly swollen and the interspaces almost obliterated. The swellings feel hard and are discrete from the skin. Springing of the ribs causes sharp pain over the affected area. Other systems normal. Blood sedimentation rate 9 mm. in first hour. Kahn reaction negative. *X*-ray examination of chest showed increased fibrosis with large roots and fibrosis at the right apex. Sputum: no tubercle bacilli seen on direct smear. Radiograph of costal cartilages: no abnormality noted.

The patient still has constant aching pain over the right side of the sternum (Aug. 10, 1942) which is less severe than formerly and the area is no longer tender. The swellings are, however, no smaller than on admission.

I am indebted to Dr. Hale White for permission to report this case.

—I am, etc.,

P. R. C. EVANS.

Hyperostosis Frontalis Interna

SIR,—I hope that I am not being unduly dense and becoming mixed up in my nomenclature, but does not Dr. C. T. Andrews, in his article on hyperostosis frontalis interna (Aug. 15, p. 185), mean to write "lowered" rather than "raised" glucose tolerance? His patient had a fasting blood sugar of 150 mg. per 100 c.cm., high blood sugar values for the next two and a half hours, and glycosuria on 3 days out of 4. She had also been previously diagnosed as diabetic, presumably after the discovery of a lowered sugar tolerance curve.

Russell Brain (1935, "Glycosuria in Cerebral Lesions," read before the Society of British Neurological Surgery; unpublished) points out that hypothalamic lesions may give glycosuria with or without hyperglycaemia. Hypopituitarism, on the other hand, is said to give a raised sugar tolerance. If we are to assume that the symptoms in Dr. Andrews's case are due to hypothalamic damage, then I, personally, should expect to find glycosuria with or without hyperglycaemia and a lowered sugar tolerance. If I am being dense I apologize, but I should be grateful if the point can be cleared up.—I am, etc.,

Caterham, Surrey. J. MACKAY CRAWFORD.

Enteritis associated with Giardia lamblia

SIR,—The article by Drs. G. Ormiston and Joan Taylor and Prof. G. S. Wilson on enteritis associated with *Giardia lamblia* (Aug. 8, p. 151) will, I trust, be remembered when dealing with enteritis of apparent unknown cause. I have had some experience of this parasite when in the Middle East, and believe it to be commoner than many realize; it is possibly the cause of outbreaks of unexplained enteritis, particularly in institutions and where there is apt to be overcrowding.

I would like to mention a few points in connexion with *Giardia lamblia* which were not brought out in the article and which may help in investigating cases. (1) *Giardia* are found in cats, mice, rats, and some human beings are possibly carriers. They are usually found in the upper part of the small intestine, in the gall-bladder, and in the biliary system. (2) The best way to isolate the protozoon is by means of duodenal drainage through the standard Ryle's tube. This enables the parasite to be seen free from lower intestinal contamination. By injecting a small quantity of magnesium sulphate through the tube the gall-bladder can be drained. The yellow colour of the bile acts as a good contrast background to the parasite. (3) Apart from acute intermittent and chronic enteritis, cases of acute cholecystitis have been reported from time to time, which have been due to *Giardia lamblia*. (4) I have known 3 cases of acute catarrhal jaundice to be associated with heavy infection by *Giardia lamblia*. Two of these cleared up quickly with the treatment and disappearance of the parasite. The third proved fatal, and microscopical examination of the liver showed a heavy infection of the biliary system with protozoon.

In view of present wartime conditions, when there is an unfortunate overcrowding both in and out of the Services, with, in some instances, faulty sanitary conditions, an increase in the number of natural hosts, and a possible increase in the dissemination of the parasite, I would like to congratulate the authors on reminding us in their interesting article of the existence of this parasite.—I am, etc.,

Bromsgrove. J. A. SMITH.

Treatment of Malaria

SIR,—I have read with great interest Prof. Warrington Yorke's article on the diagnosis and treatment of malaria in England (July 18, p. 61) and Dr. E. S. Fennell's suggested intravenous method (Aug. 8, p. 171). Having worked on malaria for a number of years in the Tropics, sometimes in hyperendemic areas, and having experience of the disease in its worst forms, may I take the liberty of making a few comments on its diagnosis and treatment?

There is one algid type of malaria which Prof. Yorke has overlooked and which I have quite frequently encountered during an epidemic—the "allergic type." The symptoms in this type are severe headache, vomiting, diarrhoea (sometimes containing blood), subnormal body temperature with a high rectal temperature, and general urticaria. Blood smears showed multiple infections of R.B.C. with malignant tertian rings. Quinine per os was out of the question, so I decided to give it intravenously. I am herewith giving a résumé of my article published in the *Indian Medical Gazette*, 1926, on "Intravenous Use of Quinine, Arsenic, and Adrenaline in Algid Cases of Malaria." I have given a total of about 3,000 to 4,000 injections without a fatal case.

Technique.—Quinine, specific for malaria; arsenic, a haematinic and general tonic in small doses; adrenaline counteracts fall of blood pressure due to quinine and "quinism." 10 grains of quinine bihydrochloride is dissolved in 20 c.cm. of redistilled water in a test-tube, to which is added 3 drops of liq. arsenii hydrochlor. The tube is then heated over a spirit lamp until the quinine is completely dissolved. Allow the sol to cool to about body temperature, draw up 10 minims of a fresh sol of liq. adrenalin. hydrochlor. into the syringe containing the quinine sol and inject, preferably into the median basilic vein at the bend of the elbow.

Do not heat the adrenaline, as it decomposes on heating and will not have the desired effect. The injection must be made very slowly, at least 7 to 10 minutes. If too rapid an injection is made it might cause acute dilatation of the heart and syncope. The rate can be judged by the patient's respiration. If the injection is made too fast the patient will complain of a tight feeling in the chest and his respiration will get hurried. I found the best time to give the injection was when the patient commenced a rigor, as the sporozoites at this stage are free in the general circulation, and this offers an opportune moment to destroy them. My results have been verified by blood examination before and after injection, by which I found that if an injection is given at this stage there is a marked reduction of the parasites. The following mixture was given when the patient was able to swallow:

℞ Quinin. sulph.	gr. x
Acid. citric.	gr x
Tr. nuc. vom.	♏x
Liq. arsenicalis	♏iii
Aq. syrup. limon.	ʒj
Aq.	ad ℥ss

℥ss t.d.s. for 10 days.

A diet which favours blood regeneration should be given, such as red meat, green vegetables, fruit (vitamin C), plenty of fluid with glucose if vomiting is persistent The anaemia following malaria is of a microcytic type, as with most protozoal infections, and iron is indicated.

The synthetic compound of atebrin could be used instead of quinine, as advised by Prof. Warrington Yorke, after the acute stage has subsided.

—I am, etc.,

Whitchurch, Cardiff SYDNEY J. BELLGARD.

SIR,—I was interested in the report of a meeting of the Royal Society of Tropical Medicine (Aug. 8, p. 167) at which the treatment of malaria was discussed. I agree with Prof. Warrington Yorke that the conservation of the present limited supply of quinine must be effected by rigid economy in the large amount used for prophylactic treatment. I admit to some bias, as I have never believed in the efficacy of the daily 5 grains as a prophylactic. About 40 years ago in India and Burma I treated severe cases of malaria by intramuscular injection of quinine bihydrochloride, and never saw the slightest ill effect from it. On the contrary, I am convinced that it saved lives.

In 1906, when serving in "the bush," Sierra Leone Protectorate, I contracted malignant tertian malaria confirmed by myself by microscope. As no other doctor was available I treated myself by intramuscular injections of quinine bihydrochloride. Except for a mild recurrence, also treated by injection (single), ? two months later, I have never suffered from malaria since. I am therefore in full accord with Prof. Yorke in expressing "surprise and consternation" at Sir R. Christophers's denunciation of the intramuscular use of quinine.—I am, etc.,

Bath. J. COWAN, M.B.
Lieut.-Col., R.A.M.C. (ret.).

Treatment of Threadworms

SIR,—Prof. James Miller has pointed out to me Dr. C. Paget Lapage's letter (June 13, p. 738) on the treatment of threadworms, in which he advocates the use of barium. It is our experience that any mode of treatment for pinworm infections which depends on its mechanical effect alone is at best purely palliative. And while a number of worms may be dislodged by the use of barium, a few are bound to escape and will serve as the nucleus from which a new autoinfection is quickly built up.

Recent investigations have made available two drugs which are specific in the treatment of pinworms—gentian violet and phenothiazine. Gentian violet is administered in coated tablets, either enteric-coated or with a water-soluble coating of an adjusted thickness which disintegrates at a specified time after ingestion. The coated tablets are given to ensure their reaching well down the intestine before they disintegrate, thus providing a maximum concentration of the drug at the site of infection. Our tests with gentian violet in the treatment of pinworm infections in children of school age have shown it to be effective in 60 to 90% of those treated (Miller *et al.*, *Canad. med. Ass. J.*, 194, **43,** 455). The following doses are recommended: Children under 10 years, 1/4 grain 3 times a day before meals for 10 days; children from 10 to 13 years, 1/2 grain 3 times a day before meals for 10 days; children over 13 years and adults, 1 grain 3 times a day before meals for 10 days. These dosages are not rigidly fixed, and if a child is big for its age or is small and puny the dose is determined accordingly. We found that untoward symptoms were almost entirely avoided if the drug was given in 2 five-day periods separated by a treatment-free period of one day.

Phenothiazine administered in chocolate tablets is even more efficient than gentian violet in the treatment of pinworm infections (Miller and Allan, *Canad. med. Ass. J.*, 1942, **46,** 111). However, because of its haemolytic action and other toxic effects, we agree with Dr. Lapage that its use should be avoided until more is known of its action on the body.—I am, etc.,

Institute of Parasitology, Macdonald College,
McGill University, Quebec. MAX J. MILLER.

The Blood in Cancer

SIR,—The blood may be studied from so many aspects that research on its appearances in cancer should be restricted to certain specified lines. Dr. O. C. Gruner seems to attempt too much in his book reviewed in the *Journal* of Aug. 8 (p. 159), for the results of his many years of study seem more a maze with many blind alleys than a path to follow hopefully. His book claims to offer the surgeon and the radiotherapist just what they want most from some laboratory method: diagnostic confirmation of the presence or absence of cancer; in treated patients the likelihood or not of the completeness of cure; and an indicator of the phase of the periodicity of each case. (The last point Gruner has given in more detail in Fig. 5 in his paper in the *Canad. med. Ass. J.*, 1941, **44,** 256.) But over a year's trial of his methods has shown, to my regret, a value most apparent in the patients with a high grade of tumour activity—i.e., where such additional tests are least needed.

Your reviewer states that Dr. Gruner "does not claim absolute certainty of diagnosis" by his methods, but such a claim would seem to be made on p. 41 for what are called "geniculate" mitochondrial forms in monocytes. These are said to be so pathognomonic "that if one genuine one is seen there is no need to search further to make the diagnosis." Further, as they "indicate active disease" (p. 64) the important conclusion is drawn that "more than half the cases treated by modern methods still show evidences of cancer in the body."

My studies (in progress) show these forms are not "pathognomonic," for similar forms are to be seen in the other leucocytes and in lymphocytes (more so in leukaemic blood); they are also to be seen in cancer and normal and non-cancer blood when stained (fresh blood) with Duboscq's solution or (dried films) with Victoria blue or with Morosow's silver method, and examined with a low condenser and good light (and binocular); they are also to be seen in many haematoxylin-stained tumour and normal cells; and (in very fine types) in viruses, as vaccinia, herpes, and molluscum contagiosum. These zig-zag noded forms of cell-reticulum or mitochondria need much further research.—I am, etc.,

London, W 1 J. H. DOUGLAS WEBSTER.

Meningococcal Septicaemia resembling Malaria

SIR,—The case of meningococcal septicaemia resembling malaria reported by Major-Gen. Robert Priest (Aug. 1, p. 129) recalled a similar interesting case under my care last year. In his patient meningococcal septicaemia was apparently diagnosed confidently by Major-Gen. Priest on the occurrence of characteristic cutaneous eruptions, although no organism was isolated. In my patient there were no cutaneous signs, and organisms were finally recovered from the cerebrospinal fluid. The two cases appear complementary in providing a clinical picture of interest.

A boy of 15 was admitted for observation to the local isolation hospital during a small epidemic of paratyphoid B fever. For 6 days previously he had been feverish and confined to bed. Blood taken the day before admission showed agglutination to *B. paratyphosus* B at 1/30. On admission he was comfortable, afebrile, and no clinical abnormality could be discovered. Blood culture was sterile; examination of urine and faeces and subsequent Widal tests ruled out the possibility of paratyphoid fever. On the evening of the second day after admission he had a rigor with headache, vomiting, generalized pains, and temperature of 103.6° F. Eight hours later the temperature was normal. Three further similar attacks developed with a quartan rhythm as in Major-Gen. Priest's case. No cutaneous eruption developed. Several blood films revealed no malaria parasites, but a course of quinine bihydrochloride was given, and the next rise in temperature did not occur as expected, but recurred after four afebrile days when the patient was still receiving quinine. Owing to pressure on the accommodation and the necessity to admit patients requiring urgent treatment, he was transferred the next day for further investigation to the local general infirmary. Investigations there revealed no abnormality, and his temperature remained normal until his discharge a fortnight later.

Three weeks after discharge he was readmitted to the local isolation hospital suffering from severe headache and generalized pains of 3 days' duration. The diagnosis of meningococcal meningitis was confirmed by culture of the turbid cerebrospinal fluid. No rash was present. Treatment with sulphapyridine resulted in a rapid uncomplicated recovery. He stated that he had not really felt well after discharge from the infirmary.—I am, etc.,

Southport. F. E. CRAWLEY.

"Removal for Mental Observation"

SIR,—The article by Dr. Arthur Harris (Aug. 1, p. 136) is a timely contribution. It reveals a deficiency for which the general practitioner is not wholly responsible. Unfortunately Dr. Harris's remarks are too condensed to be of much practical value, and make little attempt at any substantial solution of the problem.

The average general practitioner has little time or opportunity to devote to the mental assessment factor. Academically he is usually poorly equipped for the purpose. What proficiency he may acquire has to be gained in the hard school of cumulative experience. Lately he has been granted the privilege of postgraduate study, but, in this, too little time has been allotted to the ever-growing importance of the abnormal mental state.

The general practitioner need not be too despondent about his mistakes. The senior specialist is still a long way from the acme of infallibility, which fact, no doubt, many of your readers have reason to deprecate.

Dr. Harris suggests that misdirected disposal may lead to public censure and may jeopardize prestige. Undoubtedly this is true, but is it not sometimes the outcome of diplomatic indiscretion on the part of an officious colleague?

Dr. Harris states also that all mental cases of "organic" origin should be lodged in a general hospital. The satisfactory operation of this policy would challenge even the ability of its author. At the present time I cannot visualize the general hospital that would accept without controversy any case with a dominant mental picture. The policy, however, does merit consideration. Would it not be practicable to institute an observation department in our general hospitals? If so, futile travel might be partly eliminated, patient and relative would probably be more co-operative, fuller investigation would be facilitated, and, incidentally, any anxiety on the part of the practitioner with regard to reputation would be appreciably relieved.

Too often has the general practitioner to sacrifice incentive and ability at the altar of inefficient and clumsy administration.—I am, etc.,

Birmingham. A. W. DOCKAR.

SIR,—I was interested to read Dr. Arthur Harris's article (Aug. 1, p. 136). He deals very thoroughly with the organic diseases that simulate acute psychoses by the presenting symptoms and signs of confusion and delirium, and the only additions I should like to make are cerebral contusion, hypoglycaemic states, and subarachnoid haemorrhage. I cannot, however, agree with his view that the majority of these conditions should not be admitted to the mental observation ward. These cases are unsuitable for home nursing and a source of worry, discomfort, and apprehension to other patients in the general wards. Moreover, in my experience, since the presenting symptomatology is one of mental abnormality and behaviour disorder there is little difficulty in explaining to relatives that in fact the observation ward is the ideal place for these patients, although their primary illness is physical.

The real pitfall in the management of these cases is their admission to a mental hospital under certificate, which can only be avoided by staffing the observation ward with efficient nurses and well-qualified doctors of sufficient experience to make a correct diagnosis. Under these conditions the observation ward forms an important part of the neuropsychiatric unit of any general hospital, and without it the hospital is unable to give the fullest service to the public and to the local general practitioners.—I am, etc.,

Central Middlesex Hospital, N.W.10. A. BARHAM CARTER.

A Depression–Hyposexual–Alopecia Syndrome

SIR,—I am grateful to Dr. Ucko (Aug. 8, p. 174) for his kind interest in our paper and agree with him that further investigations would have been helpful. They were omitted only because the case was actually under my care for a short time, and the patient was already being boarded-out when I first saw him. Moreover, perhaps Dr. Ucko does not realize that research in the hurly-burly of a war hospital is somewhat different from doing similar work comfortably in the West End. We pointed out the similarity of the condition we described to some aspects of Simmonds's disease, but we cannot accept that it is merely an undeveloped form of this illness. Simmonds's disease is characterized by emaciation, anorexia, asthenia, precocious ageing, breaking of the nails, hypotension, etc. None of these conditions was found to be present. Again, myxoedema shows swelling of the subcutaneous tissue, puffiness of the face, changes in skin coloration and texture, vocalization, gait, mentation, reaction to cold, etc. These were entirely absent. It does not appear to me that the malady which we have described is a variety of either hypothyroidism, however masked, or of Simmonds's disease, and had Dr. Ucko seen the patient I am sure that he would have agreed. Nevertheless, I hope that I shall have the good fortune to encounter further cases which will be under my care for a longer period, and I shall be able to repay Dr. Ucko's kind interest by conclusive proof that this is a new endocrine and psychiatric syndrome.—I am, etc.,

CLIFFORD ALLEN.

Body Mechanics

SIR,—A review in your issue of July 25 (p. 99) of *Body Mechanics in Health and Disease* by Goldthwait and others called forth a comment from Dr. George Macdonald (Aug. 8, p. 173) that the theories advanced in the book in question are similar to those propounded by Still, the original osteopath, 80 years ago. I must point out that long before this the theories had been propounded by the Swede P. H. Ling (1776–1839), on which he based his educational gymnastics for the acquisition and maintenance of health and his medical gymnastics for the alleviation and cure of diseased conditions.

It is unfortunate that osteopaths should so often arrogate to themselves "discoveries" to which they are not entitled. I may, for instance, mention that an article of mine, written in conjunction with Dr. Kellgren-Cyriax, on the manual treatment of the abdominal sympathetic (*N.Y. med. J.*, 1910, **7**, 193) was severely criticized by Smith in the *Lancet-Clinic* for 1911, who accused us of borrowing methods from the osteopaths and exploiting them as new. To this we replied in the former journal (1912, **95**, 897) by quoting a large number of authors of the Swedish school who had written about this method of treatment for many decades before the time of Still. Another example is to be found in the pretensions of osteopaths that it was they who discovered that vertebrae could be replaced by manipulation, and that this was a valuable measure in the treatment of spinal curvatures and various nervous troubles. They entirely ignore the fact that these methods were extensively practised by Dr. E. Harrison during the early part of last century, as can be seen from his papers on the subject in the *London Physical and Medical Journal* for 1820, the *Gazette of Practical Medicine*, and a number of larger works.—I am, etc.,

London, W 1. EDGAR CYRIAX, M.D.

Atypical Asphyxial Deaths

SIR,—I was interested in the short article on atypical asphyxial deaths by Dr. Norman Patterson (Aug. 15, p. 188). It is strange that three cases of distension of the pharynx with bread should have occurred in so short a time in the experience of one medical officer. This could obviously only happen in a mental hospital and in patients with a deranged mind.

Some ten years ago I was engaged in research on the lymphatic drainage through the oesophagus, and had as my subjects a series of monkeys on whom I passed an oesophagoscope. Naturally these tubes, being constructed for the human gullet, were over-sized for the monkeys and considerable anxiety was caused. Each time they passed the larynx and trachea the heart always stopped beating, even although the larynx had been anaesthetized with cocaine, and one monkey actually died under the operation. There can be little question that it was the pressure which caused the vagal inhibition of the heart, and I imagine that the cases described were of this nature rather than a true asphyxia.—I am, etc.,

Birmingham. MUSGRAVE WOODMAN.

Anaesthetic Death in the Surgery

SIR,—I would suggest to Dr. A. H. Bartley (Aug. 8, p. 170) that the dilemma he was involved in was due to an "error" in anaesthesia and would have occurred most probably in hospital also, given the same set of circumstances. Speaking as an anaesthetist, I strongly advise him to avoid chloroform or "ether–chloroform mixture" at all costs in cases of fracture and dislocation, as such patients are unusually prone to collapse under chloroform anaesthesia. It is also well known that shock is an absolute or relative contraindication to chloroform. I regard ether–chloroform mixture as essentially chloroform in action, and administer it with the same amount of caution as if it were pure chloroform, and only in those conditions for which a satisfactory reason for the choice of chloroform can be substantiated.

Though hospital is undoubtedly the better place for such a procedure, the risk of removal may be much greater than the relative advantage to be gained. For such a problem (increased in number many times by "blitzes") I have adopted, and intend to continue to adopt, either open ethyl chloride–ether sequence or gas-and-oxygen–ether sequence. Of the choice of two evils—"chloroform collapse" or risk of "post-operative pulmonary complications" (which, by the way, have occurred irrespective of the type of anaesthesia)—I prefer the latter. I have, I may add, witnessed both conditions.

If Dr. Bartley adopts this technique I feel sure he will not get another "nightmare," and should the worst occur this choice of anaesthetic will weigh much more in his favour than that of chloroform. The attendance of a colleague, wherever possible, is a *sine qua non.*—I am, etc.,

Bradford. P. Esmonde Woodroofe.

Sir,—The case described by Dr. A. H. Bartley is reminiscent of one of Guedel's illustrative cases in the chapter on ventricular fibrillation in his *Inhalation Anaesthesia* (New York, 1938).

Dr. Bartley says he reduced the fracture when the child was apparently under. One might infer from this that she was not necessarily really and truly sufficiently anaesthetized. Should this surmise be correct, and realizing the possible combined effect of pain, fear, and a chloroform mixture, "the stage would be well set for ventricular fibrillation" and, to continue the quotation from Guedel, the operation "provided the required added stimulus to produce the fibrillation. The fibrillation passed before anoxic depression rendered the heart unresponsive to its normal stimulus. It is doubtful whether the violent resuscitative measures influenced the outcome. Possibly the fibrillation passed in spite of the traumatic stimulation of the precordial massage."

My opinion is that the risk of inviting anaesthetic death in the surgery far outweighed the risk of added shock due to a journey of 7 miles to hospital. A further alternative was to secure the help of an anaesthetist.—I am, etc.,

Salisbury A. D. H. Simpson.

Sterilizing Sulphonamide Powders

Sir,—In connexion with the sterilization of sulphanilamide, may I, as a hospital pharmacist, be allowed to make a contribution to the *Journal.*

I have read with interest Mr. J. C. Cherry's letter (Aug. 1, p. 142) on the sterilization of dry powders and his method of sterilizing sulphanilamide. Messrs. May and Baker referred to the changes in colour which take place when sulphanilamide, sulphapyridine, and sulphathiazole are subjected to dry-heat temperature high enough to sterilize them (*Prevention and Treatment of Infection in Wounds by Sulphonamides,* March, 1941) and, as reported, the method probably turns the powders toxic. The only alternative method, therefore, is sterilization by moist heat.

I should like to comment upon one of Mr. Cherry's statements. He says, referring to his sterile powder: "The powder in the beaker may be slightly caked, and may need to be pounded a little with a glass rod." I think it is almost certain to be caked if a very necessary detail, omitted from Mr. Cherry's method, is not observed. Using a very similar method, I had, during my investigations into this problem, six out of six batches cake. If it is desired to make sulphanilamide cake or crystallize, the sure method is to allow moisture other than steam to get at it. Even if the powder is not moistened (as described in the last paragraph of Mr. Cherry's letter), water will still get at the powder and cause caking or crystallization. There seem to be two possible reasons for this, and I believe that one or both may be responsible for the difficulty. They are as follows and probably occur in this order.

1. When steam is turned on to the cold flask or other container and the cold powder, condensation takes place, water is formed, is heated during sterilization, dissolves the sulphanilamide, evaporates again as the powder gets hot, and leaves behind the powder it has dissolved in a crystalline form, usually as a solid cake. This should occur fairly early in the sterilization process. If it does, and if a fairly dense mass of powder is being sterilized—e.g., 15 grammes in a narrow container—steam may not have penetrated to the bottom of the mass before caking occurs. How is steam to penetrate the hard surface cake formed and sterilize the powder at the bottom or the centre?

2. Where a not too dense mass of powder is used (as in the case of 15 grammes distributed over the bottom of a flask, a relatively large area), steam gets at the centre of the powder before caking occurs, condenses, and cakes the core as well as the surface. Even if the core did not cake during sterilization, it would later when the powder mass cooled, because the steam in the centre would condense. It could not escape during the vacuum drying because of the hard outer cake. I am working to confirm these theories, but have proved that condensation of steam and formation of water are responsible for caking in methods where the dry powder is autoclaved.

If the powder can be sterilized in its final container, it is better than having to transfer sterile powder from one container to another, and there is then no need for sterile gloves, mask, and gown. I wish to describe a method of autoclaving sulphanilamide in its final container, whereby the sterilized preparation is available as a soft white powder suitable for insufflation. I completed my method early in July, and have since then done several test sterilizations of sulphanilamide, and in every case have produced a smooth white powder. In two different experiments the powder was deliberately contaminated, one with *Staph. aureus,* the other with *B. welchii.* Both powders were found to be sterile after autoclaving by my method as follows.

An autoclave with vacuum drying attachment (dressing sterilizer) was used and the container was a dry boiling-tube plugged with non-absorbent wool. The boiling-tube must be thoroughly dried, if possible in a hot-air oven. (1) The jacket pressure of the sterilizer should be ready at a pressure of 20 to 30 lb. (2) Allow steam at 20 lb. into the empty closed chamber of the autoclave and leave for five minutes. (3) Using the appropriate valves clear chamber of all steam and condensed water. This process has heated the chamber, and the boiling-tubes, loosely plugged with non-absorbent wool and containing the powder (in 5- or 10-gramme batches), are now placed in it. They should be placed on their sides, with the powder spread over their full length, giving a thinner mass for the steam to penetrate. (4) Leave the tubes for 15 minutes in the hot chamber; this heats tubes and contents sufficiently to prevent condensation inside and on the powder. (5) Autoclave at 15 lb. for half an hour. (6) Clear the chamber of steam and any condensed water quickly, and allow vacuum of 10 to 15 inches for 15 minutes. (7) Remove tubes from autoclave, place a tight sterile plug of non-absorbent wool on the top of the one already in, and cap tubes with a suitable paper—preferably cellophane. Caking does not occur. If apparent caking is observed, it is only present while the powder is still hot, and when cool a tap on the side of the tube is all that is necessary to show the sterile preparation to be the desired soft powder.

Thanks are due to Dr. Rosher, director, pathological laboratories, Mile End Hospital, where examination of the powder when contaminated and after sterilization was carried out, and to his assistants Mr. Crawley and Miss Brews; also to Mr. J. Leebody, medical superintendent of this hospital, for permission to carry out the work, and the medical officer of health, London County Council, for permission to publish. —I am, etc.,

St George-in-the-East Hospital, E.1 W. J. Buckland, Pharmacist.

Complacency in Anaesthetics?

Sir,—The letter from Dr. A. Mills (Aug. 8, p. 169) is so good that it seems to me important that where it contains doctrine which cannot be accepted by anaesthetists of experience equal in both giving anaesthetics and teaching to that of Dr. Mills this should be pointed out. Otherwise if passed unchallenged these fallacious statements might be accepted as correct by the comparatively inexperienced. Where I join issue with Dr. Mills is in (1) his implied condemnation of intravenous methods and (2) his contention that gas–oxygen–ether from a machine is not efficient for the deepest anaesthesia. Incidentally I may say that, like Dr. Mills, I have not seen a case of ether convulsion, but I do not attribute the cause of these to machines, because I know of many instances in which the convulsions have occurred when no machine was used.

Now as regards (1) Dr Mills's words are: "a drug can be introduced directly into the circulation to produce an *uncontrollable* state of coma, but this procedure does not appear to be a desirable one." This presumably rules out such methods as the use of pentothal intravenously. Dr. Mills's objection seems to me of theoretical value only. In practice it does not matter that the dose injected is uncontrollable because, guided by the knowledge gained through experiment and wide clinical practice, the anaesthetist puts in only so much of his anaesthetic drug as is certainly safe. This he does by injecting slowly, being guided by the symptoms evoked and by knowledge of the general limits of safety to which I have alluded. He has no need to control the dose after it is in the patient's body.

As regards (2), if it were true that satisfactory anaesthesia, say for upper abdominal operations, were not obtainable by gas-oxygen-ether, surely we should have heard of it from surgeons in no measured terms ere now. "The proof of the pudding is in the eating," and there are hundreds of surgeons working contentedly every day with an anaesthesia provided by gas-oxygen-ether from a machine. One of the chief advantages of the method is the very thing for which Dr. Mills so rightly pleads—a copious supply of oxygen. This can be achieved more surely from the oxygen cylinder than from the air drawn through an ether-soaked mask. Needless to say, proper premedication and perfectly unobstructed breathing are essential. The latter is often secured by an airway, but if necessary an endotracheal tube is used. Through these measures perfect relaxation in patients free from cyanosis and abundantly supplied with oxygen is provided daily by scores of anaesthetists. Moreover, the condition of patients after a long operation, if they have been handled in this way, is much better than that of patients who have been deeply under pure ether throughout. The machine enables us to take advantage of those periods, often considerable, when the deepest anaesthesia is not needed; at those times the patient gets gas and oxygen only. Like Dr. Mills I regard giving anaesthetics as an art, and believe that no one method should be laid down as the sole routine. Therefore I am far from disparaging open ether, and hold indeed that no student should be allowed to qualify without competence in its use.—I am, etc.,

West Middlesex County Hospital. J. BLOMFIELD.

Operations and Workmen's Compensation

SIR,—I feel that Dr. Hermann Levy's letter (July 18, p. 82) and Dr. W. O. Moore Ede's subsequent one (Aug. 1, p. 142) call for some comment.

Dr. Levy's letter in particular raises points and asks questions which, though most of the latter are rhetorical, show a misunderstanding of the Workmen's Compensation Act and, if I may say so, a biased outlook. To deal with his letter in detail.

1. What does Dr. Levy mean by "getting him back *at any price* to some sort of light work"? Surely it is in the interests of both employer and workman that the injured man should find suitable occupation as soon as possible. His financial position is thereby improved and his mind is occupied, minimizing the dangers of worry and introspection.

2. No responsible examiner acting for employers would ever suggest any operation "for . . . evil."

3. It has been my experience during many years of examining accident cases that occasions for difference of opinion with general practitioners are very rare. In any event to call a genuine difference of opinion a dispute and an employer's medical examiner an opponent betrays an attitude of mind that, if held by a workman's doctor, would go a long way to explain the patient's "very unfavourable attitude" to workmen's compensation law.

In answer to questions raised by Dr. Levy. Whether the effect of an operation is of lasting value does not bear on the question of compensation, because under the Act, if by reason of the effects of the accident or treatment for it the man's working capacity deteriorates at any time, he is entitled to receive again the appropriate weekly compensations. The question of the finding of appropriate light work is dealt with in the Act, which provides that if the workman can show that in spite of reasonable efforts he has been unable to find such work he shall be deemed to be totally uncapacitated.

The question of a subsequent accident is dealt with under the Act either as a claim *de novo*, or, if it arises as a result of disability due to a previous accident, the increased disability is regarded as the result of the first accident, and the employers responsible for the first accident are liable to pay compensation for the second. With regard to the provision of appliances, it is an almost invariable practice for the insurance company to supply these in the first instance, and in very many cases the estimated cost of replacements is covered by a "lump sum" settlement. It is, however, a weakness of the Act that no definite provision is made for this.

Dr. Moore Ede's suggestion that all cases should be referred to a neutral body—e g., the Ministry of Pensions—has been tried in Canada with, I believe, some success, but the provision in the Workmen's Compensation Act whereby an independent referee appointed for each county court may be appealed to by either side is so seldom made use of that it is very doubtful if it would be acceptable in England. This matter, however, involves many side issues—legal and otherwise—and cannot be properly dealt with in a letter. The Workmen's Compensation Act has several weak points and I hold no special brief for it, but misconception of its provisions do not assist its amendment.

—I am, etc.,

London, W 1. HAROLD GARDINER.

The Planning Commission's Report

SIR,—I have just read Dr. N. M. Vallely's letter (Aug. 8, p. 168). The point that he and many others seem to miss is just this. State medical service has to come: it is being forced on us by circumstance whether we like it or not. It is a natural result of this war, which is creating scarcities in men and material. The conditions now beginning are, if anything, likely to progress rather than to go back to where we were, and the peace is not likely to restore those conditions to what we considered as normal. Since this is so, why not envisage an *ideal* plan of State medicine, rather than try to compromise between State medicine and our present system, if such it can be called. You may never quite attain an ideal, but at least it is there to work for; but what is the result if you never quite attain a miserable compromise—and, in the end, be very sure that in a compromise the only losers will be the medical profession. We should have a well-laid plan, and we should see that the men who are responsible for its administration are not only administrators but qualified doctors as well.

The men who object to a complete State medical service, which is, as I think, inevitable, do not see that one may compromise with the present Government, but what of the Government after the war? Unless you plan ideally is it not likely that a Labour Government may whittle away that compromise until we are controlled completely? We should begin at once to build a powerful organization based on a solid plan rather than merely modify our present "system," so that when the time comes we shall rule and not be ruled.—I am, etc.,

Ledbury. GEOFFREY G. AIREY.

Self-medication and the Chemist's Shop

SIR,—Dr. E. L. Loewenthal's interesting letter raises points of great importance, but he seems hardly to realize that they have, though with no really appreciable result, been very frequently discussed in public. He should read for this purpose the evidence of the Select Committee on Stamp Duties, 1937, the P E P *Report on the British Health Services*, the debates in the House of Commons last year when the new Pharmacy and Medicines Bill was discussed, and an article on the "Druggist's Dilemma" in the *Economist* of July 12, 1941. Self-medication, if exaggerated, is certainly a deplorable thing. That the English have a certain proneness to it should be taken into account. "I hate doctors but I love medicines," says a titled lady in one of Oscar Wilde's stories. Business men have not been idle in exploiting these leanings, and it is to the credit of the B.M.A. that as long as 30 years ago it called attention to the abuses in its unforgotten publications on *Secret Remedies.*

Nobody will deny, however, that a moderate sort of self-medication is not to be condemned altogether. But that advertisements urging people to take certain patent medicines as all-in cures, that overworked and ill-paid panel doctors with little time for the single case, that overcrowded hospitals and an entirely insufficient N.H.I. scheme drive people of the poorer classes to try their own cures or the druggists' remedies, is, indeed, a tragedy. It is from all these angles that a campaign against self-medication might be started. But once undesirable causes and incentives to unjustified self-medication are removed, it is very doubtful whether further restrictions (Dr. Loewenthal ignores the existing ones) on the sale of so-called drugs and medicines in other than chemists' shops should be imposed by statute. It should not be forgotten that druggists and pharmacists not only form a profession but are also retail traders. In the latter capacity they resent that retail distributors not belonging to their "profession" sell aspirin or stomach powders or peroxide, while they themselves find no harm in selling hot-water bottles, films, toilet soap, or lavender water. If Dr. Loewenthal's restrictive recommendations were carried out the quasi-monopoly position of the pharmacist as opposed to "other vendors" would be greatly strengthened. No social advantage would result from such development. But improved health services, a more energetic control of patent medicines and their advertisements, and a careful observation by doctors of the recommendations laid down in the *National Formulary* as regards the use of non-proprietary preparations would probably help much in avoiding some of the dangers which Dr. Loewenthal has in mind, and would simultaneously cheapen the cost of treatment.—I am, etc.,

Richmond. HERMANN LEVY.

SIR,—I read Dr. E. L. Loewenthal's admirably expressed letter on self-medication and the chemist's shop (Aug. 15, p. 199) with considerable interest. While agreeing entirely with what he says, I do not think that he has mentioned the most pressing aspect of the matter. The enormous waste of material and labour which results from self-medication is not permissible at the present critical stage of the war. It is essential that we should build up a reserve of drugs for home needs, for the Forces, for the second front, and for the allies—notably China, whose gallant 8th Route Army was stated recently to have received no medical supplies from abroad for many months. To this end it is imperative that the resources of our chemical industry should be fully mobilized for essential purposes only.

In hospitals we are exhorted to use the utmost economy in the use of such things as aspirin and disinfectants, yet the well-meaning housewife may go to the pharmacist's and buy as much dettol as she likes to tip down the w.c. and the aspirin addict may purchase as much aspirin as he pleases. Surely a control over all important drugs such as that recently introduced for quinine is long overdue. They should be obtainable only for hospitals, clinics, or on a medical prescription. Strict control should also be exercised over the allotment of drugs, so that sufficient quantities are available for essential purposes over-seas as well as at home. The production of the many useless and harmful preparations now on the market should be prohibited and the labour and material diverted to necessities. —I am, etc.,

St Mary Cray, Kent BRIAN H. KIRMAN.

The Evils of Long Working Hours

SIR,—Your leading article on the evils of long working hours (Aug. 1, p. 132) is a valuable indication of the necessity for a drastic overhaul of our working conditions. May I call your attention to the conditions of another section of the community—the young laboratory assistants of both sexes? They are now chiefly recruited from secondary schools, and matriculation is the standard of general education required.

These young people of 17 or 18 years of age enter their first job enthusiastically in laboratories attached to factories, where they are employed in routine process control from 8 or 8 30 a.m. to 5.30 or 6 p.m. (with 1 hour for lunch and 15 minutes for tea if they are lucky). They have a fortnight's holiday per annum. They are encouraged by their employers to study for university degrees at evening schools, and, being intelligent and keen, they embark on courses of study which absorb an average of 4 evenings a week from 6 p.m. till 8.30 or 9 p.m. Their homework they do at week-ends or on the evenings not occupied with actual classes, but since they rarely have time for even a hurried meal between work and evening school, I have never been able to discover when they get the necessary fresh air and exercise for proper physical development.

My experience is with training these young chemists during their working hours, though I have also taught evening classes for some years. I have seen so much good human material ruined by these gruelling conditions. After a few months of this life mental and physical fatigue is apparent in all their actions. In peacetime this is bad enough, but I have seen these young people in an ordnance factory made to work daily from 8.30 a.m. till 5.30 p.m. and on alternate Saturday afternoons till 5 p.m. (instead of the usual 1 p.m.). At rush periods they have worked on Sundays too, without a compensatory day's holiday later in the week. When one has seen these youngsters of the 18 to 23 age group working for 12 consecutive days without a break in the unhealthy atmosphere of a chemical laboratory one appreciates the meaning of industrial fatigue, especially if they are handling high explosives. I know of cases where young women laboratory assistants at various stages of education between matriculation and B.Sc. work consistently for an 8-day rota of these long hours. It makes one wonder whether it is really civilization for which we are fighting, since the old pagan human sacrifice meant only death, whereas this is a refinement of slow murder.

As you so rightly point out, the young men can stand adverse conditions much better without permanent harm and in any case with a man one is dealing with an individual. But these young women, and their counterparts in factory operatives, are the mothers of the future, and it is little short of racial suicide to expose them to such unnatural strains during the difficult years of adjustment between puberty and full womanhood. We have yet to learn the extent of the damage which may be done to them. Surely an enlightened State would legislate so that continuation classes could be counted as part of the day's work and not in addition to it. If certain individuals, whether boys or girls, leave school at 17 and are considered suitable for further training they have a human right to assistance without mortgaging their future health and happiness. Surely this is in the best interests of the State as well as the individual.—I am, etc.,

London, W.4 ENID A. M. BRADFORD.

Ministerial Propaganda

SIR,—I am much interested in the furtherance of immunization against diphtheria and am doing my own little best to that end. While fully agreeing with the necessity for a campaign by the Ministries of Health and Information, I feel that their widely displayed posters might be improved upon by one or two simple alterations to the wording. In this public health department the posters have been altered so that parents are requested to "Ask your own doctor, or inquire at the council offices or at the nearest child welfare or school clinic." I think it regrettable that the private practitioner is not considered in any of the posters I have seen. Nor can I find the family doctor mentioned in the large brochure sent out by the Ministry of Health in conjunction with the Ministry of Information. At the foot of page 7 of this brochure I read: "It is suggested that local authorities should invite the co-operation of all appropriate persons and organizations in propagating the need for immunization." I wonder if the private practitioner is wrapped up in this camouflage, or is he deliberately and entirely left out of the campaign?

The word "free" looms largely on the posters and in printed speeches; I think the word "now" a happier choice. The emphasis which is laid on *free* immunization not only cuts out the private practitioner entirely but tends to suggest that were immunization not available free of cost then it would hardly be worth bothering about at all.

Local authorities are urged by the Ministry of Health to do everything possible to promote the success of the campaign. To me it seems passing strange that private practitioners are not called upon by the Ministry to take part. The family doctors' co-operation is a source of pleasure and valuable help to the average public health medical officer.—I am, etc.,

DEPUTY MEDICAL OFFICER OF HEALTH.

Persistent Blood-giving

SIR,—While it is generally recognized that the amount of blood normally lost by a donor at a sitting is such that its loss does not cause any ill effects, a point of interest appears to be raised by cases, such as occur frequently, where the same donor regularly gives blood for prolonged periods. Is it possible that although, so long as blood-giving at regulated intervals continues, no ill effects are observed the blood-forming mechanism of the body has been unduly stimulated? This might have the effect that while transfusions continued all would be well, but a cessation of blood-giving might give rise to symptoms which could only be relieved by periodical blood-letting. It would be of interest to know whether those in close contact with regular blood donors have noticed any facts lending support to such a view.—I am, etc.,

Chester. E. M. BISKE.

Obituary

SIR JOHN MACPHERSON, C.B., M.D., F.R.C.P.Ed.

Sir John Macpherson died on August 14 at Bristol in his eighty-fifth year. A son of the manse, he was born at Dores, Inverness-shire. He graduated M.B., C.M. at Edinburgh University in 1882, and immediately thereafter was appointed an assistant physician on the staff of Sir Thomas Clouston at the Royal Edinburgh Asylum. His promotion was rapid, because only seven years after graduation he was appointed to the important post of medical superintendent, Stirling District Asylum, Larbert. At Larbert he showed that he was possessed of that rare combination, deep and sympathetic clinical insight and administrative capacity. He modernized the Larbert institution, equipped a pathological department, encouraged research, and at the same time found opportunity to become lecturer in mental diseases at the Royal Colleges School of Medicine, Edinburgh, working in collaboration with the late Sir John Batty Tuke. His textbook, *Mental Affections*, published in 1899, can still be read with much profit; it contains a wealth of clinical material and experience, formulated in a clear, concise, but by no means dry manner. In association with the distinguished Edinburgh surgeon, Sir David Wallace, his brother-in-law, he became interested in the treatment of general paralysis by means of drainage of the cerebrospinal fluid. In 1899 he was appointed Commissioner in Lunacy for Scotland, and held that post with distinction until 1921. His official visits were a delight to the medical superintendents and the assistant physicians in the mental hospitals. He had always interesting and instructive suggestions to make, and gave many of us that extra word of encouragement which meant so much to us. His courtesy and kindliness were a byword amongst us all. In addition to his official duties he was of great assistance to the Scottish Office in 1913 in framing the Mental Deficiency and Lunacy (Scotland) Amendment Act; he served as president of the Special Medical Board (Military) for Scotland in 1917-18; he was a member of the Highlands and Islands Medical Board. As recognition for the great work he had accomplished the Companionship of the Bath was conferred on him in 1917, and in 1922, after he had retired from his post as Commissioner, he was knighted.

Any man might have thought that this was a fitting time to enjoy a well-earned leisure, but Sir John, still interested as he was in psychiatric work, and despite his 65 years, proceeded to Australia, delivered a highly successful series of lectures at the University of Sydney, with the result that a chair of psychiatry was founded, of which Sir John became the first professor. On his retirement, five years later, he returned to this country. A magnificent and very gallant end to a grand career.

Among other special distinctions it should be mentioned that Edinburgh University awarded him a gold medal for his M.D. thesis; in 1904-5 he delivered the Morison Lectures of the Royal College of Physicians; in 1928 he delivered the Maudsley Lecture, taking as his subject "The Present Position of Psychiatry." Finally it remains to mention that in 1910 the Royal Medico-Psychological Association of Great Britain and Ireland conferred on him its highest honour, the presidency.

Now has ended the distinguished career of one of Britain's foremost psychiatrists—a man who up to the very last interested himself in his specialty, and always had a kindly greeting and a helping hand for those of us who were so much junior to him, and owed him so much. Clear-headed, wise, courteous, he had wide cultural and scientific interests which he applied constructively in building up a better psychiatry.

As stated previously, he married a sister of Sir David Wallace, the well-known and distinguished Edinburgh surgeon, and is survived by her and their two daughters, the elder of whom is a B.Sc. of Edinburgh University, while the younger is at present serving with the military Forces as a nurse in the V.A.D.

D. K. H.

JOHN M. T. FINNEY, M.D.

Dr. John M. T. Finney, who died at his home in Baltimore on May 30 at the age of 78, was well known to surgeons in this country as one of the most distinguished members of the staff of the Johns Hopkins Hospital. He belonged to that rapidly diminishing band who were closely associated with Prof. Halsted as assistants in the early pioneering days at Johns Hopkins, for he joined the medical faculty there as long ago as 1893 and ultimately became professor of surgery. John Finney occupied all the important positions in surgery in the United States, including the presidency of the American College of Surgeons, the American Surgical Association, and the exclusive Society of Clinical Surgery, as well as many other bodies. In 1936 he was awarded the Henry Jacob Bigelow Medal for his distinction in and contributions to surgery. During the last war Finney accompanied the American Expeditionary Force to France and acted as chief surgical consultant with the rank of Brigadier-General. For these services he received the D.S.M., but what he much more valued was the gratitude of those large numbers of medical officers who came under his purview and received willing guidance at his hands. In this country he was well known and respected and received many distinctions. Since 1920 he had been an Honorary Fellow of the Royal College of Surgeons of England. He was also an Honorary Fellow of the Medical Society of London and of the Irish College of Surgeons. Finney was in the truest sense a general surgeon, with perhaps a particular interest in the abdomen. As long ago as 1902 he introduced the method of pyloroplasty which has always been associated with his name, but there were many other contributions to practice which have not become eponymous. He made several visits to this country and took part in meetings of the British Medical Association and the Hunterian Society. At home he was generally recognized as a sound surgeon and good teacher, but most of all as a great doctor and an influence for all that was good in the profession. Among his pupils and associates he will always be remembered for the way he put the interests of his patients before all else. Finney had a keen sense of humour, which sometimes took a whimsical turn. He was a great gentleman, and though his loss will be severely felt, there is no doubt that his example and memory will for long continue as an influence in the healing art as practised in America.

G. GREY TURNER.

L. F. WILSON, M.B.

The East Yorkshire Branch of the B.M.A. has lost one of its staunchest supporters in the death on August 7 of Dr. LESLIE FREDERICK WILSON at the comparatively early age of 54. Dr. Wilson served during the last war with the R.A.M.C. and then, in 1924, qualified M.B., Ch.B. at the University of Birmingham. For several years he practised in the Dudley area, and his medico-political activities during that time included being hon. secretary of the Dudley Division (1926-30) and representative at the Annual Meeting at Manchester in 1929. In 1930 he went to East Hull, where he soon established a large practice. There he associated himself with the work of the St. John Ambulance Brigade, being appointed Divisional Surgeon to the Alexandra Dock (L.N.E.R.) Division; in 1938 he was promoted to Corps Surgeon, Hull Corps, St. John Ambulance Brigade, and in the following year to County Surgeon for East Yorkshire. He lectured a good deal on first aid and conducted many examinations for the Brigade's certificate. As a judge in local first-aid competitions he showed a keenness and understanding which resulted in his being asked to judge the Brigade finals in London on one occasion. Dr. Wilson trained a competent staff which has served at the East Hull First-Aid Post under dangerous and difficult conditions. On one occasion ambulances could not reach the post to take the injured to hospital, so Dr. Wilson and his staff improvised a temporary hospital at the post. They worked with the aid of hurricane lamps and candles, and heated the premises with stoves. The post was damaged during other "incidents," but it always carried on under Wilson's untiring and inspiring leadership. For his services he received the M.B.E. (Civil Division) last November. He had many medical interests, and at the time of his death was a member of the East Yorkshire Branch Council, the Local Medical War Committee, the Hull Local Medical and Panel Committee, the Study Group of the Branch and convener of the subgroup for East Hull, and vice-chairman of the Hull Public Medical Service. He was also an active member of the Hull Medical Society.

Dr. Wilson's opinion was highly valued, always concisely expressed, and punctuated with good humour. He had a great sense of duty, and on many occasions visited his patients when he should have stayed at home. Although obviously seriously ill on July 26 he felt it his duty to attend a meeting of the Local Medical War Committee. He was always ready to help his colleagues however busy he might be, and never lost his pleasant and cheerful bearing. The affection and high esteem with which he was regarded were demonstrated at his funeral, which was attended by representatives of all the various organizations with which he was connected.

C. J. P. writes: Leslie F. Wilson was one of 4 medical students who were closely associated throughout 5 happy, if arduous, years. He set out on a medical career under a heavy handicap which would have deterred all but a resolute soul such as his. Several years older than the majority of students and fresh to study after 4 years on active military service were not the only difficulties he faced and overcame. L. F. had no pretensions, and if he won no prizes his knowledge was sound and of practical value. Despite his handicap he took each examination fence as it came and graduated in due course without a single fault. He was a staunch friend and ever a cheering companion. A rough diamond, may be, but he had the diamond quality. He was the right man to have at hand in a tight corner, for he was never afraid of heavy odds. It is no wonder, therefore, that his work in Civil Defence gained him the M.B.E. He would be at his best, and be one of the best, in charge of a busy first-aid post. His patients were fortunate in their doctor. There will be many who know of his untiring zeal and complete unselfishness, without thought of gain, on their behalf. His 3 fellow students will remember his energetic example and stimulating companionship with gratitude.

We regret to announce the death on August 4 of Dr. **STEVEN LONGMORE BUTTERWORTH WILKS**, a familiar figure in the life of Colwyn Bay, where he had practised for 33 years. Dr. Wilks received his medical education at the University of Leeds, qualifying M.R.C.S., L.R.C.P. in 1892. In the same year he took the M.B., B.S. of London, proceeding to the M.D. in 1900. He also took the M.B., Ch.B. of Leeds in 1905. Wilks first began practice at Grassington, Wharfedale, where he often used to visit his patients on horseback. From there he went to Colwyn Bay, where, in addition to a busy practice, he was attached, in one capacity or another, for all his professional life to the Colwyn Bay and West Denbighshire Hospital. For over 30 years he was physician and anaesthetist, for some years senior physician, and later honorary consulting physician and honorary consulting anaesthetist to the institution. His hospital work was, perhaps, dearer to him than any other part of his professional life. He took an active interest in all that went on there, and for years the Board of Management benefited by his far-sighted views and sound advice. Dr. Wilks was most sought after as an anaesthetist; he had given thousands of anaesthetics at the hospital, and his surgical colleagues had come to place reliance on his judgment. For many years he was an active member of the B.M.A. and in 1935–6 was chairman of the North Caernarvon and Anglesey Division. A colleague writes: "Dr. Wilks had a sunny, cheerful nature and it was a privilege to be his friend. He was of a modest and retiring disposition, and men are rare who are moved so little by a mercenary motive. He was not ambitious in the ordinary sense of the term, but his ambition was to do good work all day in the service of his fellow men, and as a result he was an exceptionally happy man."

The Services

The Military Cross has been awarded to Capts. R. E. S. Lewis and C. D. Weir, R.A.M.C., and to Capt. A. G. J. P. Fernandes, Capt. R. D. Scriven, and Lieut. D. J. Burnett, I.M.S., in recognition of gallant and distinguished services in the Middle East.

The R.N.V.R. Officers' Decoration has been awarded to Surg. Cmdrs. W. H. Butcher, J. B. Oldham, and H. M. Petty, R.N.V.R.

CASUALTIES IN THE MEDICAL SERVICES

An Admiralty Casualty List published on July 28 gave a list of the ship's complement lost in H.M.S. *Hermes*, aircraft carrier, sunk by enemy action in the Bay of Bengal in April. Among them was Surg. Cmdr. **JAMES MICHAEL MCNAMARA**, R.N. He was educated at the National University of Ireland, in Dublin, where he graduated M.B., B.Ch., B.A.O. in 1923. After a period in practice he entered the Royal Navy as surg. lieut. in 1929, became surg. lieut.-cmdr. in 1934, and surg. cmdr. in 1940.

Lieut.-Col. **HOMI RUSTOMJI CURSETJI**, I.M.S., is included as "Died" in an India Office Casualty List published on August 14. He was born on August 13, 1890, and graduated M.B., B.S. of the University of Bombay in 1916 and also took the D.O.M.S. of the English Royal Colleges in 1937. He entered the I.M.S. as temp. lieut. in 1917 and in 1922 received a permanent commission, being ranked as capt. from 1920. He was promoted capt. in 1923, major in 1928, and lieut.-col. in 1936. He served in the war of 1914-18.

Prisoners of War.—Capt. E. F. M. Caraher, R.A.M.C., Capt. A. F. Murray, R.A.M.C., Major J. M. Officer, R.A.M.C., Lieut. A. C. Price, R.A.M.C., Major L. F. Richmond, R.A.M.C., War Subs. Capt. R. L. Sanderson, R.A.M.C., War Subs. Capt. D. B. Watson, R.A.M.C.

Wounded.—Acting Col. D. V. O'Malley, O.B.E., I.M.S.

DEATHS IN THE SERVICES

Colonel **WILLIAM RIACH**, C.M.G., late R.A.M.C., died at Chula Vista, California, on May 29, aged 70. He was born in Edinburgh on May 24, 1872, and graduated as M.B., C.M. in 1894 at Edinburgh University; he proceeded M.D. with commendation in 1899, also taking the D.P.H. of the Scottish Colleges in 1898. After filling the posts of resident physician at the Edinburgh Royal Infirmary and clinical assistant at the Royal Westminster Ophthalmic Hospital, he went to South Africa as a civil surgeon to serve in the war of 1899-1902. After about eight months' service in that capacity he took a permanent commission as lieutenant in the R.A.M.C. on Nov. 29, 1899, reaching the rank of lieut.-colonel in Feb., 1918. In the South African War he took part in operations in the Orange River Colony and in Cape Colony, receiving the Queen's medal with two clasps. He also served throughout the war of 1914-18, being mentioned in dispatches in Jan., 1916, and receiving the C.M.G. and a brevet colonelcy.

Medical News

The annual general meeting of the British Orthopaedic Association will be held at Nottingham on Sept. 25 and 26 under the presidency of Mr. G. R. Girdlestone. On the morning of Sept. 25 a clinical meeting will be held at the Harlow Wood Orthopaedic Hospital; in the afternoon a discussion on rehabilitation, followed by a demonstration, will be held at the Rehabilitation Centre for Miners, Berry Hill, near Mansfield. On Sept. 26 the meeting will be continued at the General Hospital, Nottingham.

The Home Office announces that Major John Gilmour, C.M.G., *M.C.*, Department of Health for Scotland, has been appointed to fill the vacancy for a temporary Inspector under the Cruelty to Animals Act, 1876.

The committee of award of the Norman Gamble Fund and Research Prize will consider applications for the prize and for grants in aid of research work in Oct. Applications for the prize and for grants in aid must be received by the Secretary of the Royal Society of Medicine, 1, Wimpole Street, London, W.1, not later than Sept. 30.

Dr. P. Gorer of Guy's Hospital will give a lecture entitled "Experimental and Genetical Study of Leukaemia and its Relations to Cancer Research" to the Association of Austrian Doctors in Great Britain on Sunday, Sept. 6, at 11.30 a.m., at 69, Eton Avenue, N.W.3.

Since the beginning of the war over 300 field medical units have been raised in India and are being used in the United Kingdom, the Middle East, and other areas where there are British and Indian troops, while ambulance trains, fully equipped and manned by personnel from India, have been provided for the Eastern theatres of war. These field units did not exist in peacetime, but had to be raised and staffed on the outbreak of war. Although there has been a rapid increase in the number of medical personnel there are not enough to meet future commitments, and many new training schools have, therefore, been started and the existing ones expanded. Consultants from the United Kingdom are helping India in this work. A new, centrally controlled Army medical store organization has been created in India, which is not, however, confining its services to the Army, but is also supplying the Royal Indian Navy and the Royal Air Force. It has, on occasion, provided medical assistance for the American, Chinese, and Russian Armies.

A hospital for the wives of officers and men in the Forces has been opened at Adlington Hall, Cheshire. There is a resident medical officer with special experience in obstetrics, and the consultant obstetricians of Saint Mary's Hospitals, Manchester, pay regular visits and attend whenever required. The fee of £5 5s. a week, which, in a few special instances, may be reduced, is inclusive of medical attention (including visits by the honorary staff), drugs, dressings, etc.

Proposals for the inauguration of a Regional Hospitals Council for Northern Ireland were discussed at a conference in Belfast recently, which was attended by representatives of the Nuffield Provincial Hospitals Trust and of local municipal and voluntary hospitals. The first steps towards this were taken a year ago, when a delegation of the Trust was received by the Governor of Northern Ireland at a conference called to consider a hospital co-ordination scheme for the Province.

Mothers of premature infants can obtain, on presentation of a doctor's certificate, a permit authorizing them to spend additional "points" on condensed milk when supplies are available. The certificate, which should be on a form to be obtained from local food offices, should state that the infant is a premature one, is under the age of 6 months, and needs condensed milk, the weekly quantity needed being also stated. All infants under 1 year are to have a priority supply of liquid milk up to 2 pints daily. It may be taken either in the form of liquid milk or as half liquid and half national dried milk.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the notifications of measles fell by 857, of whooping-cough by 163, of scarlet fever by 116, and of diphtheria by 70.

The infectious diseases of childhood are prevalent in only a few counties. Scarlet fever and diphtheria are relatively more common in the Northern section of the country than in the Southern. Measles and whooping-cough do not show this geographical difference. This can be illustrated by expressing the notifications in the chief centres of the two sections of the country as a percentage of the total. The percentage distribution for the week under review was:

	Whooping-cough	Measles	Scarlet Fever	Diphtheria
Lancashire and Yorks West Riding	25	32	28	29
London, Middlesex, and Essex	19	26	14	8
England and Wales	100	100	100	100

The notifications of dysentery were 18 higher than in the preceding week. Two small outbreaks occurred in Berkshire, Wallingford R.D. 6 cases, and Hertfordshire, Hemel Hempstead M.B. 9 cases.

In *Scotland* 85 cases of dysentery were notified, compared with 52 in the preceding week. The chief of the local outbreaks were those of Fife County 37 cases, Aberdeen City 22, and Edinburgh 8.

Infectious Diseases in Port Areas

The experience of Glasgow has led to additional precautions being taken by Bristol Port Health Department. Every ship and the crews entering port are to be examined to reduce the risk of importing infection.

Typhoid and Paratyphoid Fevers

A report has appeared in the daily press attributing to Mr. Ernest Brown, Minister of Health, the statement that not one case of typhoid or paratyphoid occurred in this country during 1941. The publication of such a statement is rather surprising in view of the epidemic of last summer in the Liverpool area, which, originating in a multiple baker's business, involved some 800 persons. Altogether there were 4,703 notifications of paratyphoid and typhoid fevers in England and Wales during 1941, with 148 deaths—a fatality rate of 3.1%. The trend of these diseases during the present year has been exceptionally low, the number of notifications during the first 30 weeks of the last six years, 1937-42, being 1,004, 672, 659, 1,340, 3,227, and 502.

Memorandum on Scabies

The Ministry of Health has issued a revised edition of the Memorandum on Scabies which was published in January, 1940: it deals with the condition under the headings of "Life History and Habits," "Symptoms," "Complications," "Differential Diagnosis," "Method of Spread and Prevention," and "Treatment." It can be obtained at H.M. Stationery Office for 1d.

Returns for the Week Ending August 15

The notifications of infectious diseases in England and Wales during the week included the following: scarlet fever 1,332, whooping-cough 1,125, diphtheria 665, measles 4,983, acute pneumonia 440, cerebrospinal fever 70, acute poliomyelitis 15, dysentery 51, paratyphoid 13, typhoid 15.

No. 31

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 8.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	1942 (b)	1942 (c)	1942 (d)	1942 (e)	1941 (Corresponding Week) (a)	1941 (b)	1941 (c)	1941 (d)	1941 (e)
Cerebrospinal fever	77	—	24	7	11	166	12	39	8	9
Deaths		—	1				2	1		
Diphtheria	580	26	164	45	14	727	31	204	25	38
Deaths	11	1	1	1	—	26	2	—	3	1
Dysentery	82	9	85		—	122	7	52		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	4	—	—	—	—	5	—	2	1	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						34	—	1	5	3
Deaths						—	—	—	1	—
Erysipelas		—	54	6	—		—	42	6	5
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				93						
Deaths	34	3	12	13	5	34	4	5	15	2
Measles	5,619	563	126	26	64	3,084	101	42	143	1
Deaths	8	—	5	—	—	4	—	—	1	—
Ophthalmia neonatorum	81	5	17	1	—	86	3	18	2	—
Deaths										
Paratyphoid fever	15	—	3	—	—	194	—	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	413	19	3	2	2	424	11	13	—	—
Deaths (from influenza) .. .	10	—	3	—	—	4	—	—	1	3
Pneumonia, primary ..			129	16				124	12	
Deaths ..		9		3	16		—		8	—
Polio-encephalitis, acute	4	1				5	—			
Deaths .. .		—					—			
Poliomyelitis, acute ..	10	1	4	4	—	28	—	9	2	—
Deaths		1	—				—	—		
Puerperal fever ..	—	2	6	4	—	1	1	18	5	—
Deaths		3					—			
Puerperal pyrexia ..	142	10	11		4	135	9	12		—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	1,340	86	231	46	28	863	38	107	36	18
Deaths	—	—	—	—	—	1	—	—	—	—
Small-pox	—	—	2		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever .	6	—	7	7	1					
Deaths	1	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	953	83	14	50	13	3,731	251	59	63	5
Deaths ..	2	1	1	3	—	22	2	4	2	—
Deaths (0–1 year) ..	271	27	48	34	29	229	23	46	51	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths) .. .	3,475	483	505	149	129	3,596	513	573	190	113
Annual death rate (per 1,000 persons living)			11.4	9.9	†			12.5	12.6	†
Live births	5,626	606	836	400	269	4,518	331	796	354	202
Annual rate per 1,000 persons living ..			17.3	26.7	†			16.2	23.5	†
Stillbirths ..	206	14	38			191	24	27		
Rate per 1,000 total births (including stillborn)			43					33		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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QUERIES AND ANSWERS

Treatment of Seborrhoea

F.R.C.S. would be most grateful to any reader who could help him to be relieved of a chronic troublesome skin complaint described as seborrhoea. It occurs in small brown patches on his bald head and temples and spreads at the periphery. The patches can be peeled off sometimes in thin small flakes, leaving a sore place with crusts. It does not yield to ointment of sulphur with benzoic and salicylic acids—the usual treatment advised.

Itching of Limbs

Dr. **William Stobie** (Oxford) writes: Has Dr. W. A. Milligan (Aug. 15, p. 208) tried cannabis indica, first brought to my notice by the late Dr. Wm. Collier?

Coltsfoot

Dr. **C. W. Badger** (Penicuik) writes: I asked an old patient who has used coltsfoot for some time to give me a note on it. I enclose his note. Its use seems to keep him quiet.

"In regard to query about coltsfoot I have collected and smoked this for some considerable time. So far as I am aware there is no hard-and-fast rule as to the time for collecting the leaves, although August is said to be the best time. However, I have collected them in all stages of their development, from their first appearance to the withering stage, and found no practical difference. The leaves are simply collected and dried in the sun, or at the fire, until absolutely dry or nearly so, then rubbed down to shreds and packed in an air-tight tin. Sometimes they are mixed with a little lavender to give the smoke a perfume. Since 1921 I have been subject to occasional attacks of asthma, at times severe, but since starting to smoke coltsfoot and inhale the smoke I have had only one slight attack which I think was brought on by a chill."

Premaxillary Cysts

Mr. **H. T. Roper-Hall** (Birmingham) writes: Will members of the profession please let me have details, models, radiographs, specimens, or histories of cysts in the premaxillary region; especially those in the region of the lateral tooth, in which diagnosis was complicated or origin uncertain and the teeth not, apparently, involved. Material will be appreciated and acknowledged; all specimens, etc., will be returned.

Income Tax

Billeting Allowance

"Q" is a pathologist in the E.M.S., receiving a salary of £800 and an extra allowance of £100 as he is "billeted." He is keeping his home going and visits it each week-end. Is he liable to income tax on the £100?

⁂ As it is money paid and received under a service contract and as the expenses with regard to which it is paid are personal in general character the amount in question appears to be legally liable to assessment.

LETTERS, NOTES, ETC.

Loss of Hair after Air Raids

Mr. **Frank Bodman** (Bristol) writes: The case of depression–hyposexual–alopecia syndrome (July 18, p. 67) reminds me of a man, aged 36, whom I saw last year, who lost all his hair following experiences in air raids in Bristol. He was a fireman attached to a railway goods yard, and had a series of alarming incidents to deal with. He lost all his scalp hair and his eyebrows, but retained his beard and axillary and pubic hair. Emotionally he was stable. There was no evidence of depression, and he experienced no loss of sexual feeling or power. He was merely self-conscious about his peculiar appearance. Under a course of ultraviolet-light treatment he recovered his hair and eyebrows, although at first the hair returned in patches, so that during the recovery stage he resembled a case of alopecia areata. There was no greying of the new hair.

Bed-pan for Patients with Fractured Femur

Dr. **W. J. Gunne** (Kenora, Ontario) writes with reference to "Naval Patient's" comments on the hospital bed-pan (June 6, p. 710): In the old days when we used Liston's long splint in fractures of the femur (and good results we got, too) we made a mattress as follows. Out of the centre of a mattress on one side we removed a portion of the mattress and slid in the bed-pan. After use it was removed and replaced by the portion of the mattress. We found this worked well.

Declining Population

Dr. **B. Dunlop** writes: I welcome the statements of Mr. V. B Green-Armytage that no one finds fault with spaced births after the first child and that it is impossible to suppress birth control. But I know many medical colleagues who will share my disagreement with the view that freedom for birth control spells race suicide and economic ruin, and I regret that it was expressed in a journal which cannot give space to economics.

Mrs. **Marie C. Stopes**, D.Sc., writes: The letter from Mr. V. B. Green-Armytage in your issue of Aug. 1 raises several points which on the face of it appear rather conflicting. It is very important, however, to know what method of control of conception he approves, since he says: "No one finds fault with spaced births after the first child." I sympathize greatly with his condemnation of "quinine and mercury and other noxious ingredients." Compounds of mercury are now, alas! being encouraged by the society of which Lord Horder is the president in spite of my unavailing protests. Perhaps your readers may find it useful to know that headquarters constructive birth control clinics are available for free patients in the following towns and these are all open daily from 10 to 6: Aberdeen, Belfast, Cardiff, Leeds, and London. At these clinics no noxious substances of any sort, but only absolutely bland and safe contraceptives, are supplied.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for August 27, 1842:

"In our last number we mentioned the changes which had recently taken place in the medical department of the University of Edinburgh. Dr. Home has resigned the chair of practice of medicine, to which Dr. Alison has been unanimously elected, and Dr Henderson fills the chair of pathology, vacant by the resignation of Dr. Thompson. The election of Dr. Alison to the chair of practice of physic cannot fail to be most beneficial to the university. The truth is, that time had laid his heavy hand on many of the professors, and the state of oral instruction had become intolerable. Dr. Home especially was long since physically incapable of fulfilling the duties of the office which he held. It is now many years since we assisted at a lecture given by the worthy professor. The pupils were '*rari nantes*' in the vast amphitheatre; one half of them were playing cards; the other half listening to the notes of an old violin, on which an Irish student was playing 'Home, sweet home'; while the professor, unconscious of that which was passing on above him, mumbled from an ancient manuscript words unheard by himself, and unheeded by his pupils. The valedictory letter of Professor Home to the University of Edinburgh is worthy of being placed on record; it is thus conceived:

'Edinburgh, August 8, 1842

My Lord,—Having for forty-four years discharged the duties of the chairs of materia medica and of the practice of medicine; considering also that, from my very advanced age (although still enjoying the most perfect health), I am become unable to perform the important duties of the professorship, which I now hold, also wishing, before I go home, to have some time free from my laborious duties, I have for some time intended, and now herewith offer to your lordship and the other honourable patrons of the college, to resign the professorship of the practice of medicine, on condition of your providing a retiring allowance of £300 sterling per annum, and making such other arrangements as may seem necessary for securing the requisite payments of the said allowance during my life.—I am, &c.

James Home.

To the Right Hon. the Lord Provost.'

The £300 per annum with which the career of the professor thus characteristically terminates is to be taken from the pockets of his successors, £150 being paid by Dr. Alison, the remainder by the professor of theory of medicine. It is questionable how far it may be a prudent measure to leave the burthen of Dr. Home's retiring pension on his successors; but we suppose that it was a matter of necessity, and that the university possesses no funds whence the pension could be derived. But enough of Dr. Home and his pension; the subject on which we are desirous of saying a few words is the election to the chair of pathology."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 5 1942

AN ALPHABET OF BREAST-FEEDING

BY

CHARLES McNEIL, M.D., F.R.C.P.Ed.

Paediatrician, Maternity Pavilion, Royal Infirmary, Edinburgh

In this third year of war the saving of food is an urgent duty, and the waste of food is strongly and rightly denounced. It is timely, therefore, to draw attention to the serious waste of breast milk caused by the prevalent neglect or mismanagement of breast-feeding. Breast milk is the ideal and complete food of the infant for the first six months of life and can continue to be its principal article of diet for the remainder of the first year. The gross quantity of breast milk consumed by a baby in six months is about 210 pints (on the basis of 3/4 pint daily for the first month and 1¼ pints daily for the next five months). Deducting the 41,459 infant deaths in Great Britain during 1941, there were 635,062 survivors, and their requirements in breast milk for the first six months were 16½ million gallons. It is a reasonable estimate, and probably an under-estimate, that one-third of this quantity, 5½ million gallons, of essential ideal infant food was lost through unnecessary weaning of babies.

Of babies weaned early the great majority are weaned in the first month of life. In my ward at the Edinburgh Children's Hospital 62% of a consecutive series of 100 babies had been weaned by the end of the first month, and by the end of the second month the figure was 80%. It will be agreed that this early weaning of babies is due to the failure of mothers, nurses, and doctors to overcome the numerous difficulties in breast-feeding that occur in the first weeks of lactation. For a generation the pre-eminent value of breast milk has been taught and accepted ; but this has had little effect in practice, because, on the occurrence of difficulties, weaning is advised for reasons that are far too often trivial and unnecessary. The results are not only a colossal waste of the best infant food available but also a waste of money, time, and trouble, and a loss of thousands of lives. This is bad enough in times of peace ; it is worse in time of war, when the substitute, cows' milk, is scarce and urgently needed for older children, and when the conservation of infant life and health is a paramount duty.

The following simple account of breast-feeding, its normal processes, and difficulties is offered to nurses and doctors in order to assist them in their duty of securing and maintaining breast-feeding in every possible case. It might be called the A B C of the subject—an alphabet of breast-feeding.

The Normal Processes of Breast-feeding

Breast-feeding is not so simple as it looks, and its inauguration is beset with many difficulties. But these difficulties can be understood and overcome only if the underlying facts of normal structure and function are known.

(*a*) *Breast-feeding.*—This is not a single process but a triple one, consisting of lactation, suckling, and digestion. For each there are anatomical and physiological data. In each the normal process may be at fault ; so that difficulties may arise in lactation, suckling, and digestion.

(*b*) *Lactation.*—This consists in the production of milk in the mammary glands and its temporary storage in the dilated great ducts behind the nipple. Efficient lactation depends, among other things, on the regular emptying of these ducts by suckling.

(*c*) *Breast Milk.*—For the first two or three days breast milk consists of scanty thick colostrum. About the third day there is a free flow of thin breast milk, accompanied by engorgement of the breast. At the end of the first week the daily output of milk, when mother and baby are healthy, is about 15 oz. ; at one month, 20 oz. ; at three months, 25 oz. ; and at six months, 30 oz. These daily quantities can be easily checked by test-feeding.

(*d*) *Suckling.*—This is a co-operative act of mother and baby. Its success depends upon many things : upon the practical skill of mother and baby, both of whom may require training by the nurse in the first week ; upon the healthy condition and shape of the nipple ; upon the complete emptying of the milk ducts at each suckling ; upon the complete eructation of swallowed air, a process which again requires deliberate patient training in the first days.

(*e*) *Digestion.*—Daily inspection of the tongue is important The chemical processes of early digestion are less important than the mechanical. Early vomiting is often due to maladjustment of the pyloric sphincter with the contraction of the body of the stomach, or to retained air, and is rarely due to organic pyloric obstruction. The early peristaltic action of the intestines is vigorous and produces three to four stools a day. The colour of the stools changes from dark green to bright yellow about the fourth day, but a light green stool at this stage may be physiological or the result of milk excess.

Difficulties of Breast-feeding

The complete list of difficulties is a long one. They may arise from disturbance or fault in lactation, suckling, or digestion ; from general illness in mother or baby ; from psychological faults in mother and baby. Some of these difficulties are irremediable and call for weaning ; but most can be overcome easily, or by patience and perseverance. In the list that follows the unmanageable difficulties are marked − ; the manageable are marked + ; and those that are doubtful − +. The great majority of all these difficulties occur or become obvious towards the end of the first week. In this list there is a broad grouping into maternal and baby difficulties , nearly all the unmanageable difficulties (and they are few) occur in the maternal group. A group with an asterisk (*) indicates that unnecessary weaning is common in this group.

Maternal Difficulties

General

*(*f*) *Psychological* (+).—Maternal unwillingness, fear, anxiety, and ignorance form a group in which the difficulty is in an attitude of mind. At the present time it is a large

group, and is responsible for many cases of early and unnecessary weaning. It is kept large by the connivance and consent of nurses and doctors ; and it could be greatly reduced at once by our own assurance and by reassurance and persuasion of the mother.

(*g*) *General Physical Illness* (− +).—This is a miscellaneous group that includes the serious complications of labour, chronic heart disease, pyelitis, anaemia, malnutrition, and acute illness. The deciding factor is the condition of the mother and the effect of lactation on her general health. In many cases weaning is called for ; in many, lactation can proceed without injury to the mother and with advantage to the baby. In only one case is the bar to nursing absolute ; and that is maternal tuberculosis, in which lactation and suckling are dangerous to mother and baby alike.

Lactation

(*h*) *Excessive Engorgement of the Breasts* (+).—This is a common event in the middle of the first week, and may cause great local discomfort and some general upset ; but it is transient and is easily reduced by gentle manual expression of milk, compresses, and an aperient. It is often a herald of abundant lactation. True mastitis with abscess formation generally occurs later, and calls for suspension of suckling from the affected breast for two or three weeks. When healing is complete, lactation can be re-established.

(*i*) *Nipple Conditions.*—(1) *Fissure of the Nipple* (+) is caused by lack of ante-natal care, by excessive suckling in the early days of lactation, by breast engorgement, etc. It is treated by withdrawal of suckling for from four to seven days, by manual expression of milk, and by frequent careful dressing of the lesion with soothing and/or astringent lotions. (2) *Retraction of the Nipples* (− +) is a more stubborn difficulty, and is treated by softening, mobilizing, and pulling out of the nipples, while lactation is maintained by manual expression. Treatment may fail.

*(*j*) *Scanty or Diminishing Lactation* (− +).—This can be guessed if the baby is hungry, is angry after suckling, and has small infrequent stools ; it can be easily verified by test-feeding (a daily output of 10 oz. or less at the end of the first week means inadequate lactation). It is treated by suckling of both breasts for shorter periods and at shorter intervals, by manual expression of milk after suckling, by stimulation and mobilization of the breasts, by improving maternal digestion and nutrition, and by giving the baby *small* supplementary feeds which prevent loss of weight but maintain a state of slight hunger and active suckling. These measures should be continued for two weeks, and should be controlled by occasional test-feeding. They are generally successful in the early cases ; but less often if the decline shows itself in later lactation.

(*k*) *Excessive Lactation* (+).—This is common and often enough produces digestive disturbance—gastric flatulence and vomiting, and large frequent stools. It is easily put right by reducing the number of feeds and the period of suckling.

Suckling

(*l*) *Mismanagement of Suckling* (+).—This is another important group. The inexperience and ignorance of the mother may result in clumsy handling of the newborn during suckling, allowing the baby to fall asleep at the breast, too prolonged suckling, and neglect of the important technique of breaking wind. All these faults can be easily removed by the patient expert instruction of the midwife.

Baby Difficulties

Suckling

(*m*) *Mismanagement by the Baby* (+).—The baby, like the mother, may be unwilling to play his part, or may be ignorant and inapt. And so we have the not uncommon early refusal to take the nipple ; however stubborn the battle between nurse and baby, this refusal is always overcome by withholding food (not fluid). Also, the baby who falls asleep at the breast must be kept awake and goaded into action.

Digestion

(*n*) *The Mouth.*—Observation of the mouth ought to be part of the daily routine of the nurse. Thrush and other forms of stomatitis interfere with breast-feeding, and their early detection allows rapidly effective treatment. Deformities of the mouth may or may not impede suckling.

*(*o*) *Vomiting from Gastric Catarrh* (+).—This is due to infection of the stomach by the swallowing of infected material from the vagina, causing vomiting in the first two or three days after birth. It is treated by giving water only for 12 hours, with a little sodium bicarbonate or magnesia ; and, if necessary, by washing out the stomach.

*(*p*) *Vomiting from Gastric Spasm and Flatulence* (+).—The two conditions need not be combined, but often are so. The vomiting is usually quiet, frequent, and small, but may be forcible. The baby is of the restless type, impatient in suckling and wriggling about afterwards. Treatment is entirely a nursing procedure. Suckling should be interrupted several times "to break wind" ; on its completion a further patient effort should be made to produce eructation, and the baby soothed to sleep in the upright position before being laid down in his cot. In this type of disturbance the feeding interval should not exceed three hours, and with advantage may be less. These measures must be patient and thorough. Weaning in these cases is a bad blunder, and is often followed by persistent frequent vomiting for months.

*(*q*) *Vomiting from Excess of Milk* (+).—This may produce little disturbance beyond the spilling up of milk after suckling and the passage of frequent large stools ; or it may give a similar clinical picture to that of section *p*. A few test feeds will disclose the condition. The remedy is simple and effective—to reduce the number of feeds and cut down the period of suckling to 15 or 10 minutes.

*(*r*) *Vomiting from Pyloric Obstruction* (+).—This is rare until the end of the second week. The clinical features of pyloric stenosis need not be described, nor its specific treatment. But *breast-feeding must be maintained*: its continuation will greatly favour the success of any treatment, medical or surgical. Weaning in cases of pyloric stenosis is still far too common, and the mistake is costly in lives. Indeed, the *rule is absolute for this and every other type of vomiting—never to wean on account of the baby.* The only exception is the excessively rare condition of anaphylactic vomiting ; and its rarity serves only to prove and uphold the validity of the rule.

(*s*) *Intestinal Flatulence* (+).—If this causes colic it is easily recognized. But there is a silent type in which there is no colic ; and the baby, fat and flourishing, is happy throughout the day but cries through wakeful hours at night and disturbs the peace of the household. Such babies put on weight rapidly and take large feeds quickly, which carry through a little swallowed air into the intestine. The condition may seem too trivial to require treatment, but in the long run nervous injury is done through loss of sleep. *Treatment:* Reduce intake by cutting down the period of suckling ; slow down the rate of feeding ; take special care in "breaking wind."

(*t*) *Frequent Large Greenish Stools* (+).—These are due to excess feeding, and the remedy is to reduce the number of feeds and the period of suckling. Small doses of paraffin emulsion will control any accompanying catarrh.

(*u*) *Constipation* (+).—One type of constipation fairly common in breast-fed babies in the early months is of special character and seldom described in books. There is no bowel movement for two or three days, and then the passage of a large soft healthy motion. General health and digestion are excellent. The cause is anal spasm (not fissure) ; and the remedy is to pass the little finger covered with vaseline into the anal canal and keep the sphincter dilated until the lower bowel and rectum contract and expel the stool. This is done twice daily until there is a spontaneous daily movement, and thereafter once daily for a week.

General Conditions

(*v*) *Prematurity* (+).—Breast-feeding is especially valuable in premature and feeble babies ; but lactation is likely to be delayed, particularly if the stimulus of suckling is lacking. The special methods of feeding in prematurity cannot be detailed here ; but lactation can be encouraged by manual expression of the breasts, and when small amounts are obtained these can be given to the baby. It is surprising how a small feeble baby of 4 lb. or less, and a fortnight old, will at once suck the nipple vigorously. Before breast milk is available a diluted sweetened condensed milk is the best food ; its low fat value is an advantage.

(*w*) *Gastro-enteritis* (+).—This dangerous condition is rare in breast-fed babies at home ; but it is an ever-present risk in institutions. Vomiting and diarrhoea are accompanied by the essential symptoms of sudden anorexia, grave weakness, and dehydration. Inmmediate drastic treatment consists in total withdrawal of milk for one, two, or more days, the substitution of sweetened alkaline water, the giving three or four times daily of small doses of magnesia (a half to one teaspoonful), and parenteral salines. Meantime, lactation is maintained ; but breast milk is resumed only when the colour and the strength of the baby have improved and there are signs of hunger and returning appetite. At first the breast milk, given by bottle, should be skimmed and diluted. In the acute stage a little sweetened tea twice daily is of value.

(*x*) *Failure to Gain Weight, and Poor Appetite* (+).—This condition is common at the end of the first week. Hunger and appetite can be restored quickly by the withdrawal of two or three breast-feeds and the substitution of sweetened water preceded by half-teaspoonful doses of magnesia. This can be repeated, if necessary, on a second day.

(*y*) *Febrile Illness in the First Month* (+).—This may be dehydration fever or any other sharp and transient febrile illness. The dietetic treatment is the withdrawal of breast-feeding for 12 to 24 hours and the substitution of abundant sweetened fluid ; and here, again, the diuretic and diaphoretic action of tea infusions can be used with good effect. Breast-feeding can then be resumed.

(*z*) *Etcetera* (+).—Among all other pathological states in the baby during the period of breast-feeding—whether organic, structural, functional, or infective—while some may require a temporary withdrawal or modification of breast milk, there is not one which contraindicates breast-feeding.

Conclusion

This brief epitome of breast-feeding makes a crowded presentation of a large and complicated problem of dietetics. In other branches of dietetics the doctor and the nurse are not concerned with the production of the food, nor with its conveyance to the patient, but only with doling it out. But in breast-feeding we have to supervise all three operations ; and before we can do this we must know and understand the processes that underlie lactation, suckling, and digestion. Only when we are instructed in this primary knowledge can we manage the normal dietetic problem of breast-feeding. And when we are so instructed we can then understand and deal successfully with the derangements that may upset these three physiological processes. It would not matter much if we had mastered the problem of the infant dietetics of cows' milk, complicated as it is with the far greater risk of infection. For in using cows' milk we face the double problem of malnutrition and infection, and our failure is shown in our high infant death rate.

Human milk is a food perfectly designed in its chemistry for the digestion and nutrition of the infant ; and in the arrangements for its supply and consumption it is almost proof against infection ; with these supreme advantages, it is also the cheapest of all human food, and the least troublesome to give.

But breast-feeding is not an automatic process ; and its inauguration is attended by many checks and difficulties. Most of these difficulties can be overcome by knowledge and patient effort ; and in this paper I have tried to set out in an orderly way the common difficulties and their simple remedies. The general neglect and mismanagement of breast-feeding has existed so long that its failure has become accepted as an inevitable effect of our civilized society. Actually it is one of the major problems that have to be faced in any serious effort to reduce our infant death rate. At the present time of dearth and war the mismanagement of breast-feeding, with its resulting waste of food wealth and life, is a matter of national concern. Every doctor and nurse who has the responsibility of advising and assisting mothers in breast-feeding ought to urge its continuation wherever possible and as long as possible, and give their best thought and effort to overcome any difficulties that may arise. They should pause and think more than twice before they recommend weaning in the first month or two of life.

ULCERO-MEMBRANOUS STOMATITIS

THREE ATYPICAL CASES

BY

Squadron Leader T. CRADOCK HENRY,
M.R.C.S., L.D.S.

An investigation of 90 cases of ulcero-membranous stomatitis was recently undertaken, and of these, 87 were, on clinical and bacteriological evidence, classified as Vincent's disorder, while 3, which were atypical, form the basis of this paper.

Atypical Forms in the Literature

Reports in medical literature tend to show that atypical forms of ulcerative stomatitis are not uncommon ; they occur sporadically, sometimes in association with other diseases and sometimes alone. In most cases the condition bears a certain superficial resemblance to Vincent's infection, but the clinical course is usually different, as the chief features emphasized are the degree of toxaemia, the prevalence of complications, and the mortality.

In a rather different category is a group of cases showing a variety of skin lesions with similar manifestations in the mouth. Of these the most important are pemphigus vulgaris, erythema multiforme, and dermatitis herpetiformis. Up to recent times these cases were diagnosed on the clinical findings, but few attempts seem to have been made to investigate the bacteriology or the blood picture. Pemphigus is pre-eminently the disease in which most difficulty is encountered in making a differential diagnosis, as the bullae may first appear either on the lips or in the mouth. Matis (1940), in describing 5 cases of pemphigus in which the lesions were entirely confined to the mouth, points out that the diagnosis rested on the identification of the typical bulla, which ruptured in a few hours, and states: "Following rupture, the flaccid pellicle sloughs off, leaving a superficial ulcer, which promptly develops a marked secondary inflammatory reaction." Erythema multiforme, which also produces a bullous lesion in the mouth, may be another source of difficulty, but again the diagnosis must rest on the discovery of the typical lesion.

In describing cases of atypical ulcerative stomatitis some authors have applied the term "streptococcal." Costello (1931) reports a number of cases of coincident sore throat and sore mouth in children. The lesion in the mouth was apparently pustular in type, not dissimilar to the bullae of pemphigus, and on rupture it left behind a superficial ulcer. Culture from the contents of these lesions gave an almost pure growth of haemolytic streptococci. Similarly, Mead (1932) gives an account of several cases of alleged streptococcal stomatitis in which the clinical features were mainly those of an acute marginal gingivitis. Culture from these cases usually resulted in a mixed growth of *Str. viridans* and *Staph. aureus*. In none of them, however, was the condition reminiscent of ulcero-membranous stomatitis in the full clinical sense of the term, nor were any of the patients seriously incapacitated by the disease.

A very different disorder was recently described by Walton and others (1941) in which the severity of the local condition, ulcero-membranous in type, was completely overshadowed by the alarming prostration and acute illness of the patient. The clinical features of the 3 cases bear such a striking resemblance to those of Walton that it is felt they may belong to the same group. They have in common the following characteristics: (1) The patients were acutely ill, with the manifestation locally of a wide-spread ulcerative stomatitis, associated with a conjunctivitis. (2) Swabs from the mouth failed to reveal the presence of Vincent's organisms in significant quantity, but streptococci were grown on culture. In Walton's cases the organism was believed to be a streptococcus of the *faecalis* type. (3) There was no response to sulphanilamide or sulphapyridine therapy, but the patients appeared to improve after blood transfusion.

The histories of the 3 atypical cases in the present series are as follows:

Case I

An A.C.2 aged 19 was admitted to hospital on May 17, 1940. Seven days previously he had had a slight sore throat, which had abated until, two days before admission, it had recrudesced simultaneously with the appearance of a sore mouth.

When first seen he was obviously very ill; cyanosis and dyspnoea were present, and the temperature was 104° F. and the pulse rate 140. He complained of dysphagia, and trismus had developed. The mucous membrane of the lips, gingiva, and soft palate was covered with a whitish-grey tenacious exudate, which on removal revealed shallow ulcers that bled freely. Haemorrhage, in fact, was observed from all the gingival margin, which was grossly hypertrophic. Smears taken from the mouth showed a few Vincent's organisms, together with large numbers of Gram-positive cocci. Aerobic culture gave an almost pure growth of haemolytic streptococci. The Wassermann reaction was negative. A general examination revealed no gross abnormality except the presence of moist rales at the left base. Sulphanilamide was given in preference to sulphapyridine, and the patient received an initial 24-hour dosage of 8 g.

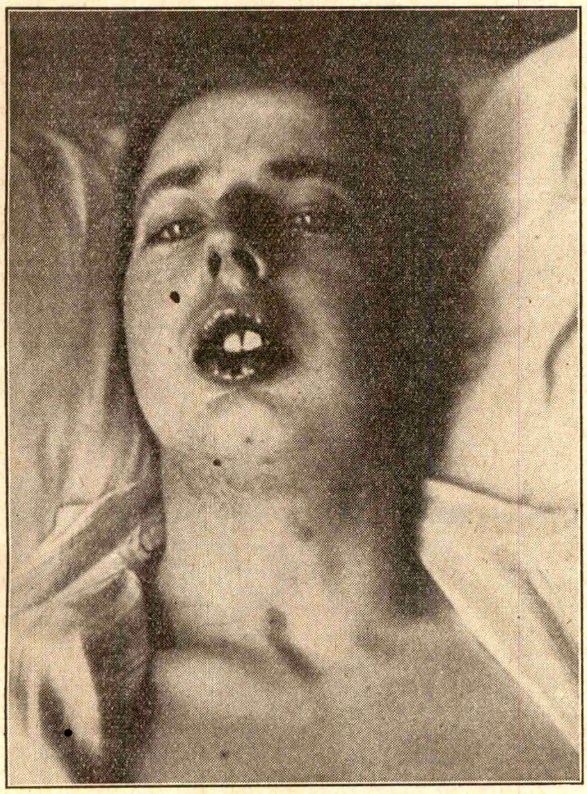

FIG. 1.—Case I. Acute phase 5 days after admission, showing bilateral conjunctivitis and blepharitis; oedema, bullae, and crusting of lips; and skin lesion. In the collar area the vesiculation, erythematous base, and central red spot can be seen.

The following day he seemed to have improved slightly and the temperature had fallen to 100° F. A skin lesion was now present; this took the form of a vesicular eruption on an erythematous base, and was first noticed on the left forearm and in the collar area. In addition conjunctivitis appeared, and a sticky discharge covered the lid margins (Fig. 1). On the fourth day a tentative diagnosis of pemphigus was made, and it was proposed to continue the sulphanilamide for a full course. The patient's general condition had begun to show a rapid deterioration; the temperature had risen again, he was taking little nourishment, and the prostration was alarming. It was therefore decided to try the effect of a blood transfusion, and 500 c.cm. of fresh citrated blood was administered. At this time the skin lesion had reached its maximum extent, and bullae were present on the arms, legs, and chest, with one on the glans penis. Smears from the mouth failed to reveal Vincent's organisms, and culture gave a heavy growth of haemolytic streptococci, both α and β. The white cell count was 13,000 per c.mm.

The following morning the patient was greatly improved, and during the next 4 days the temperature showed a gradual return to normal. On May 24 the chest was radiographed and evidence was found of a resolving bilateral bronchopneumonia. Blood culture from a specimen taken on May 19 was sterile, as was a culture from the exudate in one of the bullae. Further smears from the mouth again showed the presence of Gram-positive cocci, and culture gave an almost pure growth of haemolytic streptococci.

From about this time onwards the skin lesion started to fade and in the mouth the membrane began to separate, leaving behind a painful haemorrhagic surface. Oedema of the lips was still manifest as late as May 27 and the ulceration appeared tardy in healing. It was not until June 5 that the mouth lesion was completely resolved.

The patient was discharged from hospital on June 21, and so far as can be ascertained no other attacks have occurred.

Case II

A corporal aged 19 was admitted to hospital on Oct. 20, 1940, having been transferred from his local sick-quarters. For 5 days he had had a sore mouth, which had ulcerated 2 days before his admission. On the day previously his eyes became sore and he had awakened in the morning with the lids stuck together by discharge. He gave a previous history of having had a similar attack, in which a skin lesion had followed. This attack had never been satisfactorily diagnosed, but it was apparent that he had been gravely ill.

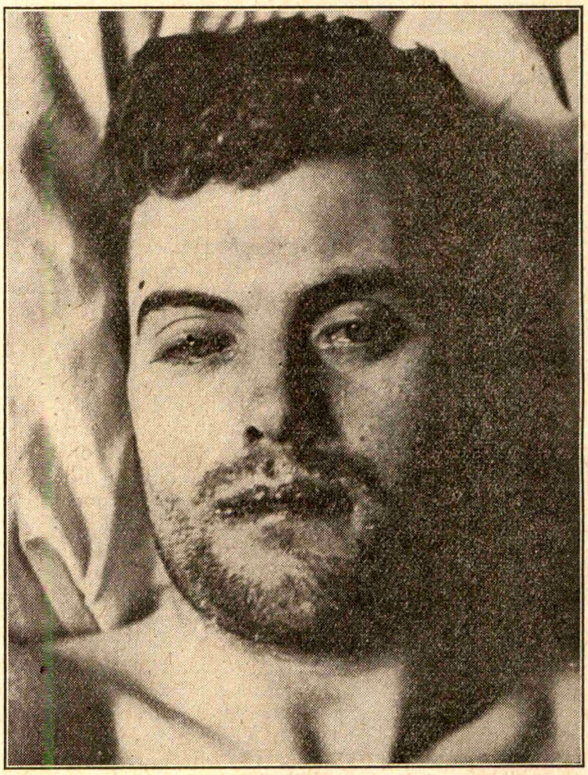

FIG. 2.—Case II. Acute phase 8 days after admission, showing ulceration and formation of small bullae on lips, and bilateral conjunctivitis, with some discharge present on lid margin.

On examination the patient appeared restless and anxious; he was of a greyish pallor and slightly dyspnoeic, but no abnormal signs were present in the heart or lungs. The temperature was 100° F. and the pulse 120. A purulent conjunctivitis was evident, but no skin lesion except a residual staining from the previous attack. Inspection of the mouth showed an extensive ulceration, with a thick dirty white exudate, membranous in character. This covered the gingiva and the mucous membrane of the floor of the mouth, the cheeks, and palate. The lips were only slightly involved, but were oedematous. The white cell count was 12,000 per c.mm., with 74% polymorphs, and a swab from the mouth revealed a few Vincent's organisms, culture giving a mixed growth of haemolytic streptococci, pneumococci, and *M. catarrhalis*. The Wassermann reaction was negative.

The patient was placed on a full course of sulphanilamide, with an initial 24-hour dosage of 8 g. The drug was continued for 6 days. He showed little improvement; the temperature was gradually rising and toxaemia was evident. A skin lesion appeared on the third day after admission, being first detected on the back in the scapular region and on both arms. The lesion was tender to pressure and similar in appearance to erythema multiforme.

On Oct. 24 the temperature reached 103.5° F., the pulse was thready, and the general condition appeared alarming. Prostration was evident; the patient was unable to take nourishment because of dysphagia, and oedema of the soft palate caused great distress. The skin lesion had extended, and was present on the buttocks, the lower limbs, and the dorsum of the penis. Two of the lesions had central vesiculation, which does not show in the photograph (Fig. 3). The white cell count was 7,800 per c.mm. A further swab from the mouth was identical with the first.

On the basis of the dramatic improvement that had taken place in Case I, a transfusion of 500 c.cm. of fresh citrated blood was given by slow drip. A rigor occurred shortly after the transfusion had begun, but despite this the procedure was completed.

On Oct. 25 the patient both looked and felt better; the temperature had fallen to 100° F. and the oedema of the soft palate was less. In the interim period mild non-specific treatment had been given to the mouth, which had shown a gradual improvement; the membrane had separated in places, leaving behind a shallow ulcer. The skin lesions began to fade, and by Oct. 30 had disappeared completely. Smears from the mouth taken on Oct. 26 and 30 failed to show the presence of Vincent's organisms, and culture on both occasions gave an almost pure growth of haemolytic streptococci. Swabs from the eye did not reveal any organisms, and the blood culture was negative. Figs. 2 and 3 illustrate the condition as it appeared 8 days after admission.

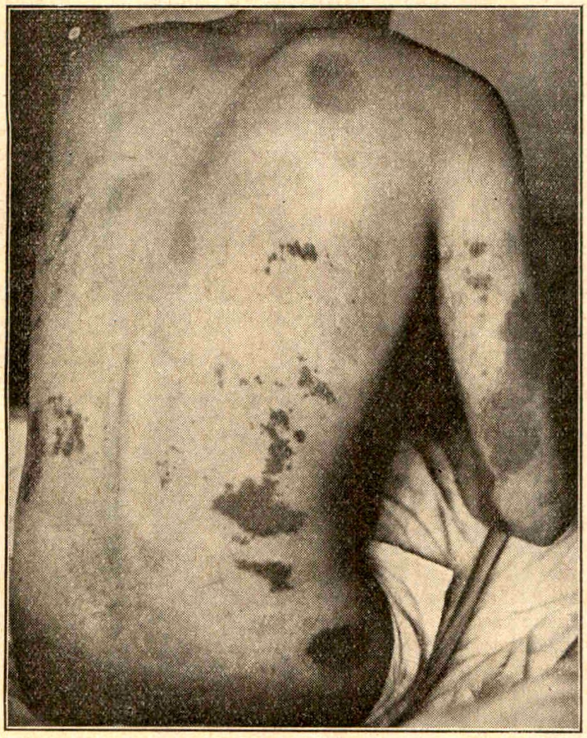

FIG. 3.—Case II. Eight days after admission. Old staining can be seen in large patches on the trunk, buttocks, and posterior aspect of upper arms. Recent purpuric lesions are mostly with limits of previous staining.

The patient showed continued improvement, and the temperature remained normal after Oct. 27. The mouth, however, was slow to heal, and it was not until Nov. 5 that all ulceration had ceased. The patient was discharged on Nov. 12.

Case III

This patient, aged 18, was admitted to hospital on June 27, 1941, as a transfer from his local sick-quarters, 5 days after the onset of a severe stomatitis, which had been diagnosed as Vincent's infection.

On examination he presented a severe ulcero-membranous stomatitis involving the gingiva, the mucous membrane of the cheeks, the lips, and the soft palate. There was a single bulla on the tip of the tongue. The membrane was tenacious and not easily separated, and was grey in colour. His lips were swollen, trismus was present, and he complained of dysphagia. The breath was not fetid. The patient's general condition was fair, but he looked toxic. The temperature was 103° F., the pulse rate 120, and the respirations 36; moist sounds were evident at the left base. He had an angular conjunctivitis, with filmy strands over the cornea. Smears taken from the mouth failed to reveal Vincent's organisms, and culture gave an almost pure growth of *Str. viridans*. A smear of the conjunctival exudate revealed a few pus cells and an occasional diphtheroid, but no other organisms. At this time the white cell count was 13,000 per c.mm.

Treatment during the next two days was mainly expectant, non-specific measures being applied locally. The patient's general condition, however, deteriorated, and as the clinical signs and a radiograph of the chest were compatible with a basal pneumonia, a course of sulphapyridine was started on June 29—30 g. in all. On July 4 the drug was withheld, but as the temperature still remained over 100° F., and on the experience in the previous two cases, a small transfusion of 350 c.cm. of fresh citrated blood was given. There was an evident improvement in the patient's general condition following the transfusion, but it was not so dramatic as in the first two cases.

Up to this time the mouth condition had remained more or less static, but by July 7 the membrane was beginning to separate, leaving behind shallow ulcers, which healed with great rapidity.

Further smears from the mouth had been taken, but on no occasion were Vincent's organisms seen, and culture gave an almost pure growth of *Str. viridans*. No skin lesion developed at any time. By July 17 the patient had improved considerably and his condition had ceased to cause any grave concern. The blood picture showed haemoglobin 94%, red cells 5,340,000 per c.mm., and white cells 5,800 per c.mm. The mouth, however, was still unhealed, although the conjunctivitis had practically disappeared. Cervical adenitis, which had been a pronounced feature in this case, was now nearly absent.

The ulceration in the mouth was healed by July 22. The temperature had remained normal since July 9, and the patient was eventually discharged from hospital on Aug. 7.

Discussion

Three cases of an atypical ulcerative stomatitis have been described which at first sight bore a strong resemblance to Vincent's infection of an acute and widespread type. Clinically, this resemblance was only superficial; for in each case purulent conjunctivitis was present, foetor oris was never marked, and two cases developed skin lesions. Toxaemia with prostration was considerable in all three, and they showed in common a failure of response to sulphanilamide but marked improvement after blood transfusion. That the lesions were not classical Vincent's stomatitis is confirmed by the bacteriological findings.

The oral lesions could be described as ulcero-membranous in character in each case, and with one exception bullae were not found in the mouth. In addition the stomatitis preceded the appearance of the skin lesion by some days. These two facts seem to indicate that, whatever the nature of the stomatitis, it was not a manifestation of pemphigus or other primary dermatological condition.

As has been seen from the case reports, the organism mainly isolated in culture from the oral lesions of these patients was a streptococcus. In Cases I and II it was haemolytic, often in almost pure culture, and in Case III of a non-haemolytic type. Unfortunately, a detailed pathological investigation was not pursued, since facilities were not then available. However, the consistent isolation of these organisms in culture, together with the absence of other significant organisms, is of interest, and it would appear profitable to speculate on the relation of the streptococcus to the clinical picture presented.

It is known that toxic manifestations, with high temperature, toxaemic cutaneous eruptions, purulent conjunctivitis, and syndromes of a like nature may arise from a localized streptococcal infection, and although it is not suggested that in the first two cases the haemolytic streptococcus was the sole causal agent, it is believed that its presence had very considerable influence on the clinical course of the disease. In Case III the streptococcus found was of a non-haemolytic variety, and it is noteworthy that in this case generalized skin lesions did not appear and, on the whole, toxic manifestations were less marked.

The fact that little response was obtained from the administration of sulphonamides in these cases would appear to absolve the streptococcus as the morbid factor, but cases of streptococcal infection are frequently seen in which no appreciable benefit has been obtained from this group of drugs, and, as has recently been shown, strains of haemolytic streptococci completely resistant to them do occur. Francis (1942) describes several cases of wound infection by a Group A Type 12 streptococcus resistant to sulphonamides, lack of inhibition of growth being demonstrable *in vitro*. This resistance is, however, not a specific type characteristic, and it seems likely that other types may, under suitable conditions, produce sulphonamide-resistant strains. However, quite apart from the possible presence of such a strain in these cases, the fact that a generalized toxaemic condition was well established lessened the clinical value of sulphonamide administration. Certainly, the problem becomes very different from one in which the streptococcus is proliferating in an open wound.

While it is realized that in these three cases there is not sufficient evidence to justify the conclusion that the streptococcus was the specific causative organism—in fact, a neurotropic virus might well be implicated—it is suggested that its presence influenced the clinical picture to a marked degree; and, although it is not possible to make a diagnosis until more is known of the condition, it is considered that this acute ulcerative stomatitis with its concomitant toxic syndrome constitutes a well-defined clinical entity.

Summary

In a series of 90 cases of ulcero-membranous stomatitis recently investigated 87 were classified as Vincent's disease. The remaining 3, which differed materially from the others, showed marked toxaemia and failed to respond to sulphanilamide and sulphapyridine; improvement, however, followed blood transfusion. In each of these 3 cases streptococci were isolated from the mouth lesions.

I wish to thank Wing Commander I. MacKay and Wing Commander K. Robson for their help and encouragement, and Squadron Leader R. Wynroe for the photography.

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GROUP PSYCHOTHERAPY

BY

MAXWELL JONES, M.B., M.R.C.P.Ed., D.P.M.

Group treatment if effective would have a particular value in wartime, when there is a relative shortage of doctors and, potentially at least, an increase of patients with neurosis. The number of neurotic patients who can be adequately dealt with by one doctor varies according to the type of patient and the type of treatment practised by the therapist, but, in general, 25 to 30, with an average duration of stay in hospital of about six weeks, is a reasonable estimate.

The effort-syndrome unit at the hospital to which I am attached has 100 beds and comprises patients with various mild neurotic states, all of whom are carefully examined to exclude organic disease, and all of whom have fatigue as their main symptom. They show various anomalies of vegetative function such as palpitation, postural giddiness, labile blood pressure, tachypnoea, hyperventilation, frequent sighing, sweating of an emotional distribution, hot flushes, cramps, and paraesthesiae. This vegetative lability has frequently been present since childhood, and while individual psychotherapy may lessen psychic anxiety and effect personality change the somatic symptoms often remain very resistant to treatment.

Patients with effort intolerance were first treated here by the usual psychotherapeutic measures, in addition to the general psychiatric methods, an attempt being made to get at any major emotional factors which might help to explain the development of the patient's effort phobia. In the resulting discussion and explanation it was necessary to deal with the cardiac neurosis that was usually present. This necessitated some simple explanation of the physical accompaniments of an emotional state, but great difficulty was experienced in removing the patient's belief that he had heart disease, which was sometimes held with almost delusional intensity.

Another great difficulty was that patients did not come here seeking treatment: speaking generally, their main conflict was over Army service, which for one reason or another they disliked intensely. From contact with such men I came to the conclusion that their low morale was more satisfactorily combated by talking to them in groups than by individual interviews. One had the feeling—and this was endorsed by the nurses' observations—that in individual interviews the men fought shy of such a topic, but at night, after "lights out," would discuss freely their dislike of the Army, their grievances, and their desire for discharge, the last being amply justified because in their opinion they had heart disease, and so on. During such discussions a patient had ample opportunity for dramatizing his predicament, and there was no possible way for the other patients to verify his statements.

After two years of individual psychotherapy conducted under rather difficult conditions, as outlined above, influenced also by the need for doctors to deal with many more patients than is at present the case, it was decided to try a form of group therapy. The patients had been carefully selected and had approximately identical symptomatology: this made the problem much simpler than would usually be the case in a psychiatric ward. The treatment was tried on a group of 50 patients, the remaining 50 being given individual psychotherapy by other doctors. There were two main problems to be considered: the patient's attitude towards his symptoms, and the degree of group responsibility which he showed. These two aspects are best discussed separately.

Patients' Attitude towards Symptoms

As already stated, most of the men on arrival here had marked vegetative imbalance, which they interpreted as positive evidence of disease. A simple explanation of psychosomatic relationships did not appear to be sufficient to undermine this belief, and much more detailed instruction was indicated. The procedure adopted was to have three meetings a week at 9 a.m. on alternate days. The patients and doctor were seated comfortably, the whole atmosphere being completely informal. The junior nurses working on the wards sat at one end of the room. The talk lasted on an average 20 to 30 minutes, with a quarter of an hour at the end for open discussion. At first the talks covered a wide range of topics, including heredity, child psychiatry, the unconscious, propaganda, inferiority feelings, fatigue, relaxation, etc.; but it soon became clear that some definite system, whereby the education was more unified, was necessary. For this purpose I have found that the central nervous system is a suitable subject because it lends itself most easily to diagrammatic representation; thus, talks about the autonomic nervous system or different levels of consciousness as pure abstractions are quite beyond the average patient's comprehension, whereas the same subject taught with the use of charts or a model brain is capable of holding his attention and means something to him. For instance, the brain is explained to the group as functioning at three levels—the cortical, the thalamic, and the brain stem—which, functionally, represent consciousness and the peripheral nervous system, undifferentiated emotions, and control of visceral activity respectively. The peripheral nervous system and autonomic nervous system are then discussed in detail without, however, using medical terms or going into details of anatomy. The main point is that the men should have a rough idea of the function of the nervous system and its importance in adjusting the individual to his environment (the exterofective system of Cannon). The autonomic nervous system is dealt with in a similar way, its function in maintaining internal equilibrium being stressed. When the men appear to have grasped these two distinct concepts they are taught how activity or inhibition at any one level may affect the other levels—e.g., the toxic effects produced by alcohol in removing the inhibitory influence of the cortex, resulting in uncontrolled emotional behaviour; or the effects of consciously apprehended emotional experience upon the vegetative nervous system.

The justification for teaching such an over-simplified abnormal physiology rests in the need for giving the patient some more or less concrete conception of the meaning of "nerves." By actually pointing to nervous structures, represented diagrammatically or by a model brain, the men find that such an abstraction as nerves becomes a reality for them in just the same way as heart disease represents a reality. Moreover, they are always ready to listen to any intelligible discourse about their health, and by frequent reference to everyday evidences of vegetative instability this impression that nerves are a reality is readily strengthened. The whole atmosphere is that of a lecture to intelligent men on a subject of general interest to them. This academic atmosphere is heightened by the presence of the nurses in that they are credited with a certain educational level and prestige. The knowledge gained increases the patient's self-esteem and offsets the embarrassment which so often accompanies an insight into his neurosis: thus the man whose wife has always shown considerable concern regarding his supposed heart condition is able to relinquish this particular ailment provided he can give her some alternative explanation which does not involve the loss of too much self-esteem.

Merely transferring the emphasis from "heart" to "nerves" would be no great advance if it were not for the fact that nervousness cannot be divorced from the total personality. It is easy for anyone to understand that his feelings of fear and so on are part of himself—i.e., feelings and self are much the same thing. In this way the individual realizes that he has a certain responsibility in relation to his feelings and cannot sit back and expect the doctor to do everything, in the same way as he might do if he had heart trouble. The man's own initiative and resources are therefore called into play to find some solution for his problem. At this stage he may ask what action he can take if, having arrived at the point where he is prepared to do his utmost to meet the difficulty, no solution presents itself. Such a situation calls for the highest level of adaptive behaviour, the patient accepting that, temporarily at least, no solution can be found and that only a positive effort at adaptation will prevent a breakdown. The negative personality factors are stressed here—the resentments, prejudices, etc., which if present prevent any possibility of successful adaptation and are fertile soil for the growth of anxiety.

Group Responsibility

The majority of patients seen here have a very circumscribed outlook and are largely preoccupied with their own symptoms, emotional difficulties, and domestic situation; few have reflected on the reason for their conscription or have stopped to consider what they are fighting for. They seldom read newspapers and have only the vaguest conception of the extent and complexity of the war. To them there exist their home and a vague, ill-defined, unfriendly outside world. With no better sense of values than these it is not surprising that some men quite openly and shamelessly hope for nothing but their discharge from the Army.

Two methods might be employed to alter this state of mind: (1) an educational programme, the aim of which is to give the individual a balanced view of the whole world situation and an ability to appraise for himself the merits and demerits of the various systems of government, and to realize that for democracy to succeed a feeling of responsibility from each individual is demanded; (2) an exposition of conditions and restrictions which exist in some other countries and particularly in the occupied countries, with emphasis on the tragic fate of some subjugated peoples. So far only the former method has been employed here, and it is in this sphere that the nurses have been particularly useful. Their main object is to imbue the men with a feeling of group responsibility and make them realize that far more is at stake than simply their own future. A man who has openly made up his mind to get out of the Army if at all possible has not only his own conscience to consider but also the effect of his attitude on his contacts in hospital, the men at his unit, and, if he is discharged, his contacts at home. His usual plea is that he would be serving his country much better in his civilian capacity at a job for which he was properly trained rather than one where he is a misfit. Such a man has seldom stopped to reflect that practically no one in the Army regards soldiering as his natural vocation and that in a sense the great majority of soldiers are doing work less efficiently than that for which they were, from choice and aptitude, trained in peacetime. The nurse attempts to make him become conscious of the fact that his attitude of mind not only concerns himself but may have a marked influence for good or bad upon his contacts. Her approach must necessarily be an indirect one and occur quite naturally in a social situation. The patients are usually only too ready to discuss their family problems and show the nurses letters from their wives, which all too often are most unsuitable for a neurotic patient to receive, with over-anxious inquiries about their heart trouble and expressing the hope that they will soon be discharged from the Army, etc. The doctor and nurse have to try and offset this damaging home influence and substitute a more realistic outlook. In general the men lack real beliefs, although most of them are convinced that their only salvation lies in a return to a circumscribed existence where they hope to escape from the awareness of world problems which they cannot understand and for which they feel no personal responsibility. The nurse first tries to improve the man's self-regard by getting him to talk about his past work and successes and, having established rapport, tries to arouse his interest in some activity within the Army. General reading is encouraged, particularly periodicals, because the more serious articles give a much greater amount of information than the daily papers.

These measures may appear to be so simple and obvious as to lack therapeutic value, but it must be borne in mind that we are not concerned with the doctor's analytic approach to the problem of morale but with the simple methods which nurses can apply. It would appear undesirable that the physician should himself be too closely identified with this problem, for by so doing he might endanger his privileged position as a doctor.

Summary and Conclusions

During the last few months group therapy has been given to a group of 50 patients with effort syndrome. No follow-up figures are yet available, so that any discussion of results is premature. There is no doubt, however, that simple talks on health problems bearing on their illnesses prove of great interest and value to the men. The danger of fostering hypochondriasis is fully realized, but a hypochondriacal attitude towards their symptoms was already present in these patients on admission to hospital and the various vegetative symptoms had been interpreted as evidence of disease, particularly heart disease. It was found comparatively easy to alter the conception of heart disease to one of "nerves." In order to do so, however, it was essential to avoid, so far as was possible, abstractions such as talks on emotions, the unconscious, belief, etc., and to build up instead an apparently real structure round the conceptions of the central nervous system, which was best done by the use of a model brain, charts showing the nervous system, etc. This led on to discussions on emotions and bodily changes, always relating events to actual change in the nervous system. The next step was to correlate vegetative symptoms, feelings, and self, which, if accepted, meant the adoption by the patient of a personal responsibility in relation to his illness. Finally, emotional difficulties and personality problems were discussed as being the level at which disequilibrium in the nervous system could best be tackled.

It has been found in practice that the men adopt these new ideas with surprising readiness, and that among themselves and in conversation with the nursing staff there is much less tendency to discuss their symptoms than previously. Further, the preoccupation with heart disease has almost disappeared from the wards, and the number of men returning for Army duty is higher than at any time since the unit started two and a half years ago.

Complementary to the group treatment is the employment of the nursing staff to give individual attention to patients, and particularly to support the doctors' views regarding the patients' symptoms and to develop a sense of group responsibility. This must be largely an individual matter depending upon the ability and beliefs of the particular nurse, but an attempt has been made to indicate in a general way how the nurses have been encouraged to tackle these problems.

Impressionistically, the results have so far been better than with any previous method. There is no doubt that the atmosphere in the wards has improved enormously and the patients are far less preoccupied with their symptoms.

I would like to thank Dr. W. S. Maclay for permission to publish these results and for every possible encouragement.

THE SEDIMENTATION RATE AND THE SEDIMENTIN INDEX*

BY

B. L. DELLA VIDA, M.D.Rome

Assistant Pathologist, the Royal Hospital, Wolverhampton

Since Fahraeus (1921) and Westergren (1920) investigated the phenomenon of the sedimentation of the red cells (E.S.R.) and first gave details of a technique for measuring its rate an extensive literature has accumulated on the subject. Much has been learned of the factors involved in the phenomenon, though its ultimate cause remains obscure, and of its implications in clinical medicine. Some half-dozen different techniques have been recommended for its investigation; this is unfortunate, since it is now abundantly clear that to be comparable results must be obtained under identical conditions. The estimation of the E.S.R. already occupies an important place in clinical pathology, but there is still not even general agreement as to the best means of its expression. Thus the Westergren E.S.R. estimation refers to mm. fall in one hour, the Linzenmeier (1920) method reports the number of minutes taken for the red-cell column to reach a certain mark, and the Rourke and Ernstene (1930) technique records results as mm. fall per minute. The applications and implications of the E.S.R. in clinical medicine are far from being fully understood; the adoption of a common technique and mode of expression of results, such as to make the figures obtained by different workers comparable, would do much towards bringing about a fuller understanding.

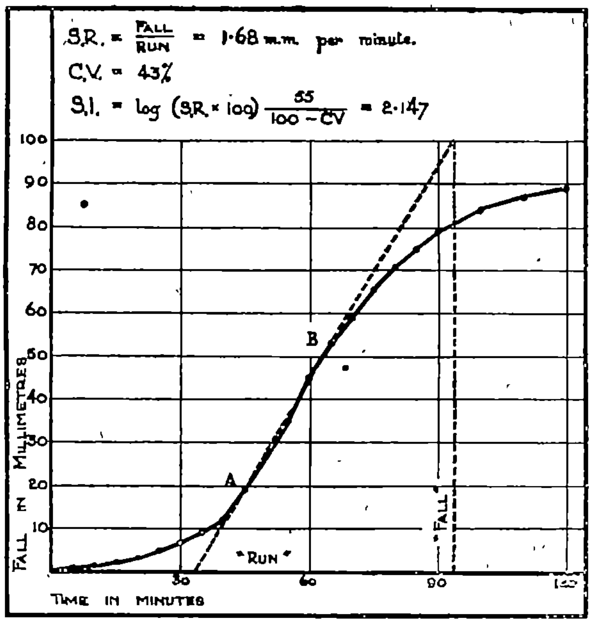

FIG. 1

Excellent reviews are available by Ham and Curtis (1938) and others on the technical aspects and by Reichel *et al.* (1936) and others on the clinical applications of the E.S.R. In the present communication it is proposed to deal only with certain facts, already well known, but of which the importance in the estimation and expression of the E.S.R. has not perhaps been fully recognized.

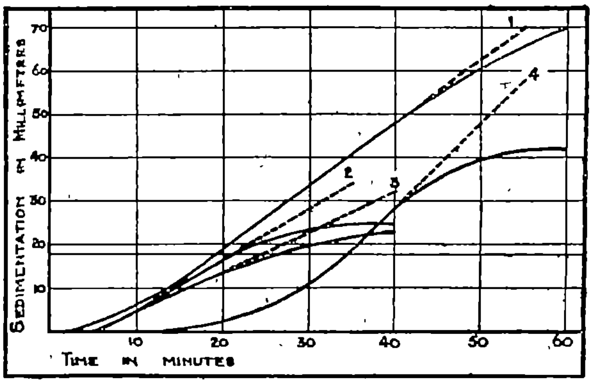

FIG. 2.—Sedimentation curves of samples of the same blood specimen by method of (1) Westergren, (2) Cutler, (3) Linzenmeier, (4) Rourke-Ernstene or Wintrobe-Landsberg. Erythrocyte cell volume 42.8%. [Graph drawn from Ham and Curtis's *Medicine* (1938).]

The rate of the sedimentation of the red cells depends primarily on their clumping. The nature of the agent responsible for this clumping is obscure, but it is accepted that it is a factor resident in the plasma; this, following Day (1940), may be spoken of as "sedimentin." The purpose of the estimation of the E.S.R. is to find an expression of the activity of this factor. The phenomenon of sedimentation is governed by certain physical laws. As shown in Fig. 1 it follows three phases. First, from the zero point at the top of the column the red cells begin to aggregate and to move towards the bottom of the tube, increasing their speed until at point A the second stage, the "period of constant fall," is reached. In the third phase, at point B, "packing" intervenes and the rate of fall is slowed down until it is reduced to *nil* and the sedimentation is complete.

If the various techniques commonly in use for the estimation of the E.S.R. be employed on the same specimen of blood and at the same time, it will be seen, as shown in Fig. 2, that not only the falls as mm. in one hour but also the maximal velocities of sedimentation are different.

Factors Influencing the Sedimentation Rate

Size and Position of Tubes.—Once the period of constant fall had been reached the speed of settling of the corpuscles would remain unchanged if "packing" did not intervene. Therefore from a theoretical point of view the height of the column of blood should be infinite. This is not feasible, but to ensure reliable readings the blood column should be as high as possible. A height of 100 mm. is sufficient, but the 200 mm. of the original Westergren apparatus is preferable. The diameter of the column should be more than 2.5 mm., to avoid the capillary action of the tube (Walton, 1933). The tube must be perfectly vertical, as very slight inclination profoundly affects the rate of fall (Ponder, 1925).

Red Cell Volume.—The sedimentation phenomenon is due to the influence of plasma "sedimentin" on the red cells; therefore, in the presence of anaemia there will be a relative increase of "sedimentin" to each red cell present: Fig. 3 shows the effect of varying the concentration of the red cells in the same plasma. It shows that the more anaemic is the blood the higher is the sedimentation rate, and this not only if expressed as fall in one hour but also as fall per minute during the period of constant fall (Rourke and Ernstene, 1930; Schuster, 1938).

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* Paper read before the summer meeting of the Association of Clinical Pathologists, June 27, 1942.

Anticoagulants.—The original Westergren technique and several of those described later employ as anticoagulants solutions of varying strength of sodium citrate. More recent techniques use heparin, dry potassium oxalate, or oxalate mixtures. The experiments of Ham and Curtis and others prove that only dry oxalate mixtures as recommended by Heller and Paul (1934) and heparin ensure comparable results and at the same time prevent shrinkage of the red cells, thus allowing a correct reading of the corpuscular volume.

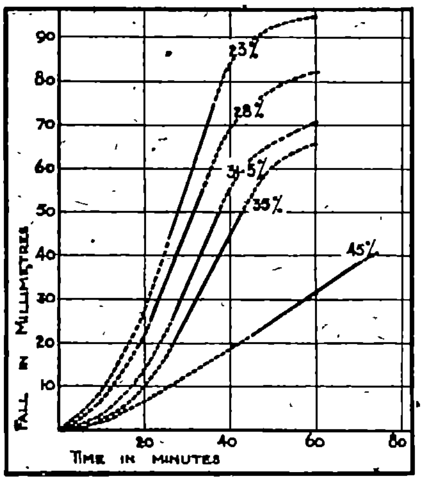

FIG. 3.—Showing the effect of varying the concentration of red cells in the same plasma. 45% = 0.70 mm. a minute; 35% = 1.97 mm.; 31.5% = 2.53 mm.; 28% = 2.64 mm.; 23% = 3.10 mm.

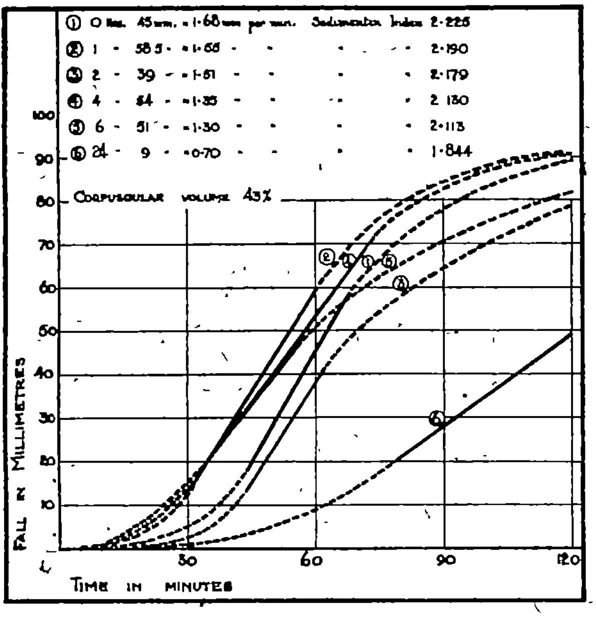

FIG. 4.—Graph showing progressive reduction with age of specimen of blood.

Time.—The E.S.R. is a labile phenomenon showing progressive reduction with the age of the specimen. Fig. 4 shows that the reduction is small up to from 4½ to 5 hours from the taking of the sample; thereafter it is rapid, until after from 24 to 48 hours the phenomenon has almost completely disappeared. The lability of the phenomenon has been shown by Day (1939) to be due to loss by the red cells, on standing, of susceptibility to clumping. The "sedimentin" activity of the plasma remains unimpaired for long periods. From this it follows that the "sedimentin" activity of the plasma of samples of blood older than 6 hours may be estimated with reasonable accuracy by combining the plasma with washed red cells from a fresh sample. Fig. 4 further serves to show that the crude reading of fall by mm. in one hour is not reliable, and that the figure subject to least variation is that expressing the fall over the period during which this is constant.

Temperature.—Variation in the ambient temperature considerably influences the sedimentation rate, but at the temperature of any ordinary laboratory this is not likely to be an important factor.

Size of Red Cells.—This appears to affect the sedimentation rate, but the variations so introduced are so small as to be of no practical importance.

Technique Recommended

From a vein in the antecubital fossa 5 c.cm. of blood is drawn into a centrifuge tube containing 10 mg. of the Heller and Paul dry oxalate mixture (4 mg. of potassium oxalate and 6 mg. of ammonium oxalate). A sedimentation tube of the Westergren type is filled to the 200-mm. mark; at the same time a haematocrit tube is spun down to ascertain the corpuscular volume. If the blood has been standing for some time (never more than 4 hours) it is gently but thoroughly mixed before setting up. The rate of fall is observed until the period of constant fall has been reached or until "packing" begins. The rate of fall can be observed either every 5 to 10 minutes or, as is desirable in the case of samples showing high sedimentation rates, by recording the time at every 5-mm. fall.

Finding the Sedimentation Rate and Sedimentin Index

The figures obtained by the observation are plotted on graph paper and the straight line expressing the period of constant fall is prolonged at both ends (Fig. 1). The sedimentation rate is given by the formula S.R. = $\frac{\text{Fall}}{\text{Run}}$ and expressed as mm. fall per minute. With experience it is easy to determine the period of constant fall from the figures alone without plotting. The normal range of the S.R. is from 0.05 mm. a minute or less up to 0.25 mm. a minute. The observed S.R. will in the presence of anaemia require correction for corpuscular volume. This may be done by means of the tables of Rourke and Ernstene. It can be done even more conveniently by making use of the sedimentin index suggested by Day.

The sedimentin index is the logarithm of the figure expressing the rate of fall over 100 minutes calculated on the basis of the constant fall per minute. Correction for anaemia may be made by simple arithmetical proportion, taking 45% as the normal corpuscular volume (C.V.), according to the formula,

$$\text{S.I.} = \log.\ (\text{S.R.} \times 100)\ \frac{55}{100 - \text{C.V.}};$$

and for correcting the observed sedimentation rate,

$$\text{S.R. (corrected)} = \frac{\text{antilog. S.I.}}{100}.$$

The normal range of the S.I. is from 0.5 or less to 1.4. Figures above 1.5 must be regarded with suspicion, but it must be borne in mind that a common cold may produce an increase of the S.I. up to 1.5 or thereabout.

The correction for an abnormal corpuscular volume is valid only in the presence of anaemia. In the case of bloods with C.V. higher than normal (polycythaemia, haemoconcentration due to shock, etc.), other factors, such as viscosity, enter into play and produce a retardation of the sedimentation not accountable for by the increased number of red cells. In these cases it is advisable to adjust the C.V. to a figure of 45% or slightly less before the estimation of the sedimentation rate.

Summary

For estimations of the sedimentation rate of the red cells to be comparable it is essential that they be performed by an identical technique and expressed in the same manner.

It is recommended: (1) That 5 c.cm. of blood be withdrawn by venepuncture into a dry mixture of 4 mg. of potassium and 6 mg. of ammonium oxalate. (2) That the estimation be made within four hours of withdrawal of the blood. If this is not possible the plasma may be separated and put up against fresh washed red cells. (3) That a tube giving a blood column of 200 mm. in height and at least 2.5 mm. in diameter be used and that this be set up in a strictly vertical position. (4) That only the rate of fall during the period of constant fall be considered in the expression of results. (5) That correction be

made for anaemia. This may most conveniently be done by using the sedimentin index of Day.

I wish to express my sincere thanks to Dr. S. C. Dyke, director of the department, for his advice and much helpful criticism; and to A. W. Farmer for his technical assistance.

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THE PREPARATION OF HOUSE-DUST EXTRACTS

BY

CHARLES SUTHERLAND, M.B., M.R.C.P., F.R.A.C.P.

Major, R.A.M.C.; Physician to Asthma Clinic, Alfred Hospital, Melbourne, Australia

Although hypersensitiveness to house dust occurs quite commonly and is an important factor in producing symptoms—e.g., in asthmatics and some types of chronic bronchitis—its existence is often completely missed by clinicians, partly because many of the extracts produced commercially for testing and treatment are either feeble or inert. The incidence and significance of this form of allergy will be properly assessed, therefore, only when potent and stable extracts become readily available. Such extracts should be so potent that they produce a large, irregular, itching wheal when used in a "scratch" test, and they should be quite inert when similarly tested on the skin of normal individuals. The "scratch" test offers a ready means of comparing the activity of different fractions isolated from dust, and was used in preference to the intradermal method throughout this work.

Since Cooke (*J. Immunol.*, 1922, **7**, 147) first demonstrated that some ingredient in house dust acted as an allergen, many attempts have been made to establish its identity, but this still remains a mystery. At first it was assumed that the activity might be simply due to a mixture of known allergens, but subsequent work has made this seem unlikely, and it appears that it originates from a single substance. Investigations made during the past two years suggested that this active substance might be adsorbed on to the particles of dust, and it was found that N/100 ammonia, which is often used in eluting adsorbed substances, did, in fact, bring the active fraction readily into the aqueous solution. Samples of dust from different houses vary considerably in activity, but by the scratch test it is easy to select a satisfactory sample. Five hundred grammes of this is just wetted with N/100 ammonia and left for 24 hours. It is important not to add excess of the fluid. The mass is then wrapped in cloth and squeezed in a powerful press, and the muddy fluid so obtained is filtered through paper and the pad of a Seitz filter until a clear yellowish filtrate is obtained. Sodium benzoate (20 g. per litre) is now added, and this dissolves readily. Hydrochloric acid (1:5) is then gradually added until the mixture becomes just acid to Congo red. A very finely divided precipitate of benzoic acid appears, and after 12 to 24 hours this is filtered off in a Buchner filter and sucked as dry as possible. Much of the active substance is held in an adsorbed form in this mass of benzoic acid, and it is readily released when the benzoic acid is dissolved in acetone. An amorphous precipitate remains, and is removed by centrifugalization. It is washed repeatedly in acetone and finally in dry ether and allowed to dry. This brownish amorphous powder shows great activity and appears to provide an ideal test reagent, as it is quite inert when tested on "control" normal individuals. This method of adsorption does not remove the whole of the active substance from solution, so it is usually worth while to neutralize the filtrate and to repeat the process of precipitating benzoic acid at least once.

Samples prepared six months ago have remained very potent, but it is too early yet to decide on the keeping properties of the substance. It is of interest that Dr. C. Rimington of the National Institute for Medical Research, Hampstead, who carried out preliminary tests on a sample, reported that it appeared to be largely carbohydrate in nature and failed to give the usual reactions for proteins. If subsequent tests with purer samples confirm this they may throw a new light on the nature of allergens.

Tests on 100 asthmatic soldiers show that roughly 80% react strongly, and in 20 cases treatment by desensitization with a 1% solution produced spectacular improvement in almost every instance. Initial subcutaneous doses as small as 0.05 c.cm. produced marked swelling, redness, and itching within half an hour, but after a dozen weekly doses of increasing quantity even ten times the initial dose often produced little reaction, and this increase in tolerance was usually associated with a considerable lessening of the symptoms.

Exigencies of war have prevented further work on this substance at present, but the preliminary results have been so interesting that a note on this incomplete work seemed justifiable.

I wish to thank Prof. D. C. Harrison of the Department of Biochemistry, Queen's University, Belfast, for much helpful advice and hospitality, Dr. Cope for advice on the method of adsorption, Mr. W. Buick of Queen's University for much technical assistance, and Dr. Rimington for carrying out the preliminary biochemical tests.

Medical Memoranda

Subdiaphragmatic Collection of Bile following a Perforating Chest Wound

This case presents some unusual features which make it worthy of record.

CASE REPORT

The patient, a woman aged 36, sustained a penetrating chest wound from a bomb fragment on Sept. 8, 1940. She was transferred to our care two days later, an ill woman, cyanosed and dyspnoeic, with a temperature of 98.8°, pulse 92, and respirations 26. There was a small puncture wound on the right side of the chest in the mid-axillary line at the level of the eighth space. Movements of this side of the chest were poor, and there was a small area of dullness and diminished air entry at the right lung base. The abdomen was distended and rigid, and tender down the right side, especially in the hypochondrium. A radiograph of the chest showed a small opacity at the right base. A provisional diagnosis of pneumonitis and probable liver injury was made, and a blood transfusion and oxygen through a B.L.B. mask were given. The following day the signs, including a friction rub, suggested consolidation or haematoma in the right lung. Sulphapyridine was started in full doses. During the next few days the patient remained ill, with temperature 99°, pulse 100, and respirations 30, the main symptoms being a feeling of malaise, persistent abdominal pain, and an irritable cough, while the chief signs were dullness on the right side of the chest, which had gradually increased, with a correspondingly diminished air entry. At this time her conjunctivae were stained yellow and the urine contained bile. Further radiographs of the chest taken on Sept. 18, 8 days after admission, revealed what appeared to be an intrapleural collection of fluid, with a raised right diaphragm. Accordingly, on the same day a diagnostic puncture through the eighth space in the posterior axillary line was done; this yielded 20 c.cm. of sterile bile. The following day a further 100 c.cm. was withdrawn. Radiographs then showed the diaphragm to be considerably lower. After the second puncture the patient steadily improved, and radiographs taken at the end of October, about 8 weeks after admission, showed the diaphragm in normal position and a small bomb fragment situated in the centre of the liver area.

It was concluded that the missile had traversed the lower part of the lung, giving rise to the signs on admission, and after piercing the diaphragm had lodged in the liver. Following this liver injury an extravasation of bile had collected below the diaphragm, probably over the bare area. The exploratory puncture, although made in the eighth space, had gone through the pushed-up diaphragm into the subphrenic collection.

Commentary.—The main points of interest in this case are: (*a*) the difficulty in making an early accurate diagnosis; (*b*) the limitation of a large collection of bile to the subphrenic area;

and (c) the fact that this collection remained sterile. We believe that conservative treatment is correct in this type of case and that operative measures should be undertaken only if infection supervenes.

A. D. EVERETT, M.S., F.R.C.S.
B. WOOD, M.B., B.S.

Shock Treatment in Psychosis complicating Pregnancy

The beneficial effect of shock therapy in the treatment of the emotional mental disorders is now so firmly established that any possible contraindications should be critically examined before deciding to withhold treatment. Several conditions which were formerly considered to be a bar to shock treatment have since been found to involve very little risk. A consideration of the patient's age, for example, is not now regarded as important, and patients of 70 to 80 and children of 3 years have been successfully treated with induced convulsions (Hemphill and Walter, 1941).

Provided they are well compensated, cardiovascular disorders are not serious obstacles, even in cases of auricular fibrillation (Good, 1940). In fact, both cardiazol and electric convulsions act as cardiac stimulants, with apparent benefit in cases of circulatory asthenia and low blood pressure. But so far as I am aware, little mention has been made in the literature regarding the use of shock therapy in the mental disorders arising during pregnancy. Although such disorders are relatively uncommon, it is possible that in some quarters the pregnant state is thought to be a contraindication to shock therapy. The result in the following case, however, suggests that in suitable patients the treatment is fully justified and entirely harmless.

The stress of pregnancy may precipitate a mental breakdown in predisposed individuals, usually a state of depression, but as a rule the prognosis is good when mental disorders occur before the fourth month. If they appear later they tend to become increasingly severe until the birth of the child, when they usually disappear. In the late case shock therapy would be worth while if only to enable the child to be born at home instead of in a mental hospital, provided there are no risks to the mother or the child. The first consideration, however, is the possible risk of precipitating a miscarriage. But this appears unlikely when one thinks of the number of epileptic women who have fits during pregnancy with no untoward results. Goldstein *et al.* (1941) state that a review of the literature indicates that epilepsy does not influence pregnancy unfavourably other than by predisposing to injury from falls. (The spasms of epilepsy occur only in voluntary muscles.) Those workers also report the case of a schizophrenic, 3½ months pregnant, who was given 13 cardiazol seizures and insulin shock treatment for 13 days with no harmful effects on the pregnancy. They conclude that convulsive or insulin treatment is justifiable in pregnant women because of the apparent harmlessness of convulsive seizures due to these drugs and to epilepsy.

The following description of a similar case would seem to support the above conclusion.

CASE REPORT

The patient, a married woman aged 23, was admitted to Wadsley Mental Hospital on March 7, 1941, as a voluntary patient suffering from melancholia of pregnancy. There was no history of mental disorder, although she had had a child 3 years previously, but it was stated that her father was of nervous temperament. The second pregnancy, however, had given rise to considerable emotional stress owing to the failure of a herbal abortifacient.

On her admission the pregnancy was 4½ months advanced, and she was in a state of acute agitated melancholia, emotional and weeping, crying out that she was wicked and had done a grievous wrong. She felt that people were talking about her and that something terrible was about to happen to her. She was in good physical health. Her mental state showed no improvement during the first 5 weeks of her stay in hospital, and she was therefore given a course of electric convulsion therapy with a view to effecting her discharge from hospital before the birth of the child. She received 13 convulsive shocks during the ensuing six weeks, and there was a progressive improvement in her mental condition. She was discharged recovered on May 29, 11 weeks after admission, and a subsequent follow-up on March 4, 1942, found her in good mental health and with a healthy 7-months-old baby. The latter was born on Aug. 8, 1941, after a normal and easy confinement.

F. T. THORPE, M.R.C.S., L.R.C.P., D.P.M.
Wadsley Mental Hospital, Sheffield.

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Reviews

HAEMATOLOGY

Diseases of the Blood and Atlas of Hematology. By Roy R. Kracke, M.D. Second edition, thoroughly revised, reset, and enlarged (Pp. 692; illustrated. 90s.) Philadelphia, Montreal, London: J. B. Lippincott Company.

This work, of which a second edition has appeared within the relatively brief space of four years, is a very satisfactory textbook of haematology, which is in no way too advanced for the practitioner or the postgraduate student. It gives an extremely well-balanced presentation of the subject, without over-stressing the rarities, which is the chief pitfall in this field. It is beautifully produced and clearly printed on a thin matt paper instead of the horrible heavy glossy stuff which American publishers so often use, and it weighs only 4 lb. Its only serious fault is the price, which is 90s. This works out at 22s. 6d. a lb. We may compare this with Piney's *Synopsis*, which works out at 16s. a lb., and Janet Vaughan's *Anaemias*, which works out at 6s. a lb. These differences do not seem reasonable in terms of weight of text. On the other hand Kracke provides 54 colour plates for 90s., Janet Vaughan 4 for 12s. 6d., and Piney 4 for 10s. 6d. It is therefore clear that what the buyer is paying for is colour plates. It seems very doubtful whether it is economical to bind expensive colour plates with text which rapidly goes out of date, for the cells of the body remain the same however much our opinions about them may change. Atlases of haematology, like those of ophthalmology, would be better published without text, and one of the post-war desiderata is an international atlas of haematology, with an agreed terminology, which would be kept up to date by a standing committee, and of which a pocket edition would be published for the student. Such a student's atlas, with an international demand numbered in tens of thousands, could probably be produced for a few shillings, and its existence would be an incentive to writers of textbooks of haematology to describe the patient rather than the blood picture. For (*pace* some professors of medicine) the more we know about diseases and the more we can describe them in physiological terms, as we can the diseases of the blood, the less interesting they become to read about. No one can imagine "Kracke," or any other modern textbook of haematology, being treasured like "Trousseau" or "Osler" or read for its own interest a hundred years hence. Perhaps this is inevitable, and the textbooks of the future must be as dull and matter-of-fact as accounts of entropy or integral calculus. But in the meantime some of us feel that the drama of haematology still awaits its inspired author.

SCHIZOPHRENIA

Schizophrenia: The Cinderella of Psychiatry. By Reg. S. Ellery, M.D., F.R.A.C.P. (Pp. 170. 12s. 6d.) Sydney: Australasian Medical Publishing Co., Ltd. 1941.

This is not a textbook but an essay expressing the opinions of the author without reference to the work of others. Some may be put off by the great exuberance of language, for he delights in words and loves to juggle with them. Others may be put off by his undoubted predilection for Marxian principles. Nevertheless, the reader should not be put off; for Dr. Ellery does know all about schizophrenia, and gives a very good description of all aspects of the disease.

It may be that he accepts the promise of the new forms of shock therapy a little too optimistically, but he rightly states that they are the only kinds of treatment which have raised the expectation of remission or recovery above the average of "natural remissions" and have changed the ultimate prognosis of inevitable dementia to one of guarded hope for some sort of adjustment to life, even though it may be at a humble level. He discusses the question of prevention and seems to think that this lies chiefly in social reform, but in his computation of the evils of family life and the delinquencies of the average parent he rather overreaches himself. No doubt all the blows to the security and proper development of the child mentioned in the book may fall upon him at some time or other, though seldom all together; but no one has yet found a substitute for family life; for the child brought up by the State is not so happy or so normal as the one who is reared in the much-maligned home, and, in the Russian experiment, home life and the family have been and are being restored.

This is a book which should be read, for it is stimulating and informative and, above all, not too long.

AN AUSCULTATORY METHOD

The Pleuro-subpleural Zone. Its Clinical and Experimental Investigation and its Practical Importance in Chest Pathology. By J. Skládal. (Pp 104, illustrated 10s. 6d. net.) Cambridge The University Press 1942.

The reviewer recalls meeting this author some years ago when visiting a hospital in Prague. Dr. Skládal was discussing his method of auscultation by sudden expiration, producing gramophone records to support his argument. In spite of language difficulties sufficient impression was made on the reviewer, who promised himself a trial of the method on his return to England, but the intention was not fulfilled. Study of this small volume, with its extravagant claims put forward in no modest manner, has not caused him to regain enthusiasm either for the method itself or for the wide knowledge of "chest pathology" promised by its practice. The following extract from the conclusions will give a clue to his feelings of confusion:

> "In view of the polymorphism of corticopleural lesions, in order to allow for a clinical survey I consider it useful to distinguish between the true corticopleural syndrome, which may be simple or mixed, i.e. with lesions of rarefaction, and the pseudocortical syndrome. This principle of fundamental distinction has two advantages. On the one hand, it establishes a link connecting the cortical manifestations of pulmonary tuberculosis and unspecific pneumopathies; on the other hand, it stresses the importance of corticopleural lesions in daily practice. So the doctrinal elements of the true corticopleural syndrome bring some new and simple principles for use in everyday medicine."

All this is made easy by sudden expiration—"a method of sharp and relatively ample expiration, replacing the usual, noisy, and insufficiently elastic method of coughing, in auscultation and radioscopy of the lungs. So the different sounds are brought out more distinctly, and, radioscopically, various intrathoracic abnormalities may be revealed." But perhaps it is not so easy, after all, for this is what Dr. Skládal states in his introduction:

> "During an examination in 1932 by the method of sudden expiration I noticed an acoustic phenomenon which was so strange that not only my assistants but in subsequent demonstrations even very experienced doctors, did not dare to confirm my findings immediately—findings upon which I particularly insisted—namely, that instead of a single expiratory sound, a double sound is to heard."

There may well be something in what the author claims, but he will need to convey his findings in a clearer form than in this book to convince the average reader.

CHEMISTRY'S KEY POSITION

Out of the Test Tube By Harry N Holmes, Ph D Third edition, revised and expanded. (Pp 305; illustrated $3 00) New York. Emerson Books Inc

In this illuminating book it is shown that most modern achievements in the realm of material prosperity owe their existence to chemistry, and the author also demonstrates the key position occupied by chemistry in their inception. The treatment of the theme is not devoid of technicality, but the technical matter is presented in a form easily to be understood without a knowledge of chemistry. The influence of chemistry is traced through a great variety of different fields. These include anaesthetics and the curative properties of sulphanilamide; the cheapening of motor-car construction due to the unique effect of tungsten in the production of machine tools; the production of synthetic clothing, agricultural crops, industrial and other explosives; the artificially controlled quality of indoor atmospheres; and the transmutation of elements by atomic disintegration.

The book is full of entertaining information—historical, industrial, and statistical—and it includes the most recent scientific developments. A number of the developments here described, some of which are still in the tentative stage, may appear somewhat startling even to readers who are generally well informed; one such is the use of mercury vapour in the place of steam for a working engine producing 12,000 horse power. The author is possessed of a vivid imagination and he has the skill to write with such effect that a lively understanding is imparted to the reader. The book is written in a cheerful and vigorous style and is enlivened at times with a vein of humour. As an American Mr. Holmes has some pertinent remarks to make on the situation of the United States with reference to strategic raw materials and world power. All is done in very clear language, and the book may be recommended to students of chemistry as well as to the reading public.

Notes on Books

An American eye specialist, Dr. G. GRIFFIN LEWIS, has prepared a book which he names *The Ophthalmic Formulary* (Springfield, Illinois: Charles C. Thomas; $3.50). It is in effect a catalogue of numerous prescriptions for all sorts of eye diseases which are stated to be the favourite prescriptions of prominent oculists from all parts of the world. This is followed by a list of the medicines used in these prescriptions, with a short statement of the utility of each drug. No fewer than 27 prescriptions are set out for the treatment of a very ordinary surface disturbance, especially among children, namely blepharitis, but several are only variations of the same main line of treatment. Naturally one turned to the disease for which effective treatment is most imperative, ophthalmia neonatorum. For this disease only two prescriptions are given, and there is not a word on the new and most effective treatment by the use of sulphonamides. Since the introduction of these drugs the treatment of ophthalmia neonatorum has been completely revolutionized; they have rendered the local treatment of the disease almost unnecessary. It is the most wonderful advance in eye work known to many generations. The omission of any reference to this method of treatment of ophthalmia neonatorum in Dr. Griffin Lewis's book suggests that an early second edition is imperative.

The fourth volume of the *Proceedings of the Medico-Legal Society of Victoria* (Melbourne: Brown, Prior, Anderson) contains nine addresses and the reports of the discussions on them. These maintain the high standard which the society has reached in the past. The paper on medico-legal aspects of gas warfare surveys the administrative measures taken by the Commonwealth and State Governments; the medical aspects largely concern administration, and the legal aspects emphasize the need for statutory amendments. The setting-up is proposed of a special court to hear appeals by property owners aggrieved at the segregation of their premises after a gas attack. Sir Frederick Eggleston criticizes much of the present judicial structure, and particularly the methods of bringing expert witnesses before the court and their examination. The evergreen subject of quackery is illustrated by Dr. Stewart Cowen with a wealth of examples from personal experience, and the discussion is unusually rich. Dr. Anita Mühl deals with suggestibility in witnesses, Mr. P. D. Phillips with some aspects of workers' compensation legislation, Dr. Guy Springthorpe with the treatment of mental deficiency in Victoria, Mr. R. R. Sholl with coroners' inquests, Mr. R. N. Vroland with the future of the two professions, and Prof. G. A. Paton with the development of forensic medicine.

Into a booklet of 80 pages the modest and anonymous author of *Reminiscences and Reflections of a Medico on Land and Sea* (Nottingham: J. Clough and Son; 3s. 6d.) has compressed his life story. Son of a Congregational minister, he obtained his education largely through his own exertions, and became more than ordinarily qualified—M.D. (gold medallist), M.S., F.R.C.S.Ed., D.P.H., M.R.C.S. His surgical life was mostly as assistant to Mayo Robson, but he left that to take up more remunerative work in general practice. Later he became interested in public health problems, and having secured the D.P.H. of Oxford was ere long appointed M.O.H. of a county. He spent 25 years in that sphere of work, and resigned at the age of 60. In order to satisfy a *Wanderlust* he then went to sea as ship surgeon, and the second half of his reminiscences concerns his voyages round the world. In a most concise way he gives vignettes of the numerous places he visited, and the reviewer, from a similar experience, can add that "MEDICO'S" descriptions are wonderfully true. The only fault about this publication is its brevity. Now that the author has found his ability to write, one can hope that he will do so at greater length, for the story of a successful professional career must always be interesting and useful to medical men, if only from the point of view of "Go thou and do likewise."

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SAVING MEDICAL MAN-POWER

When war broke out a large number of medical men who were liable for service in the Territorial or reserve Forces were immediately called-up. The consequent adjustments in civilian practice were made without great difficulty, and a steady flow of practitioners to meet the further demands of the Fighting Services was maintained during the winter of 1939-40. After a short lull, when the Army was re-forming on its retirement from Dunkirk, expansion became so fast that the conflicting requirements of the Services, civil defence, and ordinary civilian practice became hard to balance. The Central Medical War Committee had the duty of supplying practitioners but not of determining how many were needed for each specific purpose. In fact, by letting the supply fall short of demand it did informally allocate, and the branches of the Services which were thus partly unserved, appreciating the difficulties, were at first not too insistent in their protests. The position was, however, unsatisfactory and potentially dangerous. The Central Medical War Committee therefore urged the Government to find some method of satisfying themselves and the profession that complaints of Service and institutional over-staffing were not justified, and that each Fighting Service had regard to the needs of the others and of the civilian population in determining its own medical establishment. The Robinson Committee was accordingly set up at the end of 1940 to make a rapid survey of the problem, and reported early in January, 1941. In March, 1941, the Ministry of Health issued a memorandum[1] urging upon local authorities and voluntary hospitals the need for economy in the manning of their medical staffs, and indicating that the Service Departments were making a similar review. It soon became apparent that the latter assurance was not enough, and, again at the instance of the Central Medical War Committee, the Government appointed a standing committee, known as the Medical Personnel (Priority) Committee, to secure the utmost economy in the employment of medical personnel in His Majesty's Forces and all civil establishments. The First and Second Interim Reports of this Committee have now been published (see p. 287), being an account of its work up to February, 1942.

The reports indicate that the Committee first addressed itself to the problem created by the very heavy demands of the Fighting Services. Their co-operation was readily given, and the situation was greatly eased by a reduction in these demands for the last half of 1941 by 50% in the case of the Navy, 40% for the Army, and 37% for the Air Force. If it were permissible to give the actual figures they would be found impressive. In order to secure further economies in static home units the establishment of Regional Priority Committees was recommended, and special stress was placed on the desirability of co-operative arrangements between A.A. and Balloon Commands. The Committee then turned its attention to the staffing of civilian hospitals. Here it found itself in some difficulty from lack of accurate information, but the Ministry of Health and the Department of Health for Scotland undertook the somewhat formidable task of gathering and collating it. As a result of a study of the data so obtained it was recommended that there should be increased transferability of staff as between one hospital and another and that the tenure of A posts by men should be uniformly restricted to six months. Mental hospitals were asked to supply a hundred men for the Services by reduction of their establishments. In order to maintain the flow of young practitioners from hospitals to the Services and prevent the replacement of the A men, whose calling up had been accelerated, by more senior residents, a cut was recommended in hospital establishments of A, B2, and B1 posts, as filled at August 1, 1941, amounting to 15% in London and 10% in other Regions. On the other hand, the importance of expediting the absorption of newly qualified men into A posts was stressed. Attention was also drawn to the need for scrutiny of pathological, research, and public health establishments, with a view to the release of young men. Hospital authorities are aware that further measures have been taken to speed up the recruitment of young practitioners since these reports were prepared.

There is evidence that the Ministry of Health and the Department of Health for Scotland have addressed themselves energetically to the difficult and uncongenial tasks imposed on them by the acceptance of these recommendations. If these steps had not been taken it is apparent that the situation in general and special practice would have been even more difficult than it has become in recent months. Having examined sources of supply so thoroughly, the Medical Personnel (Priority) Committee might now profitably revert to the scrutiny of Service establishments in order to ensure that the economies they exercised a year ago are being maintained. The profession is indebted to this Committee, consisting mainly of medical men who have devoted much time and thought to the problems of man-power, and very specially to Dr. G. C. Anderson, without whose constant attendance as Secretary of the Central Medical War Committee the Committee might often have been at a loss for accurate information.

THE PRESENT POSITION OF HYPNOSIS

Hypnosis has had a chequered history. At first it was viewed with suspicion, partly because of its mysterious nature, partly because of the dubious personality of one at least of its pioneers. However, in the hands of Bernheim in France, and in this country of practitioners like Bramwell, it became a highly respectable and fairly popular method of treatment. It is surprising to read in Bramwell's book that hypnosis was used with apparent success in such conditions as phobias, which are nowadays supposed to depend on complexes of a kind which pure suggestion seems ill qualified to reach and to modify. Fluctuations of this sort in the popularity of a method of treatment are not unfamiliar in medicine as a whole. They have usually characterized a remedy which depended for its effect entirely on suggestion, this effect having something unsatisfactory about it, particularly as regards its permanence. There are other reasons why such remedies fade into the background and disappear. Suggestion in any form to be successful depends above all else on the therapist himself, and the efficacy of the method is proportionate to the vehemence of his own belief in it. It is more difficult for the modern doctor to have a profound belief in hypnosis than it was for his predecessor. With the progress of science hypnosis has come to look less and less respectable, and more and more like a sort of confidence trick.

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[1] *British Medical Journal Supplement*, 1941, 1, 44.

It is also possible that, immured and even protected behind his test-tubes, the physician's own personality has become less and less a permanent feature in treatment, and has become incapable of operating in any powerfully suggestive fashion.

The use of hypnosis has been handicapped also by the fact that it has been imperfectly understood. A great deal of what passes for hypnosis is not hypnosis at all; some patients are merely drowsy, some have actually fallen into a true sleep on the hypnotist's couch, and others, to please the doctor, have politely agreed that they were hypnotized. Hypnosis, properly so called, is unmistakable. Its outstanding characteristics are the patient's apparent abandonment of jurisdiction over his own will and his complete passivity. The scope of consciousness appears also to be restricted, allowing hallucinatory developments to occur that are independent of the environment. How often such a state of extreme passivity, suggestibility, and limitation of consciousness figures in a session in which hypnosis has been claimed has never been submitted to statistical examination. There have been other disadvantages in the method besides uncertainty as to the nature of hypnosis and its dependence on the hypnotist's own belief in his technique. At one time, in the French courts, post-hypnotic suggestion was urged as a defence in cases of crime. People under the influence of hypnotic suggestion, it was supposed, might do anything. Then a famous experiment recorded by Janet seemed to " debunk " this claim for ever. Recently, however, a hypnotized subject was induced to throw acid into the face of another person, who was, however, in reality protected by a screen of invisible glass. The vehicle of this experiment showed all the signs of horror and repugnance as he threw the scarifying fluid. The dramatic capacity of the hypnotized subject and the likelihood that his total appreciation, conscious and unconscious, of the situation was as great as that of the operator's, makes even this modern experiment difficult to accept at its face value.

For all these reasons it is good that an attempt should have been made to investigate what is essentially a psychological process by what is the most refined method of clinical investigation of mental states that exists. Ferenczi emphasized that in hypnosis and suggestion the patient transferred to the hypnotist his infantile loves and hates. Sandor Lorand[1] recently had an opportunity of analysing a young woman who had been hypnotized by someone else, and his observations in this case seem to confirm Ferenczi's view. It became clear that the patient had been much attached to the physician, and that she had entertained unconsciously a desire for seduction. Lorand points out that the hypnotic treatment was mishandled and might have been used to satisfactory effect. The fundamental basis of the relationship, however, of subject to operator under hypnosis, according to this psycho-analytic investigation, is the reactivation of feelings for the parents, dating of course from early childhood.

The subject is of some importance to-day in view of the findings of the last war—more than in this one so far—that painful experiences of an adult sort may be repressed and give rise to symptoms, the latter disappearing when the memory is recovered under the influence of hypnosis. It is more than a little doubtful whether hypnosis in this sense has much in common with the sort analysed by Lorand. Certainly the therapeutic aim is much more limited, and whether the subject's attitude to the operator involves a reactivation of early wishes in such circumstances is a matter requiring elucidation. It happens that so far this war does not seem to have produced the same crop of amnesias from psychological trauma as the last. Moreover, there has appeared in the method of injection of an intravenous barbiturate a means of recovering such memories with more certainty and in a shorter time than by ordinary hypnosis. At the same time there is a temptation to rush to the barbiturate method when hypnosis could quite well succeed. It may be, however, that there is something to be said for the view that it is a better therapy which does not involve the extreme emotional dependence that hypnosis, even for this limited purpose, probably does. In this connexion we may recall Freud's remarks in *An Autobiographical Study*: " Increasing experience had also given rise to two grave doubts in my mind as to the use of hypnotism even as a means of catharsis . . . even the most brilliant results were liable to be suddenly wiped away if any personal relation with the patient became disturbed . . . ; the personal emotional relation between doctor and patient was, after all, stronger than the whole cathartic process, and it was precisely that factor which escaped every effort at control." Treatment by means of injection is more readily accepted and understood by the modern patient than hypnosis is likely to be. It has been used also with some success as an adjunct to some analytic types of psychological treatment, and even in psychotic syndromes, in which hypnosis is usually ineffective.

The correct practice seems to consist in a judicious choice of psychological methods of treatment, including hypnosis. Increasing knowledge need not destroy all belief in the usefulness of the latter, but should rather refine its application and strengthen reliance on it in its proper scope of application. Lorand's two cases are an example of its discreet employment in the light of knowledge not available to the pioneers.

SEASONAL INFLUENCES

Dr. A. B. Fitt, who holds the chair of education at Auckland University College, has for many years been interested in the problem of seasonal variations in bodily and mental processes. He has made many observations himself as well as a comprehensive study of the literature, and his conclusions are presented in an excellent monograph.[1] An impressive body of evidence points clearly to a fundamental rhythm. During the autumn–winter period, say, September–January in the northern hemisphere, weight increase is at a maximum and height increase at a minimum, this being reversed during the spring–summer period. The most important observations on mental growth and function are those of Prof. Fitt himself. He finds a higher level during the autumn–winter period, the climax occurring about mid-winter. Thereafter there is a rapid fall in the early spring, followed by a recovery about April and May; the level then attained, however, is not as high as during the winter. It is also noted that muscular capacity, as measured by the dynamometer, is maximal during spring–summer, as also are such indexes of instability as suicide or the onset of mental illness.

An even more interesting series of observations deals with differences associated with period of conception. There can hardly be any doubt as to the reality of this variation. Those conceived during the period autumn–winter are on the average slightly taller, heavier, stronger in hand-grip, and more intelligent than their fellows, as well as less likely to die during the first month of neonatal life. Once again the maximum occurs towards the end of the favourable period and the minimum early in the spring–summer period. A rough estimate of the order of magnitude of the greatest differences when adult life is attained would be half an inch in height and one and a half points of I.Q. Prof. Fitt will make orthodox biologists shudder by calling this an effect on "inheritance" and by his light-hearted assumption that it is determined by the total organic condition of both parents at the time of the conception of the child, and is therefore due presumably to something passed on to the fertilized ovum via the gametes. It is much more probable that the differences are related to the state of the mother during pregnancy. In view of the correspondences found it seems likely, however, that the important period is the earliest part of pregnancy. After reviewing various lines of evidence Prof. Fitt rejects hypotheses which seek to relate these differences directly to external factors. To give one reason alone, the periodicity is too universal and too constant to be explained in terms of temperature or diet. He puts forward the suggestion of an endocrine rhythm to which the pituitary makes the most important contribution. This rhythm is doubtless affected, however, by external factors, of which solar light is likely to be the most important. Interesting comparisons are made between some human observations and those on hibernating animals. The general picture is of an autumn-winter period of minor stress with weight increase at its maximum, as is also mental activity and emotional stability. This is succeeded by the period of major stress. Increase in height is now maximal, and the generally unfavourable character of the period is reflected by slight, though real, differences in many indices. It seems likely, furthermore, that the most unfavourable period of all is the pale reflection in the human subject of that critical phase when the hibernating animal is adjusting itself once more after its comfortable winter sleep to the strain and perils of an active life.

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[1] *J. nerv. ment. Dis.*, 1941, 94, 64.

[1] *Seasonal Influence on Growth, Function and Inheritance*, by A. B. Fitt. New Zealand Council for Educational Research, 1941. 10s. 6d.)

VITAMIN B_1 DEFICIENCY AND THE NERVOUS SYSTEM

One of the difficulties of applying experimental results to clinical medicine is the great variation in response shown by the various types of animal to the same procedure. This apparent lack of uniformity is often attributed to individual and species differences. In pigeons, for example, vitamin B_1 deficiency produces head retraction, which rarely if ever occurs in the human subject. A recent series of papers by Swank and his colleagues[1 2 3] from the Harvard school goes far to elucidate some of the problems of symptomatology of B_1 deficiency in pigeons, with special reference to pathogenesis and morbid histology. Several points of clinical interest are brought out in this study. There appears to be little doubt that both clinical and histological aberrations from normality vary according to the speed at which the deficiency is brought about, which in turn is largely dependent on the ratio between B_1 intake and caloric value of the diet. With very acute onset there was increased tendency to the appearance of opisthotonos, whereas when the effects of B_1 deficiency were minimized by a lessened carbohydrate intake ataxia and leg weakness preceded the head retraction, which often did not occur. This is of importance in the use of opisthotonos in pigeons for assay purposes, indicating the necessity for maintaining a standard caloric intake before conclusions are drawn as to the amount of vitamin B_1 ingested. It is obvious that the different clinical syndromes are primarily the result of different rates of development of the deficiency. Therapeutic experiments also throw light on the pathological processes at work. Opisthotonos yields rapidly to the administration of vitamin B_1, indicating that the symptom is the result of metabolic upset which has not yet caused structural damage. Leg weakness, on the other hand, requires days or even weeks before B_1 therapy produces recovery, suggesting that there is some tissue degeneration. These speculations are confirmed by the authors' studies of the histological changes. With opisthotonos there is generally no structural change in the nerve fibres of either the central or peripheral nervous system, whereas with leg weakness there is degeneration of the peripheral nerve fibres, the number involved being roughly proportional to the severity of the clinical condition. A further connexion between the clinical picture and histology is seen in the finding that clinical improvement is closely correlated with the regeneration of myelinated nerve fibres. Degeneration begins first in the axis cylinder at the distal end of the fibre, and with long-continued B_1 deficiency progresses centrally, followed by changes in the myelin sheath. The cell body very soon shows signs of chromatolysis, which persists even during recovery of the neurone, suggesting that the changes in the cell are manifestations of the neurone's effort to regenerate its axis cylinder. Furthermore, it is obvious that even with complete withdrawal of the vitamin sufficient B_1 is released from the tissues to stimulate, or at least enable, the neurone to make attempts at regeneration. Indeed, with complete starvation the vitamin B_1 derived from the tissues is sufficient to reduce considerably metabolic abnormalities and structural changes in nerve tissue. It would be interesting to know whether there is any correlation between the dosage of vitamin B_1 and the rate of histological regeneration and clinical improvement, or whether above a certain not very high optimum no further benefit is obtained.

The experimental results recorded in these papers throw considerable light on the different clinical pictures of B_1 hypovitaminosis. There is little doubt that the rate at which B_1 deficiency is produced is an important factor in this connexion. Unless there is complete inanition the intake of aneurin by man rarely reaches such low levels as can be obtained experimentally, so that the common syndrome approximates that of the chronic type of deficiency. There is still left for exploration the part played by factors other than speed in the pathogenesis of such conditions as Wernicke's encephalopathy, which Campbell and Ritchie Russell[4] suggest is largely the result of defective supply of vitamin B_1.

PREMARITAL EXAMINATION LAWS IN THE U.S.A.

Thirty States in the U.S.A. have adopted some form of compulsory medical examination before the issue of a marriage licence. The requirements vary in the different States. Seventeen require examination only for syphilis, and the remainder include in their demands freedom from other communicable venereal diseases. North Carolina and Rhode Island demand absence of tuberculosis, and, in North Carolina and Oregon, epilepsy, mental defectiveness, drug addiction, and chronic alcoholism are regarded as being deterrents to marriage. The method by which these examinations are made is different: some States permit any licensed physician to perform them, and others demand that they be carried out in the State in which the marriage licence is issued. The lack of reciprocity in the different

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[1] *J. exp. Med.*, 1940, **71**, 683.

[2] *J. Nutrit.*, 1941, **22**, 77.

[3] *Arch. Neurol. Psychiat.*, Chicago, 1942, **47**, 97.

[4] *Quart. J. Med.*, 1941, **10**, 41. See also *British Medical Journal*, 1941, **2**, 249.

States naturally leads to difficulties, more especially at a time when America's young male population is being scattered over the country. It is necessary for a male applicant to arrive sufficiently far in advance of the wedding ceremony to allow the performance of the required laboratory tests. A haemolysed specimen, a clerical error, an unexpected positive, or some other unanticipated obstacle may have embarrassing consequences. But in certain cases, and more especially in the case of a pregnancy, a licence may be issued even although the requirements have not been fulfilled.

In commenting on the action of the laws dealing with premarital examinations, Drs. G. F. Forster and H. J. Shaughnessy[1] point out that the lack of reciprocity is because they have originated in different States and have been formed by the forces of opposition and support existing there. The differences would have been eliminated had there been some central authority to co-ordinate them. But, whilst the fact that each State has been responsible for its own legislation has brought certain disadvantages, it has also brought advantages. Errors which were made in the early experiments have been avoided in some of the later ones, and in time it should be possible to establish some form of reciprocity which will make for smoother running and impose less hardship on those who are applying for a licence. This American experience should be of value to this country if it should ever decide to make the issue of a marriage licence depend upon medical evidence of a clean bill of health for the contracting parties. Were we living in Erewhon a certificate of psychological fitness would also be a stipulation.

TUBERCULOSIS IN OLD PEOPLE

Widely divergent views on prognosis in tuberculosis of old people have been expressed as the result of clinical studies alone (Brooks and Lander,[2] Snell,[3] Rest[4]). A. Arnstein[5] throws light on the pathological aspect of the condition. His study is based on 135 necropsies of people over 60 at a large hospital in Vienna between 1929 and 1934. "Anthracosis" of the mediastinal and bronchial lymph glands is known to be common in elderly people who have lived all their life in the atmosphere of industrial districts, but it is believed to be of no practical importance. Arnstein shows that, though no causal connexion with dusty trades can be found in these people, the changes in the glands are often anthraco-silicotic or silico-tuberculous. In his cases the lungs themselves were free from gross silicotic changes; the degree of pneumoconiosis in the glands corresponded with that found in the earliest stage of industrial silicosis, when the root glands are mainly affected. The very low dust content of the air breathed by the ordinary inhabitant even of a smoky district would account for the length of time necessary for the development of even slight silicotic changes and for their appearance only at an advanced age. Fibrous periglandular adhesions between the glands and neighbouring structures may occur in the course of the pneumoconiotic inflammation, but more often they have already been present as a sequel to old tuberculous foci. Such foci often contain viable tubercle bacilli, and the superadded "silicosis" may apparently cause reactivation of the lesions either because silica has a definite attraction for calcium (Amor[6]), thus causing decalcification of the foci, or, as demonstrated by Arnstein, because phagocytes densely packed with carbon particles may cause destruction of hyaline and even cartilaginous tissue. The reactivated tuberculous lesions will in favourable cases soon heal again, but in others caseation spreads along the mediastinal lymph glands to reach the venous angle, where bacilli may enter the blood and thus cause haematogenous lesions; or the morbid process may invade and damage neighbouring structures. The latter results may occur with glands that are pneumoconic only. Indeed, the author stresses that the differential diagnosis between pneumoconio-tuberculosis and pneumoconiosis, as well as between the former and simple tuberculosis of the lymph glands, is often very difficult, even on histological examination. Among Arnstein's cases, in 51 instances lymph glands erupted into the bronchial tree. The perforation was followed by chronic pneumonia in 2 cases, by lung abscess or gangrene in 5, by caseating lobar or lobular pneumonia in 24, and by no lung damage in 20 cases. In 34 cases diverticula of the oesophagus were produced, 13 of which ruptured into the bronchial tree. Perineuritic fibrosis may cause nerve paralysis: the left recurrent laryngeal nerve was found damaged in 47 cases, the right recurrent in 2, both these nerves in 4, other branches of the vagus in 7, the right phrenic in 4, and the left in 6 cases. Rupture into a blood vessel caused a fatal haemorrhage in 15 patients.

Analysis of Arnstein's material shows an increasing incidence of gland lesions with advancing age, and a marked preponderance in women. An explanation offered for the latter fact is that more women than men with healed tuberculosis reach old age. Arnstein points out that the conclusions drawn from his observations might not apply in full to other places, but here he has at all events found good examples of the conditions in the Students' Museum of U.C.H. Medical School and in the Wellcome Museum, and he has already seen 2 or 3 cases in hospital. He reports fully one case from the Northern Hospital, Winchmore Hill, of a woman of 55 who died from caseous tuberculous pneumonia caused by eruption of a tuberculous mediastinal gland into a bronchus. This instructive communication should lead to the study of a sufficiently large post-mortem material on similar lines here.

TREATMENT OF MALARIA IN BRITAIN

The occurrence of cases of malaria among Service personnel in this country has prompted the Ministry of Health and the Department of Health for Scotland to invite the co-operation of retired medical officers of the Colonial and Fighting Services in the diagnosis and treatment of such cases. Many civilian hospitals and practitioners suddenly faced with what is, in this country, a rare disease may be glad to accept the help of someone who has had practical experience of the disease in the Tropics. It is anticipated that only very infrequently would such help be called for, but on these occasions it might be urgently needed. The Ministry of Health and the Department of Health for Scotland would be grateful if any officer who can offer his services in this connexion would forward his name and home address to the Director of Establishments, Ministry of Health, Caxton House, Tothill Street, S.W.1.

Sir Henry H. Dale, M.D., P.R.S., who was recently appointed a member of the Governing Body of the Lister Institute of Preventive Medicine, has been elected by the Board as its Chairman.

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[1] *J Amer med. Ass.*, 1942, 118, 790.
[2] *Brompton Hosp Rep.*, 1937, 6, 138.
[3] *Tubercle*, 1941, 22, 111.
[4] *Amer. Rev. Tuberc.*, 1942, 45, 280.
[5] *Tubercle*, 1941, 22, 281.
[6] *An X-ray Atlas of Silicosis*, 1941, Bristol.

ECONOMY OF MEDICAL MAN-POWER

THE SHAKESPEARE COMMITTEE'S REPORTS

The Ministry of Health publishes to-day through H.M. Stationery Office the first and second interim reports of the Medical Personnel (Priority) Committee, commonly known as the Shakespeare Committee, and these are reproduced below substantially in full. The membership of the Committee has been as follows:

Sir Geoffrey Shakespeare, Bt., M.P. (chairman), Sir Girling Ball, Major-General R. J. Blackham, M.D., Dr. J. Crighton Bramwell, Dr. J. A. Brown, Dr. W. M. Knox, Sir Hugh Lett, Bt., Surgeon Vice-Admiral Sir Percival Nicholls, Prof. R. M. F. Picken, M.B., Major-General R. C. Priest, M.D., Air Marshal Sir Victor Richardson, M.B., Prof. Sydney Smith, M.D., Mr. H. S. Souttar, Sir Alfred Webb-Johnson, and Sir Charles Wilson, P.R.C.P. Dr. G. C. Anderson attends the committee as Secretary of the Central Medical War Committee. Sir Hugh Lett was a member in virtue of his office as President of the Royal College of Surgeons; his place was taken by his successor in the Presidency, Sir Alfred Webb-Johnson, in July, 1941, and the vacancy thus created was filled by the appointment of Sir Girling Ball. Major-General Blackham replaced Major-General Priest in October, 1941.

The Committee's terms of reference were: "To investigate in the light of the recommendations made in January, 1941, by the Committee of Inquiry on Medical Personnel [the Robinson Committee] what further steps can usefully be taken to secure the utmost economy in the employment of medical personnel in H.M. Forces, the Civil Defence Services, the Emergency Hospital Scheme, and all other medical services, including general practice; and having regard to any recommendations made as a result of such investigation to report from time to time what should be the allocation between the above-mentioned services of the available medical personnel."

The first interim report, addressed to the Minister of Health, is dated August 6, 1941, and the second interim report February 11, 1942.

FIRST INTERIM REPORT

We have now held 25 sittings since July 3, 1941, and members have acquainted themselves by personal visits to selected establishments with the general arrangements designed to meet Service and civilian medical needs of the population in those areas. We intend at a later stage to present to you further reports. In view, however, of the demands made by the Services for the next six months, we wish to make a number of urgent recommendations, the need for which we have already established.

We have investigated the demands of the three Services for medical personnel to satisfy their requirements for the six months ending on December 31, 1940. Since the "Robinson Report" each Service has reviewed its establishments and requirements and effected economies. Considerable economies have been secured during the progress of our inquiry, and the view of the fighting Services is that their demands have been reduced to a minimum if the efficiency of medical services is to be maintained and further expansion programmes are to be met.

We have further inquired into civil establishments making any appreciable call on medical man-power, particularly the E.M.S. and other hospital and health services. We are not in a position at present to express an opinion on many of the medical personnel requirements of these services.

With the information at present available to us we are of the opinion that the withdrawal of the proposed further number of medical practitioners from civil practice will impose a severe drain on existing resources. In view of the shortage of doctors it is imperative to review continuously their distribution, so that further economies can be effected. Some of these can only be secured by the closest co-operation between the Services mutually with one another and between them and the civil authorities. We have already received much evidence of co-operation between the Services, both between the Directors-General in London and between senior medical officers of the three Services throughout the country. Nevertheless, the degree varies from Region to Region, and much more might be accomplished if the good will already existing expressed itself through a recognized machinery. In few areas has a concerted effort been made to ensure the most economical use of the available medical man-power, whether Service or civilian.

In the Civil Defence Regions the health and hospital services are already co-ordinated under the direction of the senior administrative officers and regional medical and hospital officers of the Ministry of Health. Army and R.A.F. Commands are based respectively on geographical and functional considerations. We are therefore of the opinion that the Civil Defence Regional areas provide the best basis for reviewing the requirements of those types of medical services which can be regarded as more or less static.

Recommendations

We therefore recommend that a committee should be set up in each Region composed of senior medical officers representing the various commands of the fighting Services in that Region and the regional medical and hospital officers of the Ministry of Health and such other officers as may be necessary. The liaison medical officer for the area, appointed by the Central Medical War Committee, should also be a member of the committee. The chairman should be a neutral person, preferably the Regional Commissioner or his deputy. This committee should meet regularly and should be charged with the duty of ensuring the maximum co-operation to meet civil and Service needs in the area. It should be directed to make a review immediately and should make further reviews from time to time in order to effect economies in medical man-power within the Region and the elimination of under-employment and overlapping of medical personnel.

The reports of the Regional Committees should be sent to the Minister of Health and the Secretary of State for Scotland, and copies should be sent by them to the Departments concerned and to the Medical Personnel (Priority) Committee, to enable that committee after receiving the comments of the Departments to make appropriate recommendations. If agreement can be reached within the Regions effect should immediately be given to the agreed proposals with the consent of the Departments concerned, and such agreements should be recorded in the reports.

In the view of your committee this review and the action taken on it should lead to an economy in medical personnel.

In the meantime we recommend that the Minister of Health and the Secretary of State for Scotland request the Central Medical War Committee to continue to provide medical officers to the Services at the present rate. At a later stage we shall be able to assess more precisely the number required. To facilitate the work of the C.M.W.C. in obtaining the necessary numbers, part of which will have to come from hospital staffs, the Ministry of Health and the Department of Health for Scotland should be asked to obtain complete particulars as to the bed accommodation and staffing of all civilian hospitals in Great Britain.

In certain areas it will be extremely difficult, on the basis of the present age group, for compulsory recruitment to obtain for the Services all those male practitioners who can be spared from the civil medical services of the area. This is due to the uneven geographical distribution of the age groups throughout the country and to a relative shortage in certain areas of male practitioners under 41. In addition, there is a large number of practitioners of military age engaged in the hospital services whose removal would be impracticable.

We have considered as a solution the possibility of the exercise of compulsory powers to transfer general practitioners into areas where there is more urgent need of their services. There are difficulties which could be overcome in transferring a practitioner from one salaried post to another, but there are insuperable difficulties involved in transferring practitioners from one practice to another on account of the personal nature of the services rendered and the difficult financial problems involved. We therefore suggest that the Ministry of Labour should consider the advisability of raising the age limit for liability for service for the medical profession by five years over that for the remainder of the population.

The satisfaction of the Service requirements must be made in part by further depleting existing hospital staffs. To enable this drain on the staffs to be met with the minimum loss of efficiency it is essential to have power to move the medical staff employed on a whole-time basis (in A, B2, and B1 posts) from one hospital to another with greater freedom than at present exists. For this purpose we recommend that the present powers of compulsion under Defence (General) Regulation 58A should be used by the Minister of Labour, through the appropriate National Service officers, so as to secure that such medical personnel in whole-time employment can be transferred as desired to meet not only the threat of invasion but any other period of stress. Greater mobility will ensure economy in personnel.

Finally, we recommend that the Medical Departments of the Army and Air Force should take immediate steps to see how far economies can be effected by pooling their medical officers of the A.A. Commands and Balloon Barrage and employing them on an area basis.

SECOND INTERIM REPORT

Since our first meeting on July 3, 1941, we have held 49 sessions, and have carefully considered the whole problem of the medical needs of the country in relation to the civilian population and the fighting Services. We have inquired into the distribution of medical personnel between the fighting Services, civilian practice, the public health services, and hospitals throughout the country. We have further examined the demands made by the three fighting Services and the Indian Medical Service, and have considered the provision of medical personnel to meet all the needs of the civilian population. We have investigated existing sources of supply for the Services and, where they have proved inadequate, have made recommendations to supplement them. We have heard evidence given by medical representatives from the armed Forces and civilian services, and a number of witnesses whom the committee considered would be of assistance in their deliberations.

Since submitting our First Interim Report we have periodically framed our recommendations in the form of resolutions on which action had been taken by yourself, by the Secretary of State for Scotland, and by your Departments. A summary of these resolutions is attached in the Appendix.

We deem it advisable to summarize as briefly as possible the conclusions we have reached on problems connected with the supply and distribution of available medical personnel to meet all requirements. The Central Medical War Committee carried out on Jan. 24, 1942, a count by age groups of practitioners on the *Medical Register*, showing the distribution of these practitioners and the numbers recruited to the Services.

Requirements and Economies

When we commenced work in July, 1941, we first investigated the requirements of the fighting Services for the last six months of the year and examined the demands submitted by them to the Central Medical War Committee for this period. In August each Service was requested to review its establishments and requirements and to submit a revised estimate, taking into consideration the economies effected as a result of recommendations put to them by us. These revised estimates were discussed with the Service representatives, and agreement was reached upon minimum requirements after considerable economies had been effected. The C.M.W.C supplied in the three months July, August, and September to the Services a number of medical men which in October left a deficit to meet the needs of the three fighting Services for the last three months of the year of 1941.

We examined in detail reports of members of the committee who visited certain Service establishments and discussed this with the Service Departments. We also impressed upon these Departments the serious shortage of medical practitioners and the importance of adequate medical supervision for the civilian population. The Services appreciated the position. They again reconsidered their requirements and effected further economies. The R.A.F. accepted cuts amounting to about 37% on its original demands for the last six months of the year; the Army so revised their estimates that they reduced their original demands to nearly 40%; while the Navy accepted a cut of 50% on their requirements for the last three months of the year. We carefully considered these revised requirements and made recommendations regarding the number of doctors to be supplied for the last three months of 1941 to each of the fighting Services. Practically all of this number were supplied to the Services by the C.M.W.C. by the end of the year 1941; the deficit was made up in January, 1942.

Considerable economies have been effected in medical personnel by the three Services. As a result of co-operation between the War Office and the Air Ministry, which we recommended in our First Interim Report with a view to securing the pooling of medical officer services in the A.A. and Balloon Commands, there has been substantial economy in the Balloon Command. We feel, however, that still further effort should be made in this direction

Indian Medical Services

We have heard evidence from representatives of the India Office regarding the supply of doctors for the I M S., and we asked the Central Medical War Committee to make every endeavour to supply a specified number of medical officers a month to meet the demands of this Service. Although it appeared that compulsory powers could not be exerted to compel doctors in this country to accept service in the I M S., we were informed that the Government of India had introduced certain liberal concessions regarding antedate, etc., for candidates in India, and it was hoped that the application of these concessions to candidates in this country would result in a satisfactory supply to meet India's needs. We realized, however, that if volunteers for the I.M S. were not forthcoming it would be necessary to make up deficiencies in the supply of European doctors for the Army in India by the dispatch of an additional number of R.A M.C. officers.

We were informed that difficulties had arisen in regard to the service of R.A M C officers with formations of the Army in India because of the reduction of such officers, when serving outside India, to British rates of pay. We were of opinion that this policy stood in the way of the appointment of R.A.M C officers to posts normally filled by I M S officers, but we understand that the policy has now been changed and that the War Office and India Office have reached agreement on the conditions under which the Army in India may draw to a larger extent than before on the R.A.M.C. for its supply of medical officers.

Emergency Medical Service

We have given consideration to the organization of the E.M.S. This service was designed primarily for ensuring prompt medical treatment for civilian air-raid casualties, but it was intended that it should be available also for the treatment of Service casualties, and also for ordinary sick civilians transferred from central institutions to safe areas. Its functions have since been extended to the treatment of evacuees, and to other categories of patients. Its main duty during quiet times has been the treatment of Service sick, Service accidents, and the ordinary civilian sick patients.

The primary function for which the service was set up still determined the nature of its organization, but we consider that the extent and basic principles of this organization should now be reviewed. The instructions issued to the Minister of Health and the Secretary of State for Scotland were to set up an organization capable of dealing with casualties resulting from intensive air raids on a large number of populous districts simultaneously. Efficient units (hospitals, first-aid posts, etc) had, therefore, to be set up throughout the country, and only to a limited extent was any attempt made to render the organization mobile. Mobile teams were formed, but little use was made of them. The difficulties of making a new appreciation to deal with so many unknown factors are obvious, and in the meantime you and the Secretary of State for Scotland have accepted our recommendation of a percentage cut on hospital staffs. We understand that these cuts are now being applied and relate to medical staffs enrolled in the E.M S as well as to those directly employed by the hospital authorities.

It should be possible, without running unjustifiable risks, to reduce many of the establishments, and even to close a number down altogether. In our First Interim Report we expressed the opinion that, to enable hospital staffs to be reduced with the minimum loss of efficiency, it was essential to have power to move those of the staffs employed on a whole-time basis (in A, B2, and B1 posts) from one hospital to another with greater freedom than at present exists, thus ensuring economy in personnel. There is also a considerable number of civilian mobile teams, but it appears from the evidence submitted to us that very few of these have in fact been used. Not only ought the whole-time staffs of all hospitals, civilian and Service, to be more mobile, but every endeavour should be made to secure the greatest degree of co-operation and interchangeability between the medical units of the civilian and the fighting Services.

For all these reasons we recommend the preparation of schemes within each Region embodying these principles of co-operation and mobility. We understand that your Department is working out a scheme to achieve this purpose.

Ambulance Trains

We have examined the organization for the evacuation of casualties by ambulance trains under the E.M S. scheme. We are of the opinion that the use of whole-time medical practitioners for civilian ambulance trains in this connexion, even when these practitioners are unsuitable for service with the Forces, is an uneconomic use of medical man-power, and is not justifiable. Part-time medical officers carrying out other duties near the points at which trains are normally located should be used for this purpose.

Requirements of the Three Services and the I.M.S for First Quarter of 1942

We have considered and given our approval to figures showing the present estimated requirements of the three fighting Services and the I.M.S. and have forwarded to you our opinion on the numbers which should be supplied during the first quarter of 1942. These requirements imply a monthly rate of recruitment in excess of that which the C.M.W.C. can hope to arrange from the normal sources of supply. To meet these requirements we have submitted certain resolutions, which are set out in the Appendix. The substance of these is as follows: (1) A percentage reduction in the whole-time medical staffs of civilian hospitals other than mental hospitals (2) A reduction of 100 in the medical staffs of mental hospitals. (3) A restriction for the time being to six months of the period of office of all holders of "A" posts in hospitals.

In the first of these resolutions we recommend that whole-time medical establishments of civilian hospitals should be reduced by a percentage cut. In the course of our investigations we had formed the impression that here there was scope for considerable economy in medical man-power. In view of the absence of statistical data upon which to base definite conclusions, we recommended, in our First Interim Report, that statistical returns of the medical establishments should be required from all civilian hospitals and medical institutions. These returns were duly obtained, and were placed at the disposal of our secretaries for tabulation.

Examination of many of the individual returns, and of statistical tables prepared from them, led us to form the opinion that: (1) Reduction of medical staffs is feasible in all types of hospitals. (2) London hospitals are more generously staffed in all categories than provincial hospitals. (3) A proportionately more drastic reduction is possible in the staffing of mental hospitals. These findings led us to consider various possible methods for effecting reductions in hospital staffs. Our ultimate conclusions were embodied in the resolutions, already referred to, which you and the Secretary of State for Scotland accepted and upon which action is being taken by the Departments.

Consideration of Other Sources of Supply

We have considered other sources of supply which we were advised might yield additional medical personnel for the Services, for example:

We carefully examined the possibility of employing alien doctors in hospitals and as assistants in general practice. We have satisfied ourselves that the majority of employable alien practitioners have already been absorbed into various appointments, and that it is unlikely that this source will assist further in our problem to any material extent. We have had before us figures showing the number of alien practitioners employed and unemployed.

The possibility of obtaining doctors from the United States of America and the Dominions was carefully explored. Surgeon Rear-Admiral Gordon-Taylor informed us that on a recent visit to the United States and to Canada he had discussed with the authorities concerned the possibility of a further supply for Britain of doctors from these countries. He thought that no further doctors would be forthcoming under the American Red Cross Scheme. He informed us that Canada might possibly make some further contributions. A number of doctors from the Royal Canadian Army Medical Corps have been seconded to the R.A.M.C., but we consider that no further practitioners are available from the Dominions, who have already heavy commitments for their own armed Forces as regards medical personnel.

The question of raising the age of conscription for the medical profession by five years above the normal age of recruitment of other sections of the population was examined. This has now been partly met by the recent National Service (No. 2) Act of Dec. 8, 1941, but some time must elapse before it will produce an effective supply. We hope that as a result of the proclamation all medical practitioners between 41 and 51 will be registered in one group at the earliest possible date. We regard the proclamation as an urgent matter. Our Chairman has written to you, and to the Minister of Labour and National Service, on this subject, and has also emphasized the importance of women doctors within the age group of 20-30 being made subject to the same compulsory procedure that now applies to male practitioners.

The Public Health Services and the School Medical Service have been scrutinized. We are of the opinion that there is a source of supply in these services, and have submitted to you and the Secretary of State for Scotland a separate resolution on this subject. (See Appendix.)

Other problems were brought to our notice, from the examination of which it was considered that further economies might be effected, increased use made of available medical man-power, or sources of supply augmented, e.g.:

(*a*) More transport for medical officers in charge of troops of all Services throughout the country would enable one medical officer to carry out more work than he can at present. We wish to call the attention of the Secretary of State for War to this recommendation so that an adequate number of cars may be made available for medical officers.

(*b*) The number of medical boards required by the Services for the examination and categorization of recruits was studied with a view to considering a reduction in their number and the saving of the time of a number of medical officers. We concluded that any contribution in the way of economy in medical personnel from this source would be negligible.

(*c*) We have also had before us a suggestion that certain E.M.S. hospitals might with advantage be transferred to the Army Medical authorities. It does not appear to us that any material economy of medical man-power will result from this proposal, but we are assured by the Medical Director-General of the Army that the transfer will not, in itself, lead to any increased demand for Army medical officers, and it appears that it will be of real value to the Services in providing improved training facilities and opportunities for clinical experience. Accordingly so far as the matter lies within our province we would like to commend the project.

General Conclusion

Our investigations have satisfied us that the Services are now fully alive to the limited resources available to meet their needs and those of the civilian population, and to the consequent necessity for the utmost economy in medical man-power. As a result of their co operation with us the call by the fighting Services on the resources of medical personnel during 1941 was substantially reduced. We hope that our recommendations for the saving of medical man-power in civilian hospitals, and the deliberations of the Regional Committees will help to solve our problem during the next six months. We are, however, convinced that continued vigilance in the economical use of medical man-power is necessary.

We are now examining the demands of the Services for the last nine months of 1942, and we hope to submit at a later date a separate report based on these demands and on the conclusions of the Regional Committees, and to make recommendations after receiving the comments of the various Departments concerned.

Appendix: Summary of Resolutions

Nov. 19, 1941.—(1) That the Minister of Health and Secretary of State for Scotland be advised to instruct the Central Medical War Committee to revert for the present to its original plan of calling up for military service A men in hospitals at the termination of their first six-months tenure of such posts and to call up forthwith the present male holders of the extended A posts subject to one month's notice being given to the hospitals. (2) That the Minister and the Secretary of State be advised to instruct the Board of Control and the General Board of Control for Scotland respectively that mental hospitals and institutions for the mentally deficient should reduce the existing strength of their staffs so as to provide by Jan. 21, 1942, 100 men of military age fit for service in the Forces. The names of the men to be released to be submitted to the Ministry of Health and Department of Health for Scotland for transmission to the C.M.W.C.

Dec. 3, 1941.—That the Minister of Health and the Secretary of State for Scotland be advised: (*a*) To instruct the Central Medical War Committee and the Scottish Medical War Committee to revise, in consultation with bodies responsible for hospital services, the medical establishments of civilian hospitals (other than mental hospitals) with a view to reducing the numbers of medical officers holding A, B2, and B1 posts, the aim being to reduce the all-over strength on Aug. 1, 1941, of whole-time medical officers in hospital by 10% in the Provinces and 15% in London (including Sectors), provided that the reduction in teaching hospitals should not exceed half the above percentages in the immediate future. (*b*) That the C.M.W.C. and the S.M.W.C. should be instructed to consider expediting as far as possible the placing of newly qualified medical men and women in hospital posts. (*c*) To instruct the C.M.W.C. and the S.M.W.C. to examine closely the number of young medical men engaged in pathological appointments and in research work with a view to the release of as many as possible for either special or general medical duty with the fighting Forces.

Jan. 7, 1942.—That the Minister of Health and the Secretary of State for Scotland be asked to consider further methods by which local authorities by closer co-operation or otherwise can release from their Public Health Services more medical officers of both sexes of military age for service with one of the armed Forces of the Crown.

MEDICAL SCHOOLS AFTER THREE YEARS OF WAR

ARRANGEMENTS FOR THE NEW SESSION

For the fourth year the winter session of the medical schools opens under war conditions, but arrangements are now better stabilized than they could possibly have been in the earlier period, and while many inconveniences attaching to dispersal remain, it can be said that the volume of teaching has not been lessened nor its standards lowered. The examination results have been good, but it is obvious that the number and perhaps the quality of the pre-medical students will be increasingly affected as the best boys leave their public schools and join up with one or other of the fighting Services. Some London medical schools are beginning to experience a small diminution in the numbers seeking admission for the commencement of medical studies, others declare the numbers to be stationary, and one school in the Provinces speaks of being inundated with applications for next session, particularly from women. The number applying there is said to be far in excess of the quota allowed.

So far as the pre-clinical subjects are concerned, several of the London schools, after three years' experience in the Provinces, are returning to London. In October King's College Medical Faculty will come back to its old buildings in the Strand, and pre-clinical subjects will be taken there for the students not only of King's College Hospital but of Charing

Cross, St. George's, and Westminster. Middlesex, too, has decided that its pre-clinical students shall return to London from Leeds, where they have been accommodated for two years. The pre-clinical schools of the London Hospital and of St. Bartholomew's are to remain at Cambridge. St. Thomas's pre-clinical and pre-medical studies are still centred at Godalming, where laboratories and class-rooms have been constructed, and the generous co-operation of the headmaster and governing body of Charterhouse School is available. The first-year students of St. Mary's continue to be the guests of Berkhamsted School, and those of the London School of Medicine for Women remain at Exeter for the present.

The London Schools

The final-year students of St. Thomas's have just left their quarters at Guildford and have returned to the hospital in London, where an increased number of beds have been opened and out-patient teaching has been restored almost to pre-war standard. A sufficient part of the school library has also been moved back to London. Outside London, at Godalming, a full department of pathology has been installed in a specially leased house. The main medical school library has been accommodated at Hydestile, where lecture rooms and full students' amenities have also been provided. Following their preliminary six months, the clinical students spend two periods, each of six months, attached to medical and surgical firms at Hydestile, and these are followed by six months' midwifery, gynaecology, and paediatrics. The facilities for teaching midwifery are considerably better than in several of the pre-war years in London.

St. George's Hospital Medical School has also returned to the metropolis. Since May last the students have done the whole of their work at the hospital at Hyde Park Corner, with the exception of midwifery, which continues to be taken, through the courtesy of the Middlesex County Council, at the West Middlesex Hospital. During the past year the number of in-patients and out-patients at St. George's has steadily increased and clinical material has been abundant. Should less happy conditions recur, the hospital has re-equipped its convalescent branch at Wimbledon on modern lines, and the medical school has rented and equipped a large country house immediately adjacent to serve for emergency purposes. But unless dispersal again becomes necessary, it is intended that the school shall remain at Hyde Park Corner, with the country establishment as an annexe.

The clinical school of Charing Cross is still evacuated from London, at Boxmoor in Hertfordshire. The whole of the first clinical year's work is done at Ashridge Hospital (1,200 beds). During the second clinical year clerkships and dresserships are served in all the special departments, and for this work the facilities of the parent hospital at Charing Cross, as well as those of Ashridge, Stanmore, Edgware (midwifery), and others, are utilized. In the second and third clinical years students are posted by rota to Charing Cross and Ashridge for residence as emergency dressers. As a wartime modification the removal to Boxmoor has worked well, and residence at Chaulden House for sixty students has provided the advantages of a corporate life, but the difficulties, especially the consumption of time by the staff in having to travel out of London to teach, will not grow less, and the extended use of the school in London for the instruction of senior students is being considered.

St. Mary's is fortunate in that both school and hospital buildings remain undamaged. Nevertheless, some dispersal of students is maintained. Students in their clinical years continue to hold posts in four other sector hospitals in addition to St. Mary's, but it is at St. Mary's that the whole of the second M.B. course and the latter part of the clinical teaching is now taken. Consequently the student has at one time the opportunity of seeing a wealth and variety of clinical material in the sector and at another of participating in organized student life at the parent hospital. The large number of resident posts made available by the E.M.S. in the sector continue to provide house appointments for all students on qualification. One feature of the past year has been the large attendance—an average of 130—at the meetings of the Medical Society.

The medical school of the London Hospital, apart from its pre-clinical school at Cambridge, is now organized at three centres: the London Hospital Annexe and Warley Woods Hospital at Brentwood (542 beds), Chase Farm Hospital at Enfield (925 beds), and the London Hospital itself in Whitechapel (416 beds), together with neighbouring London County Council hospitals comprising 2,500 beds. Students starting clinical work are sent to Brentwood for the first twelve months, where they have an introductory course in medicine and surgery and carry out six months' clerking and six months' dressing. They are then sent to Enfield for a three-months course in pathology and similar courses in neurology and orthopaedic surgery, after which they are posted either to the London Hospital, the maternity unit in Hitchin, or other associated hospitals for practical experience in obstetrics. Finally they come to the London Hospital as senior students for further clerking and dressing in the wards and work in the out-patient departments. Lectures are given at Brentwood in applied physiology, elementary medicine, surgery, and pathology for junior students; at Enfield in pathology, morbid anatomy, bacteriology, biochemistry, midwifery, and gynaecology; and at the London Hospital the final systematic lectures in surgery, medicine, public health, medical jurisprudence, and therapeutics for senior students.

No Change

Most of the other London schools have no changes to report so far as the instruction of clinical students is concerned, and the arrangements set out in the article in the *British Medical Journal* of Sept. 6, 1941 (p. 345), remain unaltered. This is true of Westminster, King's College, University College, and the London (Royal Free Hospital) School of Medicine for Women. Middlesex Hospital has not found it necessary to make any major alteration in the distribution of students during the clinical years. The increasing need to supply the fighting Services with the younger qualified men has not simplified the task of the school in arranging the teaching in the sector hospitals, but the standard of teaching has been maintained, thanks very largely to the co-operation of the Middlesex and Buckinghamshire County Councils and the Board of Governors of Mount Vernon Hospital. The association with the Royal Hospital, Wolverhampton, which began in 1940 has also developed most satisfactorily. At Guy's and St. Bartholomew's there are no striking changes to report. The clinical students of St. Bartholomew's are distributed at Bart's itself, Friern Emergency Hospital, Hill End Hospital, and Cell Barnes Hospital. The main improvement during the year has been the establishment of a first-class pre-clinical medical course under the professors of medicine, surgery, and pathology at Hill End Hospital; also the introduction of a new tutorial class in pathology at the same hospital for final-year students.

Postgraduate teaching in London at the British Postgraduate Medical School, Shepherd's Bush, is continued on pre-war lines, with bedside tuition and lectures rather than specific courses, though special courses on war medicine and surgery and other subjects have been held in alternate weeks. A number of undergraduate students have been accepted at the request of the deans of their respective schools, and a limited number of refugee graduates have been accepted to enable them to put in the necessary hospital practice to take British qualifications. In addition the obstetrics department is providing facilities to enable a limited number of undergraduates to comply with the University of London's requirements in obstetrics and gynaecology.

Provincial and Scottish Schools

In the provincial schools there have been still fewer changes. At the University of Manchester various small curriculum alterations have taken place. With a view to facilitating earlier qualification and of affording wider hospital experience, senior students have been employed as temporary officers under direction at local hospitals. The Board of the Faculty of Medicine has recently passed a resolution whereby students during the war period, having completed all appointments, may apply to sit for Part II of the Final M.B., Ch.B. examination (qualifying) after thirty months' clinical work. At Leeds, again, the Board has decided to accept the recommendation of the Ministry of Health and to shorten the clinical period of study from 36 to 30 months, as a temporary emergency measure. Steps are being taken to introduce the shortened course next month. Students who would normally take their degree in

March, 1944, will be able to take their final examination in September, 1943.

One innovation at Sheffield is of interest. All students entering the university next session must undergo a thorough clinical examination, for which the university pays. Heretofore such an examination on entry has been offered on a voluntary basis, but the response has been poor. In the case of medical and dental students the physical investigation will include *x*-ray examination of the student's chest and a Mantoux test. A further *x*-ray examination is made before beginning clinical work, and again two years later.

At Bristol, instead of candidates taking the second M.B., Ch.B. examination in anatomy, physiology, elementary pathology, and elementary pharmacology six terms after completing the first examination, they will sit for anatomy and physiology after five terms of professional study—that is, in March—and will take the examination in elementary pathology and elementary pharmacology one term later—that is, in June. The whole examination must, as hitherto, be passed before students may begin hospital practice. In Birmingham no changes are contemplated for the new session. In Cardiff the raid damage to the Royal Infirmary has been considerably repaired and about 220 patients can now be taken in. The medical and surgical units, with rather more than 100 beds, still remain at the Whitchurch Emergency Hospital, and the convalescent home is still maintained as a full service hospital. The travelling of students has been well arranged, and the time-table of attendances has been altered so as not to interfere with tuition. The clinical school at the Welsh National School of Medicine has its full number of students, and the applications for admission to pre-clinical studies pursued at University College, Cardiff, are very large, so that selection has to be made. Altogether the medical students in Cardiff number about 350. The new Pathology Institute is proving of great value in teaching. Clinical pathology is made a feature of sixth-year study.

In the Scottish universities certain important changes in the curriculum have been made at Aberdeen and at Edinburgh. At Aberdeen, to enable students to graduate within five years, a fourth term is being held during the summer vacation for students who finished their fourth year in June, 1942. At Edinburgh the subject of psychiatry has been introduced into the final professional examination. The examination, consisting of a two-hours written paper and an oral, will be held at the end of the spring term—that is, in March—of the fourth year of the medical curriculum. At Glasgow, on the whole, it has been possible to continue medical teaching on normal lines. Patients in teaching hospitals are somewhat fewer, so that teaching facilities have to be slightly reduced, but it has not been necessary to discontinue any special courses. The main hospitals are undamaged and the routine of the students is not substantially altered. At present there are 1,070 students in the medical school, of whom about one-fifth are women.

The increased emphasis on the aspects of preventive social and industrial medicine and the shortening of the time devoted to the clinical period are creating some difficulties for the schools, but so many difficulties have been overcome during these last three years that the outside observer has come to believe—even if those concerned in the administration do not quite believe it themselves—that the schools are equal to all trials and emergencies.

Changes made in the organization of the British Hospitals Association, states the report of council for 1941, include a strengthening of area committees, alteration where necessary of area boundaries, and the setting up of a new area organization for South Wales. They are preliminary to a reconstitution of the council and amendment of the articles of association consequent on the decision to admit convalescent homes, sanatoria, and mental hospitals to membership. During the year an advisory committee on nursing matters was formed; also a subcommittee on hospital and contributory scheme income limits. Other items to which the association gave time and thought during a busy year were the salaries of hospital staff other than nurses; hospital staffing problems created by the demands of the Services and the Ministry of Labour; the supply of deep *x*-ray apparatus; the teaching hospitals committee set up by the Ministry of Health; and last, but by no means least, soap rationing as it affects hospitals.

Correspondence

Lister Technique for Emergency Surgery

SIR,—Under certain circumstances as a result of enemy action surgical operations may be required to be done under adverse conditions. The advanced highly skilled surgical technique in strict aseptic surroundings with an abundance of sterilized equipment (dressings, instruments, water, etc.) may have no place where war conditions have temporarily abolished such amenities.

The practical application of the Lister technique is probably unknown to the majority of the younger generation of surgeons, for they have never carried it out. There is some ridiculous idea extant that if any antiseptic—e.g., carbolic acid—should "soil" a wound, either by mops, surgical instruments, etc., tissue *necrosis* and wound *infection must* follow. Like so many surgeons of my generation I have successfully done a large number of major surgical operations in cottages, using the kitchen table for the operation, with towels around the wound area wrung out in carbolic solution 1 in 40, instruments out of the same solution, boiled mops out of normal saline or 1 in 10,000 hydrarg. perchlor. solution, with a paraffin lamp for the illuminant.

As improvisation may at any time be required I would plead for an immediate revival of the Listerian technique. This could be done by practical demonstrations at operations in surgical centres, also by carrying out the technique at all hospitals, including the E.M.S. ones. Further, in these days of rubber-glove shortage, surgical operations may have to be done with bare hands. Operations were done in the pre-glove era with equal success when compared with the present-day glove epoch. It may be that some surgeons and nurses will require to relearn the art of getting their hands surgically clean. The use of gloves, so long as they remain unperforated, excuses shortcomings in inadequate scrubbing up.—I am, etc.,

Newcastle-upon-Tyne. R. J. WILLAN, F.R.C.S.

Pernicious Anaemia

SIR,—I was glad to read the plea of Prof. L. J. Witts (Aug. 22, p. 227) for better supervision of patients with pernicious anaemia. But I would disagree with him when he attributes so much of the blame to the patients themselves for neglecting treatment when they feel themselves cured. In my opinion the unsatisfactory state of affairs which exists at present is largely due to ignorance on the part of some practitioners of the elementary principles of treatment of pernicious anaemia. They frequently reduce maintenance treatment to grossly insufficient amounts, and, indeed, sometimes tell their patients that it is unnecessary so long as they feel well. It is clear that the danger of the development of subacute combined degeneration is insufficiently appreciated.

Because of this experience I have made it a practice to explain carefully to patients before they are discharged from hospital or the out-patient clinic the necessity for continuing treatment for the rest of their lives, and I believe that very few patients will neglect treatment if they understand the position clearly. I feel convinced that the death rate from pernicious anaemia would show a sharp fall if all practitioners realized the importance of maintenance treatment in sufficient amounts. Because this treatment should be controlled by periodic blood examinations special clinics are obviously desirable, and I welcome the attention which Prof. Witts has drawn to this aspect of medical planning.—I am, etc.,

Aberdeen HAROLD W. FULLERTON.

Anaemia in X-ray Workers

SIR,—The Hospital Officer Memorandum No. 3/25 recently circulated by the E.M.S. to Class 1A and 1B hospitals (*Journal*, Aug. 1, p. 137) is, in my opinion, a dangerous document. The facts to which it refers are doubtless accurate, but the memorandum is apt to be misleading. Admittedly anaemia is not recognized as a specific effect of radiation, but it is wrong "in order to allay uneasiness and to afford guidance" to issue a memorandum which states this fact at some length and devotes only one-tenth of its space to a brief mention of the changes that do occur as a result of radiation.

The experience of the big London hospital *x*-ray departments with adequate space and protection and under close medical direction is certainly not an adequate guide to the possible experience of an E.M.S. hospital department unless the latter follows all the recommendations of the International Committee on *X*-ray Protection. The statement that "periodic blood examinations are advisable . . . as a reassurance to radiographers" is an inglorious understatement of what is considered necessary by radiologists with knowledge of radiographers who have had to leave *x*-ray work because of a white cell count which indicates damage by *x* rays. The final sentence that "the term '*x*-ray anaemia' has no particular meaning and should be avoided" is true, but again implies that there is no danger from radiation.

The authors of the memorandum are to be congratulated on the skill with which it has been compiled. To doctors and lay officers without special knowledge and experience of radiation and its effects on the blood it is a convincing document which implies that the dangers of radiation to *x*-ray workers have been over-stated, and, in fact, are practically non-existent. To those with special knowledge it presents a series of statements which are probably incontrovertible, but the emphasis is false. The dangers of radiation, the signs of its effects (leucopenia, monocytosis, granulocytopenia), the danger to the skin and gonads, and the necessity for adequate protection should have been stressed, since otherwise the radiographer and those responsible for his or her health will follow even more readily the regrettable tendency to slacken rather than enhance precautions. *X*-ray anaemia probably does not occur but while blood cell changes do occur in the *x*-ray worker inadequately protected. A true document with a false emphasis such as this is dangerous, because, while it cannot be contradicted, it causes hospital boards and administrators to relax essential precautions.—I am, etc.,

F. Ellis,
Medical Director, Sheffield Radium Centre.

Hyperostosis Frontalis Interna

Sir,—Dr. C. T. Andrews's excellent and detailed report of a case of hyperostosis frontalis interna (Aug. 15, p. 185) prompts me to add two observations, one historical and the other clinical.

There is an interesting early reference to hyperostosis frontalis interna in an address on "Tic Douloureux" which was read at an evening meeting of the Royal College of Physicians of London 120 years ago by its president, Sir Henry Halford, and later included in his collected *Essays and Orations*. He relates, among others, the case of Dr. P., whose skull showed at necropsy "an unusual thickness of the os frontis, where it had been sawn through above the frontal sinuses, and at its juncture with the parietal bones. . . . Dr. P. had submitted with great patience to a division of several branches of the fifth pair of nerves, under the judicious operation of Sir Astley Cooper, who, on my mentioning to him the notion I entertained of the cause of tic douloureux, was so obliging as to show me the skull of a person who had died of this disease in the country. The internal surfaces of the frontal bone is a perfect rock-work." A third case, he notes, is of a lady who for 10 years had suffered "the tortures and the dreadful 'clawings and scratchings'" of a right tic douloureux. She had "an enormous thickening of the frontal, ethmoidal, and spenoidal bones in one part to the extent of half an inch; and the anterior lobes of the brain were curiously moulded and indented by the thickened bone. There was thickening also of the whole of the cranium, but not so great a degree anywhere as in the parts which have just been named."

It is curious that Sir Henry Halford should have met three cases of tic douloureux associated with a thickening of the skull whose description is consistent with hyperostosis frontalis interna. Though he conjectured that the osseous enlargement "injured directly, and at once, the affected nerves," he recognized that "there are other cases in which no such immediate cause of irritation can be discovered." The association must be rare. Six years ago I described 8 cases of hyperostosis frontalis interna before the Association of British Neurologists and I have since seen several others. None was associated with tic douloureux, though two had cranial nerve palsies. In one of these with a "jugular foramen syndrome" there was found after death a plaque of bone extending over and compressing the nerves passing through the foramen. Only 22 (approximately 1 in 10) of my cases of tic douloureux have had *x*-ray examination of the skull. None has shown significant hyperostosis.

Many cases of hyperostosis frontalis interna are symptomless and discovered accidentally. In patients complaining of chronic headache routine skull radiographs will sometimes reveal not only hyperostosis but occasionally other rare lesions—e.g., extensive calcification of the falx cerebri. In one of my cases a cerebral tumour was coexistent; its presence was suggested by a hemiparesis with papilloedema, and confirmed by ventriculography and subsequent operation.

Thus hyperostosis frontalis interna may give: (1) no symptoms; (2) chronic dull frontal ache; or (3) focal symptoms associated with local compression by bony bosses or plaques—namely, (*a*) the hypothalamic–pituitary group (adiposity, diabetes insipidus, sleep disorders, etc.); (*b*) progressive dementia; and (*c*) cranial nerve palsies. This suggests that the hypothalamic–pituitary disturbances are the *consequence* and not, as some have held, the *cause* of hyperostosis frontalis interna. Of its significant cause, or causes, we are quite ignorant.—I am, etc.,

Liverpool Henry Cohen.

Tuberculin Patch Test

Sir,—In your leading article (July 25, p. 101) you show how in differential diagnosis help can be obtained from a tuberculin test because a negative reaction *excludes* tuberculosis, hence its greater value in children than in adults. These points cannot be stressed enough. But tuberculous infection cannot be excluded unless the test is complete—i.e., unless it is ultimately carried out intradermally with O.T. or P.P.D. 1 in 100. In a large series of cases a higher tuberculin sensitivity may be found among those with active tuberculous lesions than among those with latent or healed lesions, but it cannot be assumed in the individual doubtful case that a test positive to a high dilution indicates active disease, or that a test negative to such a dilution excludes active disease. You recognize this, and advise that a negative patch test should be followed by a Mantoux test with 1 in 100 tuberculin. But you then state: ". . . . and when the practitioner can be satisfied that he has at his disposal a standardized uniform 'patch,' the test will probably prove of considerable value to anyone who is impelled by the exigencies of practice to sacrifice the greater accuracy of the Mantoux test to the convenience of the patch test." And again: "If the Mantoux test is not being as much used in general practice as it should be—and evidence points that way—the use of a properly standardized patch test will be preferable to no test at all." Are these statements compatible with the clear factual data given in the remainder of the leading article? You do not yourself seem quite happy about it, for you attempt to square your conscience by insisting on a "properly standardized" patch. But is not this asking for the impossible? We find it difficult to understand how "proper standardization" can be obtained of a test that involves several factors which may influence the dosage of tuberculin yet cannot accurately be controlled; for instance, degreasing, texture of skin, application of strip, etc.

There are two other points which should be mentioned. You quote several investigations in which the patch test is compared with the Mantoux test, and point to the fairly close similarity of results. But it is well to bear in mind that when such *ad hoc* investigation is done, greater care and supervision are probably exercised in the carrying out and reading of the patch test than might be the case when it is used in routine clinical practice. The second point is this. Your leader is apparently intended for general practitioners and physicians, but the tuberculin test is of paramount value in the follow-up of children as home-contacts in tuberculosis clinics. There many children are first seen before they are infected, and are then tuberculin tested periodically in order that the primary infection may be detected at its onset. It would clearly not be possible to dogmatize about the onset of a primary tuberculous infection unless the tuberculin test carried out a few weeks or months before had been complete.

The patch test is not used in epidemiological investigations from which reliable conclusions are sought. Apart from this, the test undoubtedly has, in certain circumstances, advantages of convenience, but it cannot be regarded as more than a preliminary step in tuberculin testing whatever advertising blurbs may state about it.—We are, etc.,

Donald Court.
Staines G. Gregory Kayne.

Ileostomy for Ulcerative Colitis

Sir,—It is not within my province to argue the pros and cons of this question, but it is possible that with the introduction of specific treatment the urgent need for this serious operation may no longer be necessary for ulcerative colitis. I am, however, quite convinced that if there is one form for which ileostomy is absolutely contraindicated that is amoebic dysentery. The statement that Mr. McNeill Love had undertaken it for that disease in 1917 may induce others to do so. We fortunately possess most potent specific remedies for amoebiasis, and experience in its treatment has led to the conviction that surgery of the intestinal tract is seldom, if ever, necessary. The impression I have formed is that the conditions which produced this emergency in Mesopotamia in 1917 were due to bacillary dysentery and not to the more chronic amoebic form, as there existed some confusion in differential diagnosis at that time.—I am, etc.,

London, W.1 Philip Manson-Bahr.

Medical Planning

Sir,—Dr. J. E. Gaze's letter (Aug. 15, p. 200) is interesting because it reveals an attitude which, in my experience, is not often found among the older members of the profession. I have been qualified for 10 years only, but during that time have done hospital appointments, "locums" in town, country, and prison, "put up a plate" in Suburbia, built up a practice, and joined the R.A.M.C. (T.A.) and been invalided out. I have also had the opportunity of observing my fellow men on the Harrow B.M.A. committee and on its subcommittee when we met the public health committee of the local council. Now, after prolonged treatment and convalescence and a period of manual work in the countryside, I am in the happy position of being able to look back from afar upon my professional contacts and experiences.

I have in the past longed for a medical plan, be it pure State medicine, health centres, or what you will, if only the result would mean: (*a*) an efficient treatment of the patient be he rich or poor, including, of course, prevention as well as cure; (*b*) an elimination of "business methods" in practice, even including the abolition of "goodwill," which seems wrong to me, perhaps because now I have little or no practice to sell; (*c*) an opportunity for every doctor to have a reasonable amount of leisure and holidays in order to keep himself mentally and physically fit, with a free period each year for postgraduate study, and access to a hospital; (*d*) the maintenance of the "family" doctor and of free choice for the patient; (*e*) a reasonable and ensured income; (*f*) suitable provision for illness and old age.

All of us upon qualification set forth with high ideals. Some accomplished the climb and have risen to well-deserved altitudes. Most of us, however, seeking in general practice an opportunity to preserve our independence, found that soon we were up against the hard facts of life. In practising medicine and at the same time earning a living we had to battle with the monetary-minded among patients and colleagues, sending out bills, recovering from a feeling of nausea at the jealousy, self-interest, and the "rackets" one sometimes met, paying rates to the local authority and thus helping to provide public health services which were cutting our own throats, and so on. There were many compensations, but it became increasingly evident that something was wrong with medicine somewhere.

If we have the courage openly to admit this let us all now seize the opportunity that these times offer to put matters right. Those with a practice which under present "goodwill" valuation is a lucrative one will expect compensation if things are altered, and perhaps a reasonable compensation will be paid—by whom and how, I will not even hazard a guess. If, however, none is forthcoming, let not those doctors break their hearts. There are many who have already given their lives. There will be more. There are many who are now prisoners of war, while the large majority of all those who have joined the Forces, whether as volunteers or conscripts, have suffered considerable financial loss. Those who now remain in civil practice and who are concerned in planning the future of medicine no doubt realize their responsibility is a great one. They would do well to consult their colleagues in the Forces, who will be busy, when demobilization comes, searching for the practices they left behind. And it will be the bounden duty of those who promised to look after them to help in rediscovering them.

The present muddle and overlapping in medicine can be ended, and need not necessarily be replaced by a bureaucratic nightmare of red tape, if only the members of the profession will maintain their dignity and cast aside the tendency to look upon the problem with more than one eye upon its financial aspect. The family doctor, with his intimate knowledge of the patient's home life, must be able to continue this psychological link with those he is called upon to treat. He must also be allowed to retain his individuality rather than be regimented and submerged by rules and regulations.

My considered opinion is that in our profession we shall never succeed in persuading the "stick-in-the muds" to move. I hope, however, that we can plan a State Medical Service which will contain all that is best in our present system. I trust that if pure State medicine comes, State education will accompany it.

The Medical Planning Commission has made an admirable start. It deserves our thanks and it is the duty of each one of us to give all the help and advice we can, for the problem concerns us all, whether we are old or young, specialists, family doctors, hospital officers, public health officials, or those who are now serving in the Forces. Their voice is well worth hearing, for they have had experience in civil practice, have sacrificed much, and are now experiencing some of the snags one would expect to find in a State Medical Service.—I am, etc.,

Bradworthy, Devon. C. G. Jones.

Sir,—Recently in your correspondence columns and at meetings here it has been urged that no major change in the conditions of medical practice should take place until the men now in the Services have returned to civilian life and have had an opportunity of expressing their opinions. This is a point of view with which we must all have the greatest sympathy, though, to judge by the almost complete lack of response to the numerous invitations sent to R.A.M.C. officers serving in this area to attend our discussions on medical planning, it would appear that even those still on home service are too fully occupied to be able to give consideration to these problems.

At a recent meeting here it was suggested that the profession should unitedly refuse to work any new scheme until the men in the Services can take part in its arrangement. Since it may be 3 years after the conclusion of hostilities before demobilization is completed, and since a further 3 years would have to elapse before the majority of the younger men could have had sufficient experience of civilian practice to be able to express an informed opinion, this seems to me to be an extreme point of view.

In support of this attitude it is often stated that "the last time" the position of men in the Forces was prejudiced by changes which took place during and immediately after the war in the conditions of practice generally. For the information of those who are too young to remember conditions at that time can anyone say what these changes were, and in what way they were prejudicial to the position of those who had been in the Services as compared with those who had remained in civilian practice? Of course one realizes that there must have been periods of individual unemployment after demobilization, but was this actually greater in medicine than in other professions?

It would seem that the answers to these questions would have some relevance when the optimum time for the inauguration of any new plan is under consideration.—I am, etc.,

Stirling W. Leslie Cuthbert.

Future Medical Service

SIR,—I have read a great many letters on the future of medicine and have frequently discussed it with other practitioners and lay men and women. The letter of Dr. Vallely (Aug. 8, p. 168) crystallizes a point of view held by many of our profession. It seems a competent, clear, and reasonable point of view, and yet I am sure it is quite wrong. It is just as wrong as the idea that State medicine in itself is the first step to the millennium.

When a number of intelligent people disagree on a fundamental issue, the reason is nearly always found to be a lack of definition of the problem. If the facts are not known or not clearly explained the field is left open for the theorist, the dogmatist, and the fanatic. For example, Dr. Vallely says "a whole-time salaried service would be wholly bad for the profession and the public," and "the lay press teems with evidence of the extravagance and inadequacy of State control." That is Dr. Vallely's theory, but here are some facts.

The Government distributes £75 million in unemployment benefits and allowances at a cost of £7½ million a year; £87 million in orphans' and old age pensions at £2½ million. On the other hand, the approved societies distribute £33 million in N.H.I. benefits at a cost of £6 million, while the insurance companies distribute burial, life, and sickness benefits amounting to £33½ million at a cost of £22 million, plus a shareholders' surplus of nearly £2 million a year. (I quote from the P E P broadsheet on Social Security, July 14, 1942—a magnificent compilation of facts.) In this connexion "the extravagance and inadequacy of State control" is not obvious, to say the least.

Yet I agree about the "stultifying" and "soul-destroying" effect of Governmental bureaucracy, and this leads to the next argument which is in urgent need of clarification. Those who argue against State medicine make the point that the concomitant bureaucracy will be a "tyranny," "an evil thing," "a cause of frustration," and they assume that all bureaucracies must be bad. Surely that is untrue. The fact that a bureaucracy is necessary to administer any large concern is neither good nor bad in itself. It is merely a fact. But the *type* of bureaucracy can be good or bad. Many of the big business combines are run by most efficient bureaucracies: at times too efficient for my way of thinking. These one can call good, just as the bureaucracies of the Government are inefficient in many ways and can be called bad. So State medicine will be "stultifying" only if it is run by a bad bureaucracy. As the word "bureaucracy" is so prejudiced by use it will be wise to substitute "administration."

Now there is no need for bad administrations to continue. We must take what is good in the Ministry of Health and preserve its rule-of-thumb organization of statistics, routine, and so on, for it does that part well. But the art of medicine and the organization of practitioner and hospital services for the ever-changing needs of the community can and must only be run by active members of our own profession; and this must be one of the foundation stones of any State medical service. Our one aim must be to provide the best possible service, and we must eschew the evil which damns our Civil Service—the fact that promotion goes to those who make fewest mistakes (and consequently fewest decisions) and those showing initiative are frowned upon and penalized. It is imperative for our future welfare that we let no defeatist attitude stand in our way. We cannot accept the present administration of medicine as a good thing. We must decide exactly what we want and see that we get it. My experience is that if one knows what one wants and has faith and energy then that objective is attainable.

There is one more point to make. Dr. Vallely says that a whole-time salaried medical service is not inevitable. Does he realize that the Ministry of Health has a scheme to bring the dependants of the present insured persons under the N.H.I. Act, and that then 90% of the community will be on the panel? Surely that all but fixes the salaries of the majority of practitioners, and the N.H.I. scheme becomes an elaborate mechanism for excluding 10% of the community from what the supporters of an extended N.H.I. scheme consider the best possible service. If Dr. Vallely likes the idea of being a salaried practitioner under the present Ministry of Health, he has only to wait and nothing to worry about. But if not, it is an urgent necessity to agree upon a better scheme and stand up for it with all the power at our command. Agreement will only come with increased knowledge, and I know of no better starting point than the broadsheet from which I have quoted.—I am, etc.,

Leeds. R. A. MURRAY SCOTT.

Salaried Service and Competition

SIR,—Several writers recently have stressed the value of competition in keeping up a doctor's keenness for his work. If success in this competition was determined primarily by clinical ability and conscientiousness such competition would be of great value to the cause of better medicine. Unfortunately, competition in general practice has degenerated into one for popularity primarily, and the doctor who attempts to educate and discipline his patients reaps a poorer harvest than the humbug and romanticist who liberally distributes placebos and habit-forming drugs.

In my view a salaried service on "public health" lines, which would eliminate the element of profit from sickness and encourage that most valuable kind of medical work, preventive medicine, would be a great and revolutionary step forward so far as general practice is concerned. I know that there are evils attendant on bureaucracy, but they are likely to be less serious, in my view, than those fostered by the present system.—I am, etc.,

Wallasey. LENNOX JOHNSTON.

Maternity Service of the Future

SIR,—It was good to read the letter of Dr. G. Winn Everett and her friends (Aug. 1, p. 143). We have in Scotland in essence the system there advocated. The general practitioner and midwife carry out as a minimum three ante-natal examinations; in the majority of cases they carry out the actual confinement and post-natal visits, the latter concluded by a very detailed examination of mother and child, a full report of which is submitted to the medical officer of health. We have the right, where our ante-natal examination justifies it, to obtain, without cost to the patient, expert obstetrical opinion, and also the right in emergency to obtain free expert obstetrical assistance. In certain cases, with the consent of the M.O.H., we can send our cases to hospital, and the cost to the patient depends upon her means. This latter is the only snag. Such cases should be admitted to hospital free of all cost to the patient. Detailed reports of all ante-natal examinations, of the confinement, and of our post-natal visits are also sent to the M.O.H.. To my mind our system is ideal for all concerned if each member of the team does his or her duty conscientiously, and two years' working under the scheme has been eminently satisfactory.

The essentials of obstetrics are not difficult to acquire, and were the feeding of our children and the housing, feeding, and working hours of our young adults in accordance with what is just and right and common sense, obstetrics would offer few emergencies beyond the capacity of the average conscientious general practitioner to tackle with success. Far too much is made by the "Munro Kerr school" and "official opinion" of our difficulties and of the success of the public ante-natal clinics and the large maternity hospitals. We have many women from these hospitals at the present time in this area. From what I have seen I would blush were they patients of mine.

To the women of this area our obstetrical specialist, Dr. Thomas N. Macgregor, has been an inestimable boon. Few as they are, obstetrical emergencies can be very terrible, and practising so far from a centre as we do, one feels very much alone, and such cases place upon our shoulders a strain that is almost unbearable. We had to manage in the old days, but now our specialist is a guide and a help whose assistance to our women is beyond words of description. We learn more in discussing our cases with him than we would from many postgraduate courses. I doubt if the latter are of any value.

Without obstetrics the life of the rural practitioner would not be worth while. Obstetrics binds us to the homes of our people, to our women, their children and grandchildren in a way that, in spite of our anxieties, makes life in the practice of medicine, of all lives, the finest to live. Our work is hard and financially of little attraction if that is the main aim of life, but otherwise, when we are near the end and look back we feel that we have justified the right to live; in spite of our failings we have won the affection and esteem of hundreds of our women, because, however poor the home, our care during pregnancy, at childbirth, and post-natally, and the bond created between us have made these "homes" in the truest sense of that word.—I am, etc.,

Tain
E. K. MACKENZIE.

SIR,—The letter of Drs. G. Winn Everett, E. A. Wilson, R. C. B. Ramsay, and S. A. Scorer (Aug. 1, p. 143) on maternity service of the future will meet with general approval because it promises greater security and better hospital accommodation for mothers. I would submit that there is one major fault in the present maternity services which is in no way corrected in the new proposals—namely, the relief of pain.

I am at present unable to obtain access to the literature, but I believe I am right in saying that of the 600,000 births occurring annually in this country more than 75% are attended wholely by midwives, and, consequently, the mother receives no form of anaesthesia. Of the cases attended by doctors, only the fortunate who can afford a specialist's fee get real relief; the remainder are grateful for a whiff of chloroform towards the end of the second stage. There are, I believe, two reasons for this: (1) inadequacy of fees, and (2) modern teaching in anaesthetics.

(1) An average fee for a working-class patient is in the region of 5 guineas. For this the general practitioner is expected to undertake ante-natal care, a day at least of worry and interruption of his normal work during the confinement, and post-natal visits. Yet the same family will willingly pay 15 guineas for the removal of tonsils and adenoids from their small son, an operation performed in half an hour and comparatively safe when compared with the lurking dangers of childbirth. (2) The young practitioner is imbued with a terror of chloroform, yet this is probably the only anaesthetic available to the general practitioner which is capable of giving adequate relief in labour.

In conclusion I would urge that the maternity service of the future should have as its ideal that every confinement should be attended by a doctor, adequate remuneration being assured by the State. Alternatively, the status of midwives should be improved to encourage more to enter the service, the training should be extended to include anaesthetics, and, finally, midwives should work in pairs, one acting as anaesthetist.—I am, etc.,

E. R. HARGREAVES,
Major, R.A.M.C.

Narco-analysis in Treatment of War Neuroses

SIR,—Having been working as a colleague of Dr. J. L. Clegg's for approximately the same length of time, I was interested in his objections to pentothal narco-analysis (Aug. 1, p. 140), and would like to mention one or two points which I have briefly discussed with him.

I would agree in the main that it is by no means a royal road to the unconscious, and must be regarded as a short cut, but I would still value it as such. It appears to me that different methods such as narco-analysis, and shock treatment too, may lay open different portals of the mind, or strike it at different levels; and, apart from the material so obtained, may have effects of which we are largely ignorant but which may nevertheless have curative value. In a recent case of anxiety hysteria I tried giving pentothal while the man was already under hypnosis, and the difference in reaction was striking: he immediately became more emotional, as though responding from a, one might say, subthalamic level.

In cases of massive amnesia, where hypnosis has failed, pentothal has given me results which would otherwise have taken many weeks. I have also found it of use in confirming one's impressions of the personality type; the character traits are shown up in an exaggerated light, particularly the inflated egoistic types, and the patient is the more convinced out of his own mouth. This is, of course, analogous to the verity induced by alcohol, the effect being more like that of large cocktails than the mellower one of a bottle of vintage burgundy.

Dr. Clegg should tell us, by the way, in what percentage of his 200 cases he used this method. Personally I have employed it in about 10%. The use of pentothal, like that of any other method, when we are dealing with subjectively toned material, and rapport is present, depends on the person using it as well as on the type of case. Dr. Clegg may get results with his methods which others may only get with prolonged analysis and others by the cruder mental enema of pentothal. There is also the question of permanence of effect.

So let us neither condemn nor appraise too highly a method which is still experimental as well as, apparently, therapeutic.—I am, etc.,

CHARLES BURNS,
Psychiatrist, E.M.S

"Silent" Sinusitis

SIR,—Dr. C. Newlyn Smith's inquiry (Aug. 22, p. 229) about the kind of contraction of the field in sinusitis will be best answered by reference to the field charts. Those for the second case have been reproduced in *Proc. roy Soc. Med.*, 1931, **24**, 891, and those for another case in *Trans. ophth. Soc.*, 1933, **53**. If Dr. Newlyn Smith has not easy access to these papers I shall be pleased to send him reprints.

Your other correspondent, Dr. J. J. Craig (p. 230), has answered the question, "Would not radiographs have shown it?" I have no desire to theorize; my one wish is to show that measures designed to drain the sinuses—one with operation, the other without—did promptly relieve the 2 patients, in both of whom every other measure had failed, in one for 7 years and in the other after a lifetime of headache.

I am glad to have Dr. Craig's confirmation of the existence of "silent" sinusitis. It is on the general practitioner that the continual care of these patients falls when specialists can give no help, so that I am glad he has found Proetz useful, though I have not had success with that method. To take the fields of vision by the perimeter, using a 1-mm. white object, takes 5 minutes. I am afraid I must differ from Dr. Craig, as this seems to me much more widely applicable than *x*-ray examination after the introduction of lipiodol, though this is also excellent for diagnosis. Very few chronic cases, in my experience, are without some involvement of the posterior sinuses, which is shown by the fields.—I am, etc.,

London, W.1.
ROSA FORD.

Single-handed Anaesthesia and Operation

SIR,—Recent correspondence in the *Journal*, concluding with Dr. A. H. Bartley's letter (Aug. 8, p. 170), has brought up a question which has occupied my mind ever since I started in general practice—i.e., should an anaesthetic and operation ever be attempted single-handed except in a gravely urgent emergency? My own opinion is that they should not, as if proper attention is given to the patient under the anaesthetic it is almost impossible to operate conscientiously, while the dangers of not watching the administration of the anaesthetic have been sufficiently emphasized in recent letters.

My own practice, however, differs in fact from my conviction; in midwifery particularly I often embark on the double responsibility. I have had no anaesthetic difficulties, as I make a point of inducing the patient to the depth required before handing over to the nurse, and then only permitting her to use a Mennell's inhaler, which will usually maintain the required depth with, I believe, complete safety. In an emergency I let the nurse induce with the Mennell's inhaler, which is usually sufficient to get a good second-stage anaesthesia. I have not been so fortunate with the operative procedure in these cases, however, and have, on one occasion at least, delivered an infant in the posterior position through inefficient anaesthesia.

My reason for attempting both responsibilities is simply that everybody does it, and I feel I hardly like to trouble my neighbours, except in cases which I know may prove difficult, when they do not trouble me; but I am sure the principle is wrong. Occasionally, for a very minor and quick procedure, I feel quite justified in giving a small dose of an intravenous barbiturate, for there the nurse can concentrate her whole attention on watching the patient's breathing. In variance to the usual opinion as to the safety of administration, I see no difference between a drug that has been injected and one that has been inhaled. While it is true that the inhaled drug is excreted with normal or, if necessary, artificial respiration, surely the injected drug is as rapidly destroyed in the liver, providing the blood is oxygenated—again by normal or artificial respiration. There is not, so far as I know, any danger with ordinary doses of any castastrophic damage such as may be produced by chloroform, which is the only drug likely to be used by a nurse-anaesthetist.—I am, etc.,

Birmingham W. BRIAN GOUGH.

Anaesthetic Convulsions

SIR,—A recent correspondent maintained that no mention of convulsions under anaesthesia is to be found in the earlier literature. Hewitt, on *Anaesthesia* (p. 367), says: "It is by no means uncommon for clonic muscular phenomena to arise during the second and third stages of chloroformization. . . . In some of the recorded cases of this kind, patients are reported to have had a fit or to have been attacked by epileptiform convulsions." In a footnote is added: "See Lord Lister's account of a chloroform fatality (*System of Surgery*, 3rd edition III, 615). In this case respiration ceased during an epileptiform spasm." "A similar condition has been observed under ether (*British Medical Journal*, 2nd May, 1885, page 887)."

I do not know how far back the records of the *B.M.J.* go, but it would be of great interest and, I think, of real value if this case could be looked up and republished.—I am, etc.,

JOHN ELAM.

⁂ The article referred to by Dr. Elam was written by Dr. Ernest H. Jacob, and was entitled "Deaths from Anaesthetics in 1884." They were briefly tabulated under the following headings: "Deaths under chloroform"; "Deaths from mixtures of chloroform and ether"; "Deaths from methylene"; "Deaths from ether." The one case in which there were presumably convulsions was that of a boy (age not given) operated on for "bronchocele." The following observation was made in the column headed "Remarks"; "Death by spasm expiratory muscles epileptic. (?) Lungs could not be inflated." At the end of his short article the author writes: "In reviewing the cases of deaths from chloroform and ether respectively, one is struck by the difference in the character of the operation; the deaths from chloroform being mostly in comparatively healthy persons, during slight operations. The deaths from ether occurred, without exception, in persons severely debilitated by disease."—ED., *B.M.J.*

Trilene and Cardiac Arrhythmia

SIR,—The letter of Drs. K. G. Lloyd-Williams and D. Hewspear (Aug. 8, p. 170) giving details of cardiac disturbances in a case of non-toxic goitre under trilene is most interesting. The writers incline to the view that the trilene was responsible for the trouble.

I have been using trichlorethylene for the past two years, during which time I have anaesthetized with this agent a considerable number of cases of thyroid, both toxic and non-toxic, without any untoward symptoms. I have not used chloral as a pre-operative sedative in these cases, and I note that the writers do not say whether they have used the chloral–trilene sequence before. The only trouble I have ever experienced with trilene is a very occasional tachypnoea of such degree that efficient tidal exchange is lacking and necessitates a change-over to some other agent.

Dr. Langton Hewer has not only pointed out the chemical resemblance between chloroform and trichlorethylene, each with three chlorine atoms, but he has also drawn attention to the dangers of primary cardiac failure following basal narcosis with trichlorethanol, which has three chlorine atoms in its structure as well. In view of the fact that chloral also contains three chlorine atoms, is it possible that the chloral–trilene combination had some deleterious effect on the heart which is not seen when these drugs are used separately?

A further point is whether the adrenaline, injected just before starting the trilene, had any bearing on the above. The effect of adrenaline upon chloroform narcosis is, of course, only too well known.—I am, etc.,

St. Leonards-on-Sea E. NEWTON PRICE.

A Light Trailer Ambulance

SIR,—I was interested to read Lieut.-Col. J. L. Moir's accoun of the "Duerr-Moir" ambulance (Aug. 8, p. 160). I should like to congratulate him on having exercised his mind to this extent in a matter of great importance.

For a considerable time we have recognized in Zone 3, Lancashire and Border District, that the standard type of stretcher, requiring as it does 2 to 4 men to transport 1 casualty a short distance, has a very limited function in open country, and that a light wheeled stretcher which can carry 2 casualties and be operated by 2 men is essential. We are developing here a purely hand-propelled "stretcher carrier" which is lighter and simpler than the trailer ambulance described; and—particularly as Lieut.-Col. Moir invites comment or criticism—I should like to state the main facts which I consider influence me in favour of this and against the trailer type.

1. The trailer ambulance can only operate on roads—that is, from casualty collecting points to the "rear area." On account of the additional weight and relatively complicated structure it would not be very easy to man-handle fully loaded over, say, 1 or 2 miles of rough country if necessary. One cannot presume that defended localities would always be within "hand carry" distance of C.C.P.s that are approachable by road, and a motor car is, of course, necessary in every case for the trailer ambulance. The trailer ambulance, therefore, chiefly caters for the relief of motor ambulances, and is concerned to a lesser extent with the difficult problem of transporting wounded from points of action to collecting points or beyond. Ambulance relief might largely be acquired by fitting simple box bodies to light car chassis. Where possible these could carry 4 or 6 cases. On the other hand, a light propelled "stretcher carrier" can operate where the trailer conveniently cannot, and could evacuate direct from defended localities "backwards" for a distance of a few miles if necessary, thereby relieving the motor ambulance to a certain extent as well as clearing the action area.

2. Increased shock to the casualties is a factor which must be considered during transport by trailer. It is impossible to avoid much bumping and side swinging when carrying a casualty in a light trailer of this type. Moreover, the protection from cold given by the light canvas sides and top is hardly offset by the hot-water bottles which would in any case be impossible to maintain.

3. Risk to the patients due to mechanical faults or breakdown—such as a broken towing attachment, tyre puncture, etc. —cannot be ruled out. Even with an attendant on the pillion seat (3 men on a light trailer would make it very unstable) the occupants of a trailer ambulance do not enjoy that degree of control which should be given to helpless men.

I mention these 3 points in fair criticism of an apparatus to which I have given some thought myself and which under favourable local conditions I consider might be of limited value. With restricted means of production, however, I believe that a light wheeled stretcher-carrier would be of greater potential value in so far as it would provide an answer to more of our problems. With this apparatus a motor car is not necessary; any 2 men can control it over a long distance; direct control of the casualties is simpler; and approach to and collection from the area of the casualties is possible. On the other hand, hilly country or roads form an obstacle which a motor-drawn ambulance could cope with better. In my opinion, however, the casualties in these should be placed inside a wooden or steel body and between the front and rear wheels.—I am, etc.,

K. VERNON BAILEY.

Vaginismus

SIR,—The interesting article by Dr. Joan Malleson (Aug. 22, p. 213) makes no mention of the rare but by no means mythical condition of deep or superior vaginismus which gives rise to penis captivus, the historical and bibliographical aspects of which I discussed some years ago (*Janus*, 1935, **39**, 196; and *Epitome*, April 11, 1936, para. 301). This "curiosity of medicine," which from ignorance or prudery on the part of the authors finds no mention in Gould and Pyle's classical work, is like the common form of vaginismus due to psychogenic spasmodic contraction of the levator ani. A typical but entirely fictitious case was reported by Osler in a mischievous mood writing under the pseudonym of "Egerton Y. Davis"

(Harvey Cushing: *Life of Sir William Osler,* 1925, **1,** 240). Although the state of the imprisoned couple has appeared so supremely ridiculous as even to raise a doubt as to its actual occurrence, the acute mental and physical suffering of the unfortunate victims during their conjunction and their feeling of shame after release has in one case at least (reported by Piltz, *Thèse de Paris,* 1931, No. 236) led to double suicide. In the few cases on record in which treatment is mentioned, chloroform has been given to the female partner to relax the vaginal spasm.—I am, etc.,

Kensington, W 8. J. D. ROLLESTON.

Self-medication and the Chemist's Shop

SIR,—The letter of Dr. Loewenthal was very much to the point, and, like him, I am surprised that such an important matter has received so little consideration from doctors generally. The fact is, however, that despite the "remarkable strides" and "wonderful discoveries" medicine is still a long way from being an exact science, and if people can obtain a "cure" in the chemist's shop they will continue to patronize it, as being a quicker and more economical method than visiting the doctor's surgery. One has only to look round any sick-room and see the litter of nostrums of all kinds to realize that for most of our patients the chemist is regarded as the first line of defence in connexion with illness. When taxed with this question the chemist's invariable answer is that if he was dependent on doctors' prescriptions for his livelihood he would have a very lean time indeed, and that force of circumstances has made him more of a shopkeeper than a pharmacist.

With regard to "counter prescribing," it is interesting to note that in most of these cases the "patient" comes along with a ready-made diagnosis, having previously consulted *Every Man His Own Doctor,* so that all the chemist has to do is to take out the appropriate remedy from its particular pigeon-hole and hand it over the counter. The transaction is rapid and easy; in many cases only a matter of seconds. Dr. Loewenthal appears to think that chemists might feel inclined to cut out this part of their business if the doctors gave an undertaking to stop dispensing; but would they? In most cases it is improbable that the increased revenue from prescriptions would compensate them for the loss in selling both their own and proprietary preparations, more especially in view of the enormous demand for the latter by a large section of the public. Moreover, if the customer cannot get his favourite remedy from the chemist he can easily get it elsewhere, as most of the small general shops stock patent medicines now. In addition the vested interests behind the proprietary drug trade are powerful, and as they are extensive advertisers in the lay press we could not expect much support from that quarter. There is a further complication in the fact that so many doctors' dispensers also fill the role of book-keeper and receptionist. It would be interesting to know what others think about the matter.—I am, etc.,

Leicester E. J. O'SULLIVAN.

Tietze's Disease

SIR,—Having read with interest the article on Tietze's disease by Drs. A. Morton Gill, R. Arden Jones, and L. Pollak (Aug. 8, p. 155) we thought the following case might prove of interest.

On July 27, 1942, a rating aged 19 reported at the sick bay on board H.M.S. —— complaining of pain and a lump in the chest. On examination a prominent swelling was seen just below and to the right of the xiphisternum. The swelling was "springy" and occupied the area of the seventh right rib cartilage, oval in shape, with its long axis, about one and a half inches, parallel with the cartilage with which it seemed to be continuous. It was not tender, but he complained of some pain on strenuous exercise. It was difficult to diagnose so we had an *x*-ray examination made. The report gave no structural abnormality. Potassium iodide as a form of treatment unfortunately produced acute iodism. In view of this and the lack of symptoms he was reassured and sent back to work. On examination 3 weeks later the swelling had diminished considerably but was still present. There were no symptoms.—We are, etc.,

K. C. BALFOUR.
W. F. VIRET.

Obituary

ARTHUR VERNON DAVIES, O.B.E., M.B., Ch.B.

We regret to announce the death at the age of 70 of Dr. Arthur Vernon Davies, O.B.E., Unionist Member of Parliament for the Rayton Division of Lancashire from 1924-31. Dr. Davies was a graduate of Victoria University, Manchester, where he qualified M.B., Ch.B. in 1895. He was subsequently house-surgeon at both the Royal Infirmary and the Northern Hospital for Women and Children, Manchester. During his 23 years in general practice in Shaw, Lancashire, Dr. Davies held many public appointments, including that of medical officer of health for Crompton. His lively interest in the health and welfare of his own town never lessened, and after his election to Parliament in 1924 he became one of the most regular attendants at the House of Commons. Any medical matters before Parliament were assured of his keenest interest. He was always a fearless critic of any measure with which he did not agree, and an equally staunch supporter of those of which he approved, especially those which he felt from his own experience would be of the greatest benefit to his constituents, among whom he had worked during his years in general practice. Ill-health compelled him to give up all his public work in 1931. Perhaps Dr. Davies's greatest professional interest was in the St. John Ambulance movement, which he joined soon after going to Shaw. As Assistant Commissioner for No. 4 District he put in a great deal of time during the last war, when he had under his supervision 20 auxiliary hospitals. After he retired to Surrey in 1922 he became for a time Commissioner for No. 8 District. In 1918 he was made a Knight of Grace of the Order of St. John of Jerusalem. Dr. Davies was a member of the British Medical Association from 1898 until his death, and a member of the Association's Parliamentary Subcommittee in 1930-1.

He leaves a widow, one son, and one daughter.

We regret to announce the death of Dr. MIDDLETON CONNON of Aberdeen, a well-known radiologist and an authority on the medical aspects of workmen's compensation. Dr. Connon, who was 67, qualified in 1896, and 2 years later took the D.P.H. After a period as resident surgeon and physician at the Royal Infirmary, Aberdeen, and the Royal Aberdeen Hospital for Sick Children, he practised with the late Dr. Key at Montrose, and then, in 1904, the year in which he took his M.D., he was appointed radiologist to the Royal Infirmary and lecturer in radiology to his old university. His association with the *x*-ray department of the Royal Infirmary continued for many years, and at the time of his death he was consulting radiologist to that institution. He served with the Forces in the last war, and afterwards was appointed examining officer for the Ministry of Pensions. He was also an examiner for the General Nursing Council in Scotland. Dr. Connon joined the B.M.A. at the time of his qualification, and for 11 years was honorary secretary of the Aberdeen Division, his period of office including the visit of the Association to Aberdeen for its Annual Meeting in 1939. Not a little of the success of that last pre-war meeting was due to his labours. At the same meeting he was vice-president of the Section of Radiology. He did much good work for the Association in the "Far North."

A well-known Edinburgh practitioner died on July 30 in Dr. JOHN MAY DARLING, D.S.O., consulting surgeon to the Edinburgh Eye, Ear, and Throat Infirmary. Dr. Darling, who was one of three brothers, all of whom were doctors, was the son of a Leith schoolmaster, and was born in 1878. He was educated at the Royal High School, from which he proceeded to the University of Edinburgh, where he qualified in 1903. He also studied for a time at the University of Marburg in Prussia. In 1906 he became a Fellow of the Royal College of Surgeons of Edinburgh. While house-surgeon at the Edinburgh Royal Infirmary he began to devote special attention to the study of the ear, nose, and throat, and after serving as clinical assistant in the otolaryngological department, he was appointed surgeon to the Edinburgh Eye, Ear, and Throat Infirmary, with which he remained associated for the rest of his life. During the last war he saw service in France, Belgium, Egypt, and Salonika, and retired with the rank of major R.A.M.C. He was medical officer to the Edinburgh Provincial Committee for the Training of Teachers at Moray House. He was a member of the Scottish Otological and Laryngological Society and the author of several papers in the *Edinburgh Medical Journal* on otological subjects. Dr. Darling had been a member of the British Medical Association for just over 30 years. He was a widower and is survived by two sons, one of whom is a medical man now serving in the R.A.M.C.

We regret to announce the death at Devizes on Aug. 4 after a long illness of Mr. James Thompson at the early age of 47. He was born at Penrith, Cumberland, in 1895 and received his early education there at Queen Elizabeth Grammar School. From Penrith he went to Edinburgh University, where he qualified M.B., Ch.B. in October, 1917. He served in France for the remainder of the last war, first as lieutenant and then as captain R.A.M.C. He was regimental medical officer to several battalions of the Bedfordshire Regiment, and it was while he was attached to them that he was awarded the M.C. After demobilization he took an assistantship at Taunton, where, in 1921, he married Miss Margaret Catherine Seaton. He then went back to Edinburgh University and in 1922 obtained his surgical fellowship. In the same year he acquired a practice in Devizes, where he lived until his death. He was the senior honorary surgeon to the District Hospital, Devizes, and consulting surgeon to the Wilts County Mental Hospital, Devizes; at one time he was consulting surgeon to the Wilts County Constabulary. He was also a borough magistrate. Mr. Thompson was a surgeon of outstanding ability and for some time had consulting rooms in Harley Street. Just before his illness began in January, 1942, he had been carrying out cancer research work along novel lines. He will be greatly missed by both professional and personal friends.

The Services

The Distinguished Service Cross has been awarded to Temp. Surg. Lieut. D. R. S. Howell, R.N.V.R., for bravery and enterprise in the successful operations which led to the surrender of the important base of Diego Suarez, and to Temp. Surg. Lieuts. J. W. Boland and R. Ransome-Wallis, R.N.V.R., for distinguished services in convoys to and from Murmansk, through the dangers of ice and heavy seas and in the face of relentless attacks by enemy U-boats, aircraft, and surface forces. Surg. Cmdr. W. F. Lascelles, Prob. Temp. Surg. Lieut. B. W. Davy, and Temp. Surg. Lieuts. J. B. Houghton, I. Miskelly, and J. W. J. Knowles, R.N.V.R., have been mentioned in dispatches for distinguished services in the Murmansk convoys.

CASUALTIES IN THE MEDICAL SERVICES

Col. William Walker, M.C., is included as "Died" in an Army Council Casualty List published on Aug. 21. He was born in 1890 and graduated M.B., Ch.B. at the University of Aberdeen in 1914, proceeding M.D. in 1932. In the war of 1914-18 he saw service in France and gained the Military Cross in 1918 for conduct described in the *London Gazette* as follows: "He proceeded to a village under heavy fire and succeeded in attending and evacuating several wounded. He only desisted when the enemy entered the village. Later, he succeeded in releasing a party of stretcher-bearers who had been cut off. Throughout the operations he has shown the utmost energy and courage." After the war he took a permanent commission in the R.A.M.C. and served in Palestine and India, in the Poona and Deccan Districts, and in 1931-2 he became deputy assistant director of pathology of the Northern Command, York. He contributed an article entitled "An Investigation into Cases of Cerebrospinal Fever in the Northern Command of the Army during 1931" to the *Journal of the Royal Army Medical Corps* in 1932-3, concluding with a plea for early diagnosis of the disease. From 1933 to 1939 he resided at North Shields, where he became assistant school medical officer to the County Borough of Tynemouth and honorary pathologist to Tynemouth Victoria Infirmary. On the outbreak of the present war he was recalled for service with the rank of lieut.-col., being promoted full col. soon afterwards. He had been a member of the B.M.A. for 24 years.

Acting Group Capt. Gerard Joseph Hanly, R.A.F., died in Aug. on active service in the Middle East. A native of Elphin, Co. Roscommon, he was educated at the University Colleges of Galway and Dublin, graduating M.B., B.Ch., B.A.O. of the National University of Ireland in 1923, also taking the F.R.C.S.Ed. in 1931. He entered the R.A.F. as flying officer in 1924, became flight lieut. in 1926, squadron leader in 1934, wing cmdr. in 1938, and was recently granted the acting rank of group capt. Before the war he saw service in India, Iraq, at Aden, and in Egypt. He leaves a widow. He had been a member of the B.M.A. since 1926.

Flight Lieut. Ian Gordon Lennox, R.A.F.V.R., died in Westminster Hospital on Aug. 8. He was born on Aug. 16, 1914, and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1938. He held the post of resident medical officer at Paisley Infectious Diseases Hospital from May, 1940, until the following Sept., when he entered the R.A.F.V.R. as temp. flying officer, being promoted war subs. flight lieut. a year later. He was a brother of Mr. D. K. Lennox, F.R.C.S.Ed., of Blackpool.

Lieut. Donald Seymour Scott, R.A.M.C., is now presumed to have died of wounds received in May, 1940, while attending casualties at Cassel. He was born on June 27, 1911, the elder son of Mr. and Mrs. A. E. Scott of Maidstone, and was educated at Felsted School, at Emmanuel College, Cambridge, and at the London Hospital. He qualified M.R.C.S., L.R.C.P. in 1935 and took the degrees of M.B., B.Chir. two years later. He followed his 2nd Class Tripos (pathology) with a number of hospital appointments and obtained the M.R.C.P. in 1939. He entered the R.A.M.C. as temp. lieut. in Jan., 1940. He leaves a widow.

Prisoners of War.—Temp Major E. G. Collins, R.A.M.C., Capt A. W. V. Eley, R.A.M.C., Capt H. Houghton, R.A.M.C., Major W. R. Hunter, R.A.M.C., Capt. J. A. Learner, R.A.M.C., Temp Major J. R. A. Martin, R.A.M.C., War Subs. Capt. W. Milburn, R.A.M.C., War Subs. Capt. G. F. R. Parker, R.A.M.C., Capt. W. L. Petter, R.A.M.C., War Subs. Capt. T. St. J. H. Silvester, R.A.M.C.

Wounded.—Capt. L. G. Hannah, R.A.M.C., Capt. A. B. Waters, R.A.M.C.

DEATHS IN THE SERVICES

Col. Thomas Arthur Granger, C.M.G., I.M.S. (ret.), died at Exmouth on Aug. 4, aged 70. He was born on Aug. 12, 1871, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1892. Entering the I.M.S. as surg lieut. in 1894, he became lieut.-col. after twenty years' service, col. in March, 1922, and retired four months later. He served in the Frontier expedition in Mekram in 1898 and in the North-West Frontier campaign of 1898-9, against the Chamkannis (medal and clasp). From 1911 to 1914 he was A.D.M.S., Army Headquarters, India, and from 1914 to 1919 was Honorary Surgeon to the Viceroy. He served in the war of 1914-18, and in 1915-16 he was A.D.M.S. at the headquarters of the Egyptian Expeditionary Force and the Mediterranean Expeditionary Force and from 1916 to 1918 was A.D.M.S., 4th Cavalry Division, in France. He was twice mentioned in dispatches and was appointed C.M.G. in 1918. He was the author of a small book on *The Art of Sailing*, 1933. He had been a member of the B.M.A. for 25 years.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* a rise in the notifications of whooping-cough, diphtheria, and acute pneumonia—172, 85, and 27, respectively, in excess of the previous recorded number—interrupted the general trend of a falling incidence of infectious diseases during the past few weeks. For the sixth consecutive week there was a sharp fall in the notifications of measles, the total being 636 fewer than in the preceding week. There were 31 fewer cases of dysentery, and the lowest weekly total for 12 months was recorded.

The rise in diphtheria notifications was due mainly to two counties—Lancashire and Durham, with increases of 34 and 35 cases. In the former county the chief centre of infection was Liverpool C.B. 42 cases, and in the latter it was Easington R.D. 23.

A small rise in the incidence of whooping-cough was fairly general throughout the country. In Yorks West Riding there was a total of 184 cases, compared with 127 in the preceding week.

In *Scotland* the incidence of diphtheria has increased for the fifth consecutive week. The chief centres of infection are Glasgow, Dundee, and Lanark, where 57, 25, and 13 cases were notified during the week.

Typhus

In *Eire* 5 cases of typhus were notified in the rural district of Kanturk, Co. Cork. This is the third outbreak during this year, the two previous ones being in Westport U.D., Co. Mayo, 5 cases, and Shillelagh R.D., Co. Wicklow, 3 cases.

Returns for the Week Ending August 22

The notifications of infectious diseases during the week in England and Wales included the following: scarlet fever 1,332, whooping-cough 1,235, diphtheria 629, measles 4,089, acute pneumonia 346, cerebrospinal fever 68, acute poliomyelitis 19, dysentery 59, paratyphoid 8, typhoid 15.

No. 32

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 15.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	1942 (b)	1942 (c)	1942 (d)	1942 (e)	1941 (Corresponding Week) (a)	1941 (b)	1941 (c)	1941 (d)	1941 (e)
Cerebrospinal fever	70	4	21	1	3	144	18	38	5	8
Deaths		3	—		[illegible]			1		
Diphtheria	665	32	184	33	15	667	46	199	15	31
Deaths	15	1	3	1	1	18	1	2	2	3
Dysentery	51	10	44		—	40	10	45		—
Deaths		1		—	—		1		—	—
Encephalitis lethargica, acute	2	—	—		—	3	—	4	2	—
Deaths		—					—			
Enteric (typhoid and paratyphoid) fever						38	3	6	6	1
Deaths						3	2	—	—	—
Erysipelas	—	—	40	6	3	—	—	37	5	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				91						
Deaths .. .	34	2	14	11	6	51	3	8	23	1
Measles	4,983	475	126	24	31	2,276	84	26	102	1
Deaths	4	—	1	—	—	2	—	—	1	
Ophthalmia neonatorum	76	2	14	—	—	72	3	14	2	1
Deaths .. .										
Paratyphoid A and B	13	1	—	—	—	150	2	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	440	14	7	1	—	408	21	6	1	—
Deaths (from influenza)	11	1	1	—	—	2	12	2	1	3
Pneumonia, primary ..			138	8				120	9	—
Deaths . .				11	5				2	—
Polio-encephalitis, acute	3	—				2	2			
Deaths . ..		—					—			
Poliomyelitis, acute ..	15	1	1	2	—	30	—		5	1
Deaths .. .		—	—	—			—	—	—	
Puerperal fever ..	—	1	8	1	1	1	1	10	2	—
Deaths		—					—			
Puerperal pyrexia ..	175	6	11		4	126	112	16	2	2
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	1,332	76	253	46	24	804	27	118	32	20
Deaths	—	—	1	—	—	2	—	—	—	
Small-pox	—	—	1		—	—	—	—		—
Deaths .. .	—	—	—	—	—	—	—	—	—	—
Typhoid fever	15	—	—	20	1	—	—	—	—	—
Deaths			—	1	—			—	—	—
Typhus fever	—	—	—	5	—	—	—	—	—	—
Deaths .. .			—	—	—			—	—	—
Whooping-cough ..	1,125	97	17	51	18	3,138	206	84	37	28
Deaths	4	1	—	2	—	19	3	5	—	1
Deaths (0–1 year) ..	287	28	63	31	20	252	22	63	38	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,664	514	538	166	107	3,420	436	518	182	116
Annual death rate (per 1,000 persons living)			12.1	11.1	†			11.3	12.1	†
Live births	5,939	727	853	435	310	4,392	340	841	290	166
Annual rate per 1,000 persons living ..			17.6	29 0	†			17.1	19.3	†
Stillbirths	220	18	38			192	14	38		
Rate per 1,000 total births (including stillborn)			43					43		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The Medical Society of Pernambuco, Brazil, has recently celebrated the centenary of its existence.

The Trustees of the Leverhulme Research Fellowships have approved the award of a research grant to Dr. Frank Ellis, medical director of the Sheffield Radium Centre, for an investigation into the systematic effects of x and gamma radiation, their control and prevention. Application forms and information about Fellowships and grants may be obtained from the Secretary, Leverhulme Research Fellowships, Unilever House, Blackfriars, E.C.4.

The Board of Registration of Medical Auxiliaries has just issued a Register of Speech Therapists. Medical practitioners and hospitals and educational authorities may obtain free copies of the Register from the Secretary of the Board of Registration, B.M.A. House, Tavistock Square, London, W.C.1.

We have received from the Public Dental Service Association (15, Taviton Street, Gordon Square, W.C.1) a copy of the memorandum which the association has placed before the Interdepartmental Committee on Social Insurance and Allied Services (the Beveridge Committee). It presents the case for a national dental service as part of the health and medical services of the community, under the direction of a dental controlling authority. Preventive treatment, especially in pre-adult life, would be the chief aim of the service, and this be provided, for the present, through the existing private practitioner system.

The British Federation of Social Workers (5 Victoria Street, S.W.1) has issued in pamphlet form a report of the conference on social changes due to the war and their significance, held in London last February. Copies may be obtained from the honorary secretary, price 2s.

The Prime Minister of Australia announced on August 27 that he had co-opted Sir Earle Page to the Commonwealth War Council and that Sir Earle would attend the meetings of the War Cabinet, so that the knowledge and experience he gained as representative of Australia in the United Kingdom War Cabinet and on the Pacific War Council in London would be available to the Commonwealth Government.

The Association of Scientific Workers is organizing an exhibition to be held in November at the premises of the Royal Photographic Society, to illustrate the applications of photography to medicine, science, and industry with a view to making such information more widely available and better known to the public. Those who may be able to provide exhibits are asked to write to the Hon. Secretary, Photographic Exhibition Committee, Association of Scientific Workers, 73, High Holborn, W.C.1, for further details.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Ectodermal Dysplasia

Dr. W. A. H. BELL (Highgate) writes: Recently a case of old-standing almost complete alopecia has come under my care—a man of 40. He is the nervous, worrying type, and the skin of the body is dry and the finger- and toe-nails brittle and distorted. It would appear that there is some ectodermal disturbance affecting both hair and nails. At different times he has had all sorts of local applications to the scalp—ionization, etc.—without success. I should be interested to hear if any doctor has ever tried glandular therapy for these cases, and, if so, with what result.

Income Tax

Locumtenent and Assistant M.O.H.

"Z" did not work between January, 1941, and April 5, 1941; he acted as locumtenent for two weeks between the latter date and June 16, when he began work as an assistant M.O.H. on a salary plus weekly bonus, receiving a car allowance of 4d. per mile. He bought a Ford 8 on April 23, and sold it on June 20 at a loss of £44, buying a Standard 12 for £130.

*** "Z" is assessable for the current financial year on the basis of his earnings of the actual year. As the liability falls under Schedule E he can claim only such expenses as are incurred "wholly, exclusively, and necessarily in the performance of the duties of the office." The word "necessarily" is important—e.g., if "Z" uses a larger car than is necessary he cannot legally bring into the computation the whole of the resulting expenses. In point of fact it is the practice of the authorities to decline to make deductions from salary for any motor expenses when a mileage allowance is received, on the ground that taking one year with another the allowance may be presumed to cover the necessary costs. If, however, it can be shown that the allowance is in fact inadequate there is a legal claim to a deduction for such portion of the "necessary" expenses as are not covered by the mileage allowance. In making such a claim the cost of replacement basis for renewal of a car would probably be refused on the ground that it is not an annual expense, but the depreciation allowance—at, say, 24% of the written-down cost of the car—would be allowed in lieu of cost of replacement.

Cash Basis

E. desires to change the basis of his accounts for income tax as from March 31, 1941, treating his gross earnings as the amount of cash received in the year instead of the amount of the bookings less an allowance for bad and doubtful debts. The Panel cheque received on April 1, 1941, was £44 more than the amount received on April 1, 1942, and it is suggested that as tax has been paid upon the former amount the latter should be included in the cash basis account for 1941-2 instead.

*** In the first place we doubt whether the Revenue authorities will acquiesce in the proposed change in basis. The "cash receipt" basis has no legal validity and is accepted only when the gross earnings of a practice are reasonably stable and great difficulty is experienced in approving any other basis. If, however, the authorities do agree to the change it is fairly certain that no exceptions would be allowed to the bringing in of *all* cash received in the selected year. The argument that tax has already been paid on an item of income earned before but received after March 31, 1941, is of general application, and E would be open to the reply that while the Panel cheque would work against him in the event of a change of basis, other items might work against the Revenue.

LETTERS, NOTES, ETC.

Auscultation in Non-penetrating Abdominal Injuries

Dr. H. P. TAIT (Edinburgh) writes: I was extremely interested in Mr. Th. Schrire's paper on non-penetrating injuries of the abdomen (Aug. 1, p. 127), and noted in particular that he made no mention of the use of auscultation of the abdomen in such cases. The value of this form of diagnostic aid is emphasized in at least one standard textbook of surgery (Romanis and Mitchiner, *Science and Practice of Surgery*, 3rd edition, 2, 508). In view of the importance of early diagnosis of such difficult cases, I would be glad to hear of other opinions on the value of auscultation in such cases as may be met with in A.R.P. work.

Treatment of Plantar Warts by Elastoplast

Dr. H. HUGHES JONES (Nevin) writes: I was interested to read Dr W. Hirst Bateman's medical memorandum on the treatment of plantar warts by elastoplast dressings (Aug. 8, p. 158). I have used a similar dressing for some years with gratifying results. My method is as follows. A first dressing of elastoplast is put on, with a perforation therein for the wart to protrude. This is covered by a second layer of elastoplast and left intact for about 21 days. By this means pressure from footwear is minimized, and the relief from pain experienced by the patient is most welcome. The dressing is generally renewed in 21 days, and the wart disappears in from 6 to 8 weeks.

Plague

Dr. S. A. MONTGOMERY (Bournemouth), in the course of a letter, writes: In your Nova et Vetera column on July 25 the short article written by Lieut.-Gen. Sir W. P. MacArthur must have been read by many like myself with much interest and instruction. Plague, everyone knows, is endemic in India, and with that country so near our shores by air the practitioner might any day be confronted with a case that had passed through the airport medical officer's hands before the disease had fully developed or the incubation period was completed. The incubation period of plague is comparatively short, and so the disease has not time to incubate fully on the journey by air. In a paper read at a health congress at Belfast in 1932 Dr. W. M. Frazer, port medical officer, Liverpool, stated that an outbreak of human plague occurred as recently as 1910-11, when four cases were reported, contracted from hares infected by rats in East Suffolk. The outbreak was very restricted, and the number of fleas in East Suffolk that winter scanty—averaging under one flea per rat—and the *Xenopsylla cheopis* was absent, so that conditions for rapid infection of human beings were not present.

Action of the Heart under Anaesthesia

Dr. P. GOLDSCHEIDER (Enfield) writes: In your leading article (July 18, p. 73) you say that Dr. John Elam made a useful suggestion that "the Association of Anaesthetists might carry out an investigation into the relative safety of the various anaesthetics now used in general surgery and so lead to an assessment of their indications and contraindications" May I remark that at least part of the toxic influence of the various anaesthetics—namely, the influence on the heart—can be investigated by a strictly objective method by taking electrocardiograms of patients while under an anaesthetic. Different authors have made such tracings. I have made quite a number with ethyl chloride, ether, pentothal, and gas and oxygen anaesthesia. The results show that all the various anaesthetics influence the heart by producing arrhythmias, extrasystoles, changes in the appearance of the T-wave, depression of the S-T stretch, etc. This influence is usually quite transient, but I was induced to make this investigation years ago by finding a pathological electrocardiogram in a formerly quite healthy young man 3 months after appendicectomy. Investigations on a large scale would certainly make a valuable contribution in the assessment of the indications and contraindications of the various anaesthetics.

Nomenclature of Night-blindness

Dr. FRANCIS E. PRESTON (London, E.11) writes: I thank Dr. J. Price Williams (Aug. 1, p. 148) for his healthy constructive criticism of that portion of my article dealing with this subject. The word "nyctamaurosis" was carefully considered by me, but was turned down for the following reason. Amaurosis is an established word with a precise meaning. Neame and Williamson-Noble, in the glossary contained in the 1942 edition of their *Handbook of Ophthalmology*, define it as a serious defect of vision without any visible disease of the eye "Nyctamaurosis" can only indicate those defects of night vision where there are no external or ophthalmoscopic signs of disease. How, therefore, are we going to express the state when there are signs of disease? "Nyctamauroma," being a new word, can cover both conditions.

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journal*, September 3, 1842:

"It is thought by some of the advocates for a reform of the abuses which disgrace the whole of our medical polity, that a revision of the system of education should form a part of any legislative measure which may be brought forwards to receive the sanction of Parliament. . . . The first object of medical education is to prepare such a number of well-qualified practitioners for the public service as the wants of the community require. Medical practitioners well grounded in the principles of the profession, and capable of treating, as they arise, cases of disease, external or internal, are what are wanted for the care of the public health. To be an accomplished literary scholar, or an acute mathematician; to be well acquainted with botany or zoology, or even to be thoroughly instructed in chemistry, anatomy, and physiology; are of no avail if the practical application of these preliminary studies to the cultivator of medicine or surgery be wanting. Whatever importance, therefore, may attach to certain of these branches of knowledge, and we are far from underrating their value, they can be considered only as preparatory to the main object of qualifying the candidate for the due performance of his medical duties. . . . But, at the same time that every provision should be made for adequate medical instruction, we would not be understood to advocate the drawing of the reins of academical discipline so tight as to place the intelligent student in trammels, which, while they compel his attention to certain prescribed studies in a certain prescribed order, often prevent him from giving that free course to his natural talent which would enable him to arrive at the same end with more satisfaction, as well as with less labour to himself, or force on his mental faculties. The cultivators of medicine ought never to forget that some of the most eminent individuals, whose names are preserved in the records of their science, have been self-educated."

*** The *Provincial Medical Journal* subsequently became the *British Medical Journal*.

BRITISH MEDICAL JOURNAL

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PLASMA PROTEIN CONCENTRATION AFTER HAEMORRHAGE

BY

J. BEATTIE, M.D., D.Sc. AND H. B. COLLARD,* B.A.

(*From the Bernhard Baron Research Laboratories, Royal College of Surgeons of England*)

After haemorrhage the blood volume is rapidly restored to its pre-haemorrhage level in cats (Robertson, 1935) and more slowly in human subjects (Stead, 1940 ; Wallace and Sharpey-Schafer, 1941) and in dogs (Price *et al.*, 1941). It is generally assumed that the fluid from the tissue spaces which enters the blood stream to restore the blood volume is weak in plasma proteins. These substances have been shown by Madden and Whipple (1940), in long-term experiments, to be replaced either from existing plasma protein stores or from protein synthesized from ingested foodstuffs. There are few data, however, on the replacement of plasma proteins from existing stores in the early hours after haemorrhage. The experiments recorded here throw some light on the movement of plasma protein into the blood stream during the first 2 hours after known quantities of blood had been withdrawn from the circulation.

TABLE I.—*Haemoglobin (Hb) and Plasma Protein (P.P.) Concentrations after Haemorrhage*

No.	Before Haemorrhage		Minutes after Haemorrhage																	
			15		30		45		60		75		90		105		120		135	
	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.
60	100	8·06	91·0	7·01	92·7	6·90	90·3	6·97	92·3	—	90·3	—	89·7	7·31	89·7	7·18	—	—	—	—
63	100	6·63	94·3	6·36	91·3	6·29	94·1	6·26	88·1	6·29	88·7	6·22	86·3	6·02	84·8	6·16	88·7	6·16	82·6	6·46
64	100	7·09	93·8	6·60	87·2	6·53	85·7	6·24	83·3	5·70	80·6	5·68	76·1	5·54	—	—	—	—	—	—
65	100	7·01	87·7	5·92	83·3	5·71	75·0	5·82	75·0	5·85	73·9	5·88	72·8	5·82	75·0	5·68	71·4	5·82	62·2	6·09
76	100	7·92	94·8	6·73	93·4	6·56	90·8	6·39	90·0	6·36	80·6	6·39	80·6	6·29	79·5	6·22	—	—	—	—
103	100	7·04	98·8	6·39	98·0	6·46	96·9	6·33	95·2	6·39	96·2	6·33	95·8	6·26	95·5	6·26	—	—	—	—

Methods

Cats anaesthetized with nembutal injected intraperitoneally (50 mg. per kg. of body weight) were used. After induction 4 hours was allowed for stabilization of blood volume before an experiment was started. The animals were heparinized during an experiment, and blood or plasma from heparinized animals was used for transfusions. Blood samples of 1 c.cm. and blood for haemorrhage were taken from a femoral artery, while transfusions were given by a femoral vein. Haemoglobin was estimated in 0.05-c.cm. samples by the alkali–haematin method, using a photo-electric colorimeter. Plasma specific gravities were estimated by the falling-drop method of Barbour and Hamilton (1926). Plasma protein values were deduced from the plasma specific gravities, using the formula of Weech *et al.* (1936), or determined direct by the biuret method of Robinson and Hogden (1940).

Observations

Single Haemorrhages

The changes in haemoglobin and plasma protein concentrations after 20% haemorrhages are shown in Table I. If it be assumed that all erythrocytes discharged from "stores" during and after the haemorrhage find their way into the circulation and are thoroughly mixed when the 30-minute samples are taken, then the subsequent falls in haemoglobin concentration would be due to movement of fluid into the blood stream. If no new protein enters the blood stream, then the ratio of haemoglobin concentration at the 30-minute sample to the haemoglobin concentration in a subsequent sample would be identical with the ratio of the plasma protein concentration at the 30-minute sample to the plasma protein concentration in the same subsequent sample—e.g.,

$$\frac{\text{Hb conc. (30 min.)}}{\text{Hb conc. (75 min.)}} = \frac{\text{Pl. protein conc. (30 min.)}}{\text{Pl. protein conc. (75 min.)}}$$

Calculating the expected plasma protein concentration at the 75-minute samples, which allow slightly more than 1 hour after the end of the haemorrhage, the values in Table II, column 3, are obtained. Similarly, the expected values for plasma protein concentration are calculated for the last sample in each experiment. These are given in Table II, column 6.

A comparison of the expected values at 75 or 90 minutes in column 3 with the observed values in column 2 shows that 4 out of 5 animals had expected values lower than those observed, and one animal had observed and expected values almost identical. The expected and observed values at the end of each experiment are shown in Table II, columns 5 and 6. The animals which showed expected values lower than the observed ones at 75 or 90 minutes show a lower expected value at 105 or 135 minutes than that observed. The observed and expected values in Cat 103 were almost identical. Cat 64 differed from the rest of the experiments in this group. Dilution had progressed from 87.2 to 76.1 haemoglobin concentration, but the fall in plasma protein concentration was greater than that to be expected from the fall in haemoglobin.

TABLE II

No.	Observed Plasma Protein	Expected Plasma Protein	Time after Haem. (Min.)	Observed Plasma Protein	Expected Plasma Protein	Time after Haem. (Min.)
60	7·31	6·68	90	—	—	—
63	6·22	6·11	75	6·46	5·84	135
64	5·54	5·70	90	—	—	—
65	5·88	5·06	75	6·09	4·26	135
76	6·39	5·66	75	6·22	5·58	105
103	6·33	6·34	75	6·26	6·30	105

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* Leverhulme Scholar, Royal College of Surgeons of England

Haemorrhages followed by Blood Transfusions

The animals in this series (5) were bled, and after varying times had the blood which had been removed reinjected. The quantity reinjected approximated closely to that removed (Table III). At the end of the period allowed for dilution—75 or 90 minutes (except Cat 131)—the differences between the expected and observed values for plasma protein were small, with one exception in which the values were identical. The observed values were slightly higher in 3 out of 4 animals (Table IV, columns 4 and 5). After the reinjection of the blood the experiments were continued for at least an hour. In every experiment the amount of plasma protein expected from changes in haemoglobin concentration was greater than that actually observed (Table IV, columns 6 and 7).

Cat 131 had its blood returned 30 minutes after haemorrhage. The observed value for its plasma protein was less than the expected value by a considerable margin 1 hour after the reinjection.

TABLE III.—*Haemoglobin (Hb) and Plasma Protein (P.P.) Concentrations after Haemorrhage and Blood Transfusions*

No.	Before Haem and Blood Trans		Minutes after Haemorrhage and Blood Transfusions																			
			15		30		45		60		75		90		105		120		135		150	
	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P P	Hb	P P	Hb	P P.	Hb	P.P.	Hb	P.P	Hb	P.P.	Hb	P.P
123	99·7	6 36	100·0	5 68	98·9	5 58	100 6	5 71	101 5	5·68	102 0	5·71	†99·4	5·71	102·6	6·22	106 5	6·26	108 2	6 33	106·9	6 3
124	100·3	6·53	106·0	6·36	111 0	6 36	109 4	6·43	110·4	6 43	†108·2	6·29	111·7	7·04	110 4	6·97	112·0	6 90	110·4	6·77	109·1	6·8
*126	100·0	7·11	91 3	6 33	91·6	6·33	91 6	6 26	90·3	6 22	†90·1	6·26	97 7	7 04	98 6	7·04	98·9	6·90	99·1	6·94	99·8	6·8
127	100·0	6 46	95·7	5·88	94·9	5 88	92·7	5·68	90 6	5 88	93 2	5·71	†93 2	5·78	98 8	6·36	101 2	6·36	100 0	6·36	101·0	6 3
131	100·0	8·64	97·8	7 62	†96·4	7·26	103·8	8·81	103 8	8·81	105·3	8 81	106 0	8·57	—	—	—	—	—	—	—	—

* Previous plasma transfusion before haemorrhage † Blood transfusion given immediately after these samples.

TABLE IV

No.	Observed Plasma Protein before Haemorr.	Observed Plasma Protein 30-Min. Sample	Observed Plasma Protein before Blood Trans.	Expected Plasma Protein before Blood Trans.	Observed Plasma Protein after Blood Trans	Expected Plasma Protein after Blood Trans.
123	6 36	5·58	5·71	5·61	6 33	6 48
124	6·53	6·36	6·29	6 20	6 80	6·88
*126	7 11	6·33	6·26	6·22	6·87	7·19
127	6 46	5·88	5 78	5·78	6 33	6·50
131	8 64	7·26	7·26	—	8·57	9·00

* Plasma transfusion of 30 c.cm. at 63 minutes before haemorrhage

Haemorrhages followed by Plasma Transfusions

The observations are shown in Table V. Cat 67 was given plasma of a lower protein content than that of its own plasma before haemorrhage. Before the plasma transfusion the observed and expected plasma protein concentrations were almost identical (Table VI, columns 3 and 4). At the end of 75 minutes after the transfusion the observed plasma protein concentration was less than that expected (Table VI, columns 5 and 6). The amount of plasma given to this animal was less than one-third of the volume of blood removed. Cat 101 was bled 50 c.cm. and given 40 c.cm. of plasma with a high protein content (7.89 per 100 c.cm.) 15 minutes after the end of bleeding. The expected plasma protein concentration at the end of the experiment was higher than that observed (Table VI, columns 5 and 6). Cat 107 was bled 60 c.cm. and given only 20 c.cm. of plasma with a protein content of 5.85 g. per 100 c.cm. 30 minutes after the end of bleeding. At the end of 105 minutes after the transfusion the observed plasma protein concentration was less than that expected (Table VI, columns 5 and 6).

Cats 89 and 90 were given plasma transfusions equal to half the volume of the subsequent haemorrhage about 45 minutes before bleeding was started. Cat 89 was bled 30 c.cm. and given 15 c.cm. of plasma with a protein content of 6.87 g. per 100 c.cm. 1 hour after haemorrhage. The observed value of plasma protein concentration was considerably greater than that expected immediately before transfusion (Table VI, columns 3 and 4). Forty-five minutes after transfusion the observed value was only slightly lower than that expected (Table VI, columns 5 and 6). Cat 90 was bled 38 c.cm. and given 19 c.cm. of plasma with a plasma protein content of 7.35 g. per 100 c.cm. 65 minutes after haemorrhage. Before the plasma transfusion the observed value of plasma protein concentration was slightly higher than that expected (Table VI, columns 3 and 4); 45 minutes later the observed plasma protein level was higher than that expected (Table VI, columns 5 and 6).

TABLE V.—*Haemoglobin (Hb) and Plasma Protein (P.P.) Concentrations after Haemorrhage and Plasma Transfusions*

No.	Before Haem. and Plasma Trans.		Minutes after Haemorrhage and Plasma Transfusions																			
			15		30		45		60		75		90		105		120		135		150	
	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P	Hb	P P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P.P.	Hb	P P.	Hb	P.P.
67	100 0	7·92	95·3	7·18	92 0	7 07	93 1	7·11	92 0	6 87	†87·2	6 70	78·3	7·21	77 6	7·18	76·9	7·18	78 3	7 24	80 5	7 24
*89	100·0	7·55	95·1	7·58	96·5	7 65	†93 5	7 96	88·5	7·89	84·7	7 86	89 8	7·96	—	—	—	—	—	—	—	—
*90	100 0	7·62	100·7	7·01	100 4	7 07	103·2	7 24	†101 0	7·18	88·9	7 21	87 9	7 28	88·9	7·45	—	—	—	—	—	—
101	101·2	7 04	†94·9	6 05	79·7	7 21	77 6	6·80	76 7	7 11	77 0	6·87	76·5	—	75·3	—	74 1	6·46	—	—	—	—
107	100 0	7·58	100·7	7 04	100·3	7 04	98·2	7·01	95 0	7 01	101·8	7·48	102·7	7·35	103 0	7·18	100 0	7·31	100 0	7·01	—	—

* Plasma transfusion before haemorrhage. † Plasma transfusion given immediately after these samples.

TABLE VI

No.	Observed Plasma Protein before Haem.	Observed Plasma Protein before Plasma Trans.	Expected Plasma Protein before Plasma Trans.	Observed Plasma Protein after Plasma Trans.	Expected Plasma Protein after Plasma Trans.
67	7·92	6·70	6 69	7 29	7·41
*89	7·55	7 96	7·41	7·96	8·02
*90	7 62	7·18	7·11	7·45	7 21
†101	7·04	6·05	—	6·46	6·70
†107	7·58	7 04	—	7 01	7·14

* Plasma transfusion before haemorrhage: Cat 89 received 15 c.cm. at 43 minutes before haemorrhage, and Cat 90 received 19 c.cm. at 48 minutes before haemorrhage.
† Plasma transfusion after haemorrhage: Cats 101 and 107 received plasma at 15 and 30 minutes after haemorrhage.

Discussion

The necessity for eliminating the influence of erythrocytes added from "stores" is the reason why it is not possible in these experiments to make a comparison between the haemoglobin and plasma protein values before haemorrhage with those subsequent to bleeding. As it has been shown (Ebert and Stead, 1941) that in man no such stores exist comparable to the spleen of the dog and cat, it is possible to use in human experiments the pre-haemorrhage values for comparison with those after bleeding. Wallace and Sharpey-Schafer (1941) have published observations on plasma protein concentrations with simultaneous haemoglobin concentrations in convalescent human subjects bled varying amounts from 1,150 to 465 c.cm. In their series, 17 subjects had their plasma protein concentrations estimated before haemorrhage and also either at the end of bleeding or after 1 hour, or both. Twelve subjects were also examined for plasma protein concentration at the time of maximum dilution. Calculating the expected plasma protein concentration from the haemoglobin values, the figures set out in Table VII, columns 8, 11, and 15, were obtained.

TABLE VII.—*Effect of Haemorrhage on Haemoglobin and Plasma Protein Concentration in Man. Compiled from Data given by Wallace and Sharpey-Schafer (1941)*

No.	Amount Bled (c.cm.)	Duration of Bleeding (Min.)	Before Haemorrhage		End of Bleeding			1 Hour after Bleeding			Maximum Dilution			
			Hb	P.P.	Hb	P.P.	Expected P.P.	Hb	P.P.	Expected P.P.	Time in Hours	Hb	P.P.	Expected P.P.
1	1,150	12	73	8·0	68	8·0	7·45	—	—	—	19	53	8·0	5·81
3	1,150	10	107	7·6	101	7·6	7·17	—	—	—	23	86	7·2	6·11
5	1,150	11	96	8·2	88	—	7·52	87	7·9	7·43	23	74	7·8	6·32
7	1,100	12	63	6·8	60	—	6·48	61	6·4	6·58	24	52	—	5·61
8	1,100	18	95	5·9	88	—	5·47	85	7·0	5·28	5	78	—	4·85
9	1,100	12	70	7·4	68	7·2	7·19	66	—	6·60	26	56	6·8	5·60
11	1,060	20	107	7·1	103	7·0	6·77	103	—	6·77	9·5	90	6·3	5·97
14	900	20	77	6·2	74	6·4	5·96	77	—	6·20	24	68	6·5	5·48
16	800	10	89	7·8	86	7·8	7·54	86	—	7·54	19	71	7·8	6·22
18	800	15	95	6·6	95	—	6·60	95	6·5	6·60	22	84	6·5	5·84
19	750	24	105	6·7	100	6·6	6·38	95	—	6·06	4	83	6·9	5·30
21	720	15	84	7·8	77	7·2	7·15	75	—	6·97	19	62	6·8	5·76
22	720	22	120	6·5	—	—	—	111	—	6·01	48	92	6·6	4·98
23	700	12	77	7·3	77	7·1	7·30	74	7·1	7·02	90	61	6·9	5·78
25	650	18	74	6·5	73	—	6·41	71	6·5	6·24	3	69	—	6·06
26	550	10	89	8·0	83	8·0	7·46	87	—	7·82	—	83	—	7·46
27	465	10	95	7·1	92	7·1	6·88	95	—	7·10	4	87	6·7	6·50

Eleven subjects had plasma protein concentrations determined after haemorrhage. Of these, 8 (Nos. 1, 3, 11, 14, 16, 19, 26, 27) showed an excess of plasma protein over that expected as calculated from the haemoglobin concentrations, 2 (Nos. 9, 21) had observed and expected values in close agreement, and 1 (No. 23) showed a protein value less than that expected. The amount of protein produced in excess of that expected was not correlated either with the amount bled or with the time taken for bleeding. After 1 hour, 3 (Nos. 5, 8, 25) out of 6 subjects showed observed values in excess of that expected, 2 (Nos. 18, 23) had observed and expected values closely similar, and 1 (No. 7) had an expected value in excess of that observed. There was again no correlation between bleeding time, the amount of blood withdrawn, and the amount of protein in excess of the expected value. At the time of maximum dilution 13 subjects showed observed values in excess of that expected. Four of the 17 subjects were not observed for plasma protein concentration at this period. There was no correlation between the time taken to reach maximum dilution and the amount of protein in excess of that expected.

There is clear evidence, therefore, that in man plasma protein in considerable quantities can enter the blood stream during the actual haemorrhage, which may be as brief as 10 minutes or as long as 24 minutes. The fact that there is no correlation between the amount of protein entering the blood stream and either the bleeding time, the amount bled, the duration of active dilution of the blood, or blood pressure changes or the duration of such changes, suggests strongly that these factors are not concerned in the movement of protein into the blood stream, whether in small quantities contained in the actual fluids entering the blood stream from the tissues or in larger quantities entering it from some specific protein store such as the liver.

When these human results are compared with those obtained in the series of experimental animals recorded above, the same variations between observed and expected plasma protein values are found. Four out of 6 animals (Table II) showed evidence of plasma protein production, 1 showed no evidence of such production, and 1 showed a plasma protein concentration less than that expected. Of the 4 animals observed towards the end of the second hour or the beginning of the third hour after haemorrhage, 3 showed values in excess of that expected, and 1 slightly lower than that expected. The latter animal was that which had shown no change 75 minutes after haemorrhage.

It would appear, therefore, that what is being observed both in man and in the experimental animals might be related to the amount of protein "in store" in the individual animals. Hence those animals with poor reserves of protein would show a close approximation of expected and observed plasma proteins, while those with a depleted store might be expected to show an observed plasma protein value less than that expected. It is obvious that the magnitude of the effects of haemorrhage on plasma protein concentration is much greater in the human series than in the animals. This may be in part due to the fact that while in man it is possible to compare pre- with post-haemorrhage values, that cannot be done in cats owing to the unknown number of erythrocytes liberated from the blood stores. Splenectomy in cats diminishes considerably but does not eliminate the storage capacity for red blood cells.

When blood is reinjected into animals which have been bled, the blood volume is increased considerably above the pre-haemorrhage level immediately after transfusion. This is due, of course, to the fact that dilution had progressed considerably before transfusion, and the reinjection of the blood withdrawn produces an increased blood volume. The changes in haemoglobin values (Table III) show clearly that in 3 animals out of 5 there must have been considerable reinforcement of the red cell population from erythrocyte stores. The 2 animals remaining show that their stores must have been either depleted before haemorrhage or were inactive during and after bleeding.

The increased blood volume undergoes reduction in all the animals after blood transfusion, as is shown by the rise in haemoglobin values. At the same time it will be noted that the change in haemoglobin value is not paralleled by a similar change in plasma protein concentration: the expected values are in each experiment higher than those observed. This suggests that the movement of fluid out of the blood stream is accompanied by a movement of protein out of the circulation. It is significant that in these 5 experiments (Tables III and IV) the amount of protein contributed to the blood after haemorrhage was small, which might, as suggested above, indicate poor reserves of protein. This view is supported by the fact that in all these animals the outward movement of protein after blood transfusion was well marked, except in Cat 124. Cat 126, which had had a preceding plasma transfusion (63 minutes before haemorrhage), must have had poor protein reserves, as it was not able to mobilize any significant quantity of protein after haemorrhage. The same animal depleted its circulating plasma protein considerably after its blood transfusion.

In the third series of experiments, plasma was transfused after haemorrhage. Two animals (89 and 90) had plasma transfusions at about 45 minutes before haemorrhage. One of these animals (89) added protein to the blood after haemorrhage in sufficient quantity to produce a plasma protein concentration of 7.96 as compared with an expected value of 7.41 g. per 100 c.cm. This may be interpreted as showing that the animal had an adequate protein reserve. This is confirmed when the expected and observed values after plasma transfusion are examined. They are almost identical. On the other hand, the second animal (90), which showed a small addition of plasma protein after haemorrhage, added a considerable amount of protein to the circulation after its second (post-haemorrhage) plasma transfusion. All the other animals (67, 101, and 107), which had had no plasma transfusion previous to haemorrhage, showed lower observed values than those expected. It would seem, therefore, that movement of protein out of the circulation was to reinforce the plasma protein reserves.

An Important Factor

It is obvious from the animal experiments that the state of the plasma protein stores—whether adequate or depleted—must be the most important factor in determining the amount of protein entering the circulation after haemorrhage and also in deciding the rate at which this addition is made. If the stores are depleted completely, then the plasma protein concentration after haemorrhage will be less than that expected, as the protein requirements of the body must be met from the circulating plasma protein. The gap between expected and observed values will continue to widen unless new protein is added direct to the blood by blood or plasma transfusions or is synthesized from the breakdown products of protein taken by mouth.

If the adequate stimulus to movement of protein into the blood stream is a low plasma protein content of the blood, then some correlation might be expected between the degree of protein deficit (difference between plasma protein values before and 30 minutes after haemorrhage) and the amount of protein entering the blood stream at, say, the end of 1 hour after haemorrhage, indicated by the difference between the expected and observed plasma protein values. Such a correlation does not exist. Consequently, it would seem that either hypoproteinaemia is not the adequate stimulus or, alternatively, such stimulus is effective only when protein reserves exist outside the blood stream. The balance of evidence so far would suggest that the latter view is more likely to be correct. It is not suggested, however, that the protein in the plasma stores exists precisely in the form of the albumin–globulin complex present as plasma protein in the blood. The speed with which protein does appear in the blood stream and the amounts contributed after haemorrhage lend strong support to Whipple's view that the precursor of the plasma proteins in the plasma protein stores requires very little change before it can be discharged across the cell membrane into the blood stream.

The state of the protein reserves of the body may be determined by the response to plasma transfusions. After allowing 15 minutes for thorough mixing of the infused plasma, a blood sample is taken, followed by further samples at 45 and 75 minutes after the end of transfusion. The movement of the haemoglobin values is determined, and from these are calculated the expected plasma protein value for the 45-minute and 75-minute samples. If the observed values are greater than those expected it can be concluded that the movement of protein from blood to body cells is slow, and presumably protein stores are adequately filled. If the expected and observed values are equal or approximately equal, then protein-free fluid only is moving out of the blood stream. If the expected value is greater than the observed value, then protein movement from the circulation is rapid, and unless there are signs of massive protein movement into the tissue fluid—e.g., oedema—it must be presumed that the plasma protein stores are low. Such results give a useful indication of the state of the protein stores

Conclusion

It is clear from these experiments that after haemorrhage the restoration of blood volume is independent of the restoration of plasma protein. Restoration of both concurrently would imply considerable protein stores. The speed of blood volume restoration in the cat apparently always outstrips the rate of plasma protein movement into the blood stream. In man the data of Wallace and Sharpey-Schafer make it clear that even after large haemorrhages (1,150 c.cm.) the plasma protein concentration can remain unchanged, although blood dilution is proceeding rapidly. One subject (19) apparently restored his blood volume after a haemorrhage of 750 c.cm. within 4 hours, and at the end of that time had increased his plasma protein concentration from 6.6 to 6.9 g. per 100 c.cm. This subject had a blood volume of 4 litres before haemorrhage and one of 4.2 litres after haemorrhage.

After haemorrhage and subsequent dilution of the blood, a blood transfusion is followed by a rapid increase in haemoglobin concentration. This haemoconcentration is not pathological but is due entirely to fluid movement out of the blood stream. The restoration of the blood volume to its pre-haemorrhage level takes place independently of a movement of erythrocytes into the blood stores or of plasma proteins out of the circulation. A movement of erythrocytes out of active circulation after blood transfusion would give an expected plasma protein value lower than the observed value. The fact that no animal showed such excess of observed plasma protein over that expected even more strongly suggests that there had been rapid movement of plasma protein out of the circulation.

Summary

There is evidence of movement of plasma proteins into the blood stream within 2 hours after haemorrhage in cats anaesthetized with nembutal.

Blood transfusions at varying times after haemorrhage are followed by movement of plasma proteins out of the circulation within 1 hour of completion of transfusion.

Plasma transfusions after haemorrhage are followed by plasma protein movement out of the circulation within 1 hour of completion of transfusion.

The rate and amount of plasma protein movement into the circulation are independent of the amount or rate of bleeding, the amount or rate of dilution by fluid from the tissue spaces, and blood-pressure changes.

The amount of plasma protein contributed to the blood, and therefore the plasma protein concentration at any time after haemorrhage (provided no food containing protein has been administered), is probably dependent on the state of the plasma protein stores outside the circulation.

A method of testing the adequacy or otherwise of plasma protein stores is suggested.

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CIRCULATORY OVERLOADING FOLLOWING RAPID INTRAVENOUS INJECTIONS

BY

E. P. SHARPEY-SCHAFER, M.R.C.P.

AND

JOHN WALLACE,* B.Sc., M.B.

WITH TECHNICAL ASSISTANCE OF

A. LATHAM AND A. C. PINCOCK

(From the Department of Medicine, British Postgraduate Medical School)

Authorities differ widely in advising the amount of serum or blood to be injected and the rate at which it should be given. Many stress the dangers of overloading the circulation. In 1894 Bayliss and Starling showed that rapid injection of crystalloid solutions or blood caused a rise of venous pressure, observations which have been amply confirmed by others in the experimental animal (Bainbridge, 1915; Wiggers, 1921). Meek and Eyster (1922) showed in dogs that the immediate effect of an intravenous injection was a rise of venous pressure associated with an increase in the diastolic size of the heart; these effects were only transitory, and there was evidence that the peripheral capillaries and venules were acting as reservoirs. There have been fewer observations in man. Eyster and Middleton (1924) investigated 4 normal subjects. In the case showing the most pronounced change 600 c.cm. of blood was given at the rate of 43 c.cm. a minute; this produced a rise in venous pressure of 2 cm. H_2O but no increase in the size of the heart. Caughey (1935) found no rise of venous pressure in normal subjects receiving 1,500 c.cm. of saline at the rate of 50 c.cm. a minute, while a rise of up to 6 cm. H_2O was produced in some patients with heart disease. No attempt was made to measure the degree of retention of injected saline in the circulation. Altschule and Gilligan (1938) gave from 500 to 1,500 c.cm. of crystalloid solutions to 35 subjects at rates of 6 to 71 c.cm. a minute. The venous pressure was raised more than 4 cm. H_2O in only 6 subjects, pulse and blood-pressure changes were small, the cardiac output was increased, but there was no change in vital capacity. This paper reports the results of rapid intravenous injection of saline, serum, and, in a few cases, blood on the venous pressure and certain other cardiovascular measurements.

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* Working for the Medical Research Council.

Methods

The observations were made on convalescent subjects without cardiovascular disease. The conditions of study have been given elsewhere (Sharpey-Schafer and Wallace, 1942). The haemoglobin was estimated on 0.02 ml. freely flowing ear samples by a photo-electric method (Hill and Pincock, 1941). Venous pressures were estimated in the antecubital vein by a continuous citrate method (Wood, 1940), and changes were checked by direct observation of the neck veins (Lewis, 1937). Up to 45 minutes may have to be allowed for the venous pressure to reach a steady level. Vital capacity was measured on a Benedict-Roth spirometer. Radiographs of the heart were taken in the sitting posture, with the tube at 6 ft. The exposure was 1 second to obtain the diastolic heart size. Differences in inclination or respiratory excursion are indicated in the text. Usually two control and several post-injection films were taken. The right pectoral–F or the right pectoral–R leads (Wood and Selzer, 1939) were employed in the electrocardiographic studies. The following solutions were used: (1) 0.9% saline; (2) normal strength reconstituted lyophil serum; (3) 4-times-concentrated reconstituted lyophil serum; (4) citrated blood.

Results

The results are shown in Table I. When the rate of injection was between 50 and 150 c.cm. a minute the venous pressure began to rise after about 1,000 c.cm. of saline or serum had been given, and reached a maximum toward the end of injection (Fig. 1). If the rate of injection was very rapid, as little as 500 c.cm. raised the venous pressure. The subject shown in Fig. 2 received the first 500 c.cm. of serum

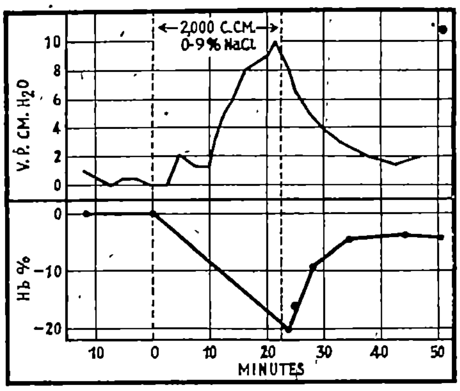

FIG. 1.—Case 1. Venous pressure and Hb% change after saline. Zero represents control level of venous pressure or Hb%.

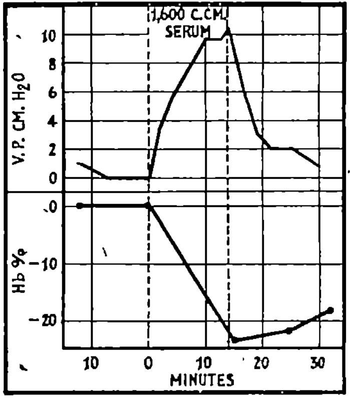

FIG. 2.—Venous pressure and Hb% change after serum in Case 11a.

TABLE I

Case	Age and Sex	Amount Injected (c cm.)	Rate of Injection (c.cm./min)	Initial Hb %	Immed. Hb % Fall	V.P. Rise (cm. H_2O)	Pulse		Vital Capacity		E.C G.	Symptoms
							Before	After	Before (Litres)	After (Litres)		
						0·9% *Saline*						
1	43 M	2,000	91	96	20·0	10·5	90	60			0	
2	39 M	1,800	112	114	21·0	10·0						
3	16 M	2,000	91	89 5	19·5	8·0	75	75			0	Headache
4	17 M	2,000	90	98·5	19·5	6·5	105	105	2·3	2 3	T change	"
5	20 M	1,500	75	90	11·2	6 0	84	96			0	Slight constriction in chest. Headache
6	17 M	2,000	168			6·0	75	75			0	
7	56 F	2,000	104	116	12 0	4 0	92	88				
8a	54 M	2,000	100	110	4·0	0	75	75				
9a	21 M	300 4%	20	95	5·7	0						
						Serum						
10	44 M	1,620	80	64·5	15·5	11·0			3·8	3·4		Slight constriction in chest. Headache
11a	17 M	1,600	114	102·3	23 5	10·5	75	105	3·0	2·3	Slight T change	Headache
12a	52 M	2,000	83	104	20·7	9·0	90	105	2·9	2·4	Slight T change	
8b	54 M	700	100	110	11·5	9·0	75	75			0	
13a	59 M	2,100	154	95	18 0	8·5	60	60	3·5	2 9	0	
14	28 M	1,200	95	68·5	18·3	8·0	75	90			0	Constriction in chest Headache
15	19 M	1,200	54	104·8	19·3	8·0						Headache
16	46 F	1,400	108	62·8	5·3	4·0	80	84				Severe constriction in chest
17	61 M	1,500*	60			8·0	75	75	3·36	3·0	0	
18	40 M	1,080* 540	71			4·5	75	105	4·3	4·0	T change	
						Concentrated Serum						
19a	59 M	300	30	84·2	10·6	10·0						
9b	21 M	300	23	95	19·9	6 0						Headache
11b	17 M	300	21	93·2	11·6	4·0						"
20	44 M	300	25	66·6	9·6	2·0						
21	29 M	300	25	78	0 5	0						

* Blood.

at a rate of 250 c.cm. a minute. All subjects given saline or serum showed a rapid fall of venous pressure once the injection had been stopped. Saline often left the circulation quickly, as indicated by a rising haemoglobin percentage (Fig. 1). The venous pressure still fell in a matter of minutes, however, if the haemoglobin remained at the lower post-injection level (Fig. 2). One subject given blood showed a rise of venous pressure that persisted for 50 minutes. When the blood volume was first reduced by a large venesection, injection of serum or saline in similar quantities and at similar rates produced little or no change in venous pressure (Table II and Fig. 3). The subject of Fig. 3 showed a small fall of venous pressure after venesection, associated with a fall of blood pressure and syncope. In this and other subjects with syncope after large venesections (Wallace and Sharpey-Schafer, 1941) a small fall of venous pressure (1 to 2 cm.) preceded the fall of blood pressure, and there was a further fall of venous pressure with collapse of the circulation. If there is no fall of blood pressure after venesection, there is, however, an abnormal fall on sitting upright. Weiss, Wilkins, and Haynes (1937) showed that the fall of blood pressure and syncope in the upright posture after sodium nitrite is preceded by a fall in venous pressure. Injection of serum immediately after venesection restored venous pressure, blood pressure, or postural response to normal. When giving intravenous injections at rates of 100 c.cm. or more a minute considerable pressure must be maintained in the bottle of fluid; measurements of venous pressure in the opposite antecubital vein might therefore merely reflect this transmitted pressure. That this is not so, and that a rise of venous pressure is due to an acutely increased blood volume, is shown by the following considerations: (1) When the blood volume has not been previously reduced a rise of venous pressure does not occur until about 1,000 c.cm. has been given, at rates of about 100 c.cm. a minute. (2) There is a statistically significant correlation between the rise of venous pressure and the fall of haemoglobin (Fig. 4). (3) There is little or no rise of venous pressure when saline or serum is injected immediately after blood-volume reduction by venesection. (4) If, however, enough time elapses after venesection for the haemoglobin to fall considerably, transfusion of similar quantities then causes a rise of venous pressure.

Table II.—*Injection after Venesection*

Case	Age and Sex	Initial Hb%	Amount of Venesection (c cm)	Rate of Venesection (c.cm /mm.)	Hb% Change directly after Venesection	Amount Injected (c.cm.)	Rate of Injection (c.cm./min.)	Immed. Hb% Fall	V.P Change (cm. H_2O)	Symptoms
					0·9% *Saline*					
22	31 M	108	900	90	−3·0	1,650	138	15·5	0	
23	37 M	101·5	740	105	−8·5	1,800	140	18·5	+2·5	
24	57 M	108	1,000	71	+1·0	1,500	88	9·0	0	
					Serum					
12b	52 M	104·7	1,100	100	−8·0	2,000	77	33·5	0	Fall of B.P Syncope
13b	59 M	84	1,080	81	−4·0	2,100	84	20·9	+4·0	
11c	17 M	104·4	1,100	36	−5·8	1,600	80	20·6	0	
8c	54 M	106·3	740	146	−1·0	700	140	10·8	0	
25	53 F	95	900	112	−4·0	1,300	60	24·6	0	Fall of B.P. Syncope
19b	59 M	83	1,080	71	0	300*	43	17·3	0	

* Concentrated serum.

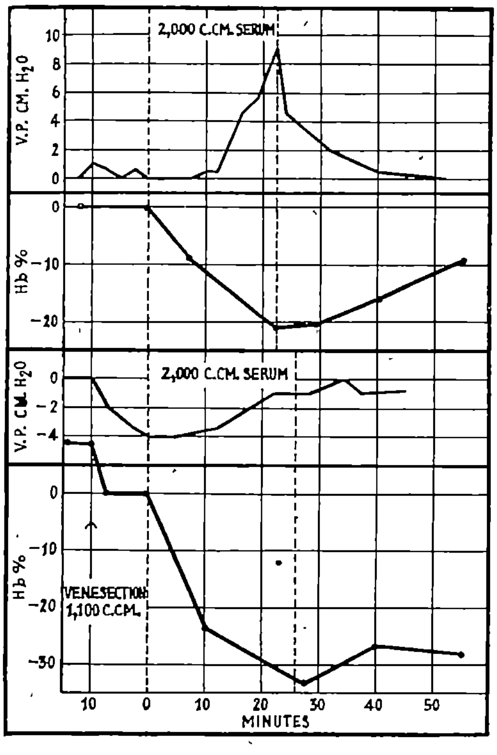

Fig 3.—Case 12a and 12b: interval of 10 days between observations.

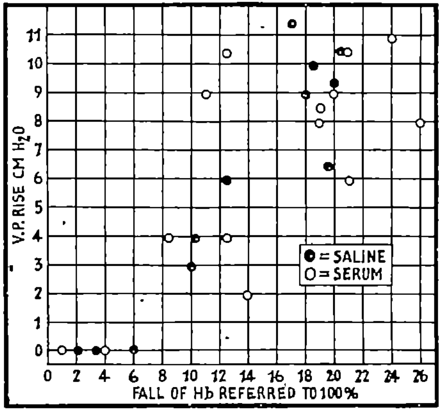

Fig. 4.—Relation between rise of venous pressure and fall in haemoglobin: coefficient of correlation (r)=0.84

Vital Capacity.—The vital capacity, measured within 2 minutes of the end of injection, showed an average fall of 470 c.cm. in 6 of 7 subjects (Table I). McMichael and McGibbon (1939) have shown that there is a fall in the lung volume and vital capacity of normal subjects on assuming the horizontal posture; they ascribed the fall to the presence of more blood in the lungs. Venesection, on the other hand, increases the vital capacity (Glaser and McMichael, 1940). That the fall of vital capacity on overloading the circulation is due to increased blood in the lungs is borne out by the *x*-ray appearances. None of these subjects showed clinical evidence of pulmonary oedema, and the respiratory rate and tidal air showed no change.

Radiograph of Heart.—Films were taken before and immediately after injection. The results are shown in Table III. The area of the cardiac shadow was measured by a planimeter, and the right, left, and oblique cardiac and transverse chest diameters were also measured. In 5 of the 8 subjects examined the average increase in the heart area was 15.3%. Table I shows that there was a considerable rise of venous pressure and fall of haemoglobin in each of these 5 subjects. Although the latter changes were present in Case 2, there was but little cardiac enlargement. So far as could be judged from postero-anterior films the enlargement appeared to involve all chambers. In addition, the following changes were present after injection: the superior vena cava shadow became prominent in those subjects in whom there was a considerable rise of venous pressure, the pulmonary arteries and vascular markings in the lungs increased in size and density, and the whole lung fields were relatively less translucent (Figs. 5 and 6).

TABLE III.—*Radiological Measurements*

Case	Heart Area (sq. cm.)		Right Diam. (cm.)		Left Diam. (cm.)		Oblique Diam. (cm.)		Transverse Chest (cm.)	
	B.	A.	B.	A.	B.	A.	B.	A.		
14	107	123	3·5	4·1	8·4	9·4	14·0	16·2	27·0	
15	92·5	109	3·4	4·5	7·4	8·0	14·0	14·8	27·2	
3	92	105	5·0	5·1	6·9	7·4	14·2	15·1	29·8	
5	83	101	4·1	5·0	6·4	6·9	13·1	14·0	26·6	Diaphragm 1 cm. higher in films after
6	105	119	3·3	4·1	9·1	9·3	15·5	16·3	28·1	Slight inclination of body forward in films after
7	97	101	3·7	4·3	8·3	8·7	15·3	16·2	26·2	Diaphragm 1·2 cm. higher in films after
2	93	96·5	4·7	4·5	9·6	9·7	14·2	14·4	27·6	
8b	150	158	4·0	4·7	10·6	10·6	15·9	16·4	29·0	

B. = Before injection. A. = After injection.

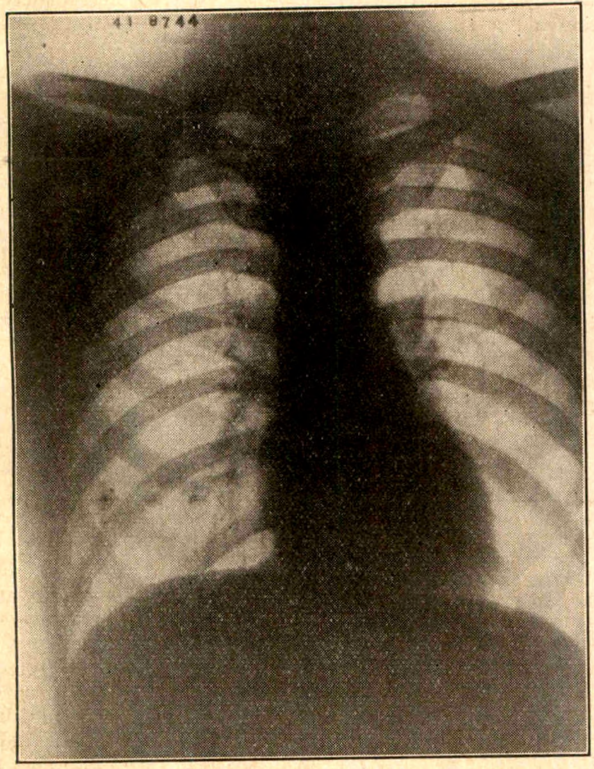

FIG. 5.—Radiograph of Case 14 before transfusion.

Electrocardiogram.—The right pectoral–R arm or right pectoral–L leg electrocardiogram is the chest lead that gives one of the earliest indications of acute right heart stress, as from packed pulmonary embolism (Wood, 1941). Changes in the T-wave are in the direction of inversion when chest leads are recorded in the manner agreed by the Cardiac Society of Great Britain and Ireland and the American Heart Association (*British Medical Journal*, 1938, **1**, 187). Only 4 of 12 subjects showed electrocardiographic changes, the T-wave becoming flattened or inverted. Gilligan and Altschule found increased amplitude of the P-wave in lead II in a few of their cases.

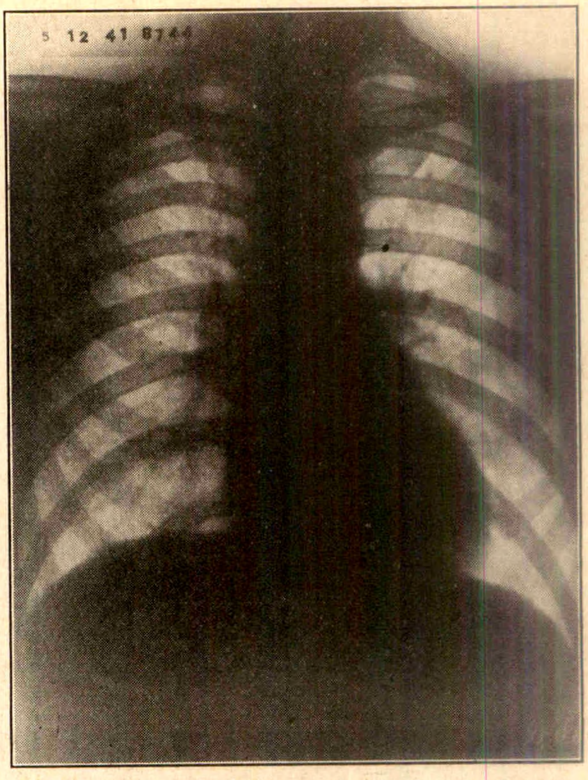

FIG. 6.—Radiograph of Case 14 after 1,200 c.cm. of serum.

There were no P-wave changes in leads RP–R or F in this series. The x-ray findings suggest that enlargement of the heart shadow may involve all chambers in some subjects. Electrocardiographic changes in the direction of preponderance of ventricle would therefore not be expected, since it is well known that cardiac enlargement can take place without them. However, it has not proved possible so far to observe the correlation, if any, between electrocardiographic changes and x-ray appearances after acute overloading of the circulation.

Heart Rate.—The heart rate showed no change or slowing in 9 subjects, while 6 showed an increase.

Symptoms.—Eight subjects had headache; 4 complained of a feeling of constriction in the chest during injection; in 1 it was severe, but not severe enough to necessitate termination of the injection. It passed off rapidly as soon as intravenous fluid was stopped. The most striking sign was vasodilatation; it was present in all subjects with any degree of retention of saline or serum in the circulation. The face became redder in tint, and the peripheral veins became prominent and distended.

Summary

Up to 2,000 c.cm. of saline, serum, and blood was injected into subjects without cardiovascular disease at rates of from 54 to 168 c.cm. a minute. The venous pressure was raised up to 11 cm. H_2O when there was considerable retention of injected fluid in the circulation, as indicated by the fall in haemoglobin. Radiographs showed an increase in the diastolic size of the heart, enlargement of the pulmonary arteries, and prominence of the vascular markings in the lung fields. Vital capacity was diminished, but there was no evidence of pulmonary oedema. In spite of the rise of venous pressure many subjects had no increase in heart rate. Of 12 subjects 4 showed electrocardiographic changes indicating slight right heart stress. Symptoms were absent or unimportant. There was a rapid fall of venous pressure to normal on ceasing injection, except in one subject given blood. There is evidence that the peripheral and pulmonary capillaries and veins dilate to accommodate the increased blood volume.

When the blood volume was first reduced by a large venesection, saline or serum injected in similar amounts and at similar rates caused little or no rise of venous pressure.

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SULPHONAMIDE SUNLIGHT ERUPTIONS

A CLINICAL STUDY OF 27 CASES

BY

R. G. PARK, M.B., M.R.C.P.
Captain, N.Z. Medical Corps

AND

W. M. PLATTS, B.Sc., M.B., Ch.B.
Captain, N.Z. Medical Corps

(From a Military Hospital in the Middle East)

The constant sunshine of the Middle East and the presence of considerable numbers of V.D. patients undergoing ambulant chemotherapy in an open-air tented hospital have recently given us unusual opportunities of observing cases of the light-sensitive type of sulphonamide dermatitis.

This form of dermatitis has been classified into two varieties (Tedder, 1939): generalized eruptions showing no predilection for the exposed parts, and light-sensitive eruptions. It is with the latter that this report is concerned.

Cases of sulphonamide photosensitivity were first recorded in 1937 (Newman and Sharlit, 1937; Menville and Archinard, 1937), rashes being described which appeared after from 3 to 5 days of drug therapy and which disappeared after 5 or 6 days of protection from light. Severe dermatitis has also occurred from artificial ultra-violet irradiation during sulphapyridine administration (Hallam, 1939). On the analogy of the sunlight eruptions in haematoporphyrinuria, investigation has shown that sulphonamides cause an excessive urinary excretion of porphyrins, of which one, coproporphyrin I, is a recognized photosensitizer (Rimington and Hemmings, 1938). This occurs more often with sulphanilamide than with sulphapyridine (Wien, 1938). The porphyrinuria varies considerably with the individual, and by exposing unselected patients on sulphanilamide Eidinow (1939) has shown that by no means everyone becomes light-sensitive.

Case Reports

During the 12 months Oct., 1940, to Sept., 1941, 486 cases received sulphanilamide, of which 21 developed eruptions (4.3%); 309 cases received sulphapyridine, yielding 6 eruptions (1.9%). Of the 27 cases 8 occurred during July and 6 during August. As measured by the photo-electric cell, the intensity of visible light in this part of the Middle East in July is about four times that in January. We have divided our cases into two groups:

1. Eruptions Limited to Parts Exposed to Sun during Chemotherapy

There were 17 cases of this kind, 16 with sulphanilamide and 1 with sulphapyridine. In 5 cases the rash appeared on the eighth day of chemotherapy, in 5 on the ninth, and in 7 on the tenth. The eruption consisted of maculo-papules in a morbilliform or roseoliform configuration. It was confluent on the most exposed parts, being distinguished from sunburn only by the discrete lesions at the margins. The demarcation was very sharp at places such as the singlet area or, where no shirt had been worn, the waist. The axillae were usually spared. The bronzed parts—face, neck, forearms, hands—suffered less than the upper trunk and upper arms, which had been exposed less in the past. Two patients admitted to unusually heavy sun exposure the day before the rash began. Only 5 of the 17 had always sunburned easily.

In addition to the above lesions there was in one case vesiculation and pustulation of the face, in 2 oedema of the hands, and in another oedema of the eyelids. Itching varied from severe to none at all. In one case—an eruption limited to the hands—an experimental exposure of the forearms to the sun was made for 3 hours on the third day of the rash. After an hour a maculo-papular eruption appeared in the exposed area, maximal on the non-bronzed flexor surfaces. In another case, in addition to a roseoliform eruption, the dorsum of the hands showed typical target patches of erythema iris at the sites of some old scars, and the face developed oedema and pustules, going on to extensive desquamation.

Constitutional disturbance was common, fever up to 102° and malaise occurring in half the cases and three rigors in one case. The eruptions faded rapidly—in 2 to 4 days in all cases except one, which lasted a week. Three patients continued chemotherapy for from 1 to 2 days after the rash appeared, with no ill effects, though they kept out of the sun. In one case the rash began 2 days after the drug had been stopped, and in the remainder cessation of the drug either coincided with or occurred on account of the rash.

Of these 17 cases 3 received further chemotherapy at later dates, varying from 1 week to 4 months afterwards. In no instance did the eruption recur, although there was no change in the amount of sun exposure.

2. Eruptions Maximal on Exposed Parts, but also Affecting Others

Case 1 received sulphanilamide for non-specific urethritis, 4 g. daily for 8 days, during which the patient went in the sun with only the face and hands exposed. He had always sunburned easily. On the eighth day an irritable morbilliform rash appeared on the arms, face, and trunk above the waist, principally on the upper part of the back. There was mild cyanosis but no fever.

Case 2 received sulphanilamide for chancroid, 4 g. daily, until it was stopped on the eighth day because of a morbilliform and roseoliform rash, resembling the cases in group 1 except that patches appeared on both thighs over the trochanters. It was slightly itchy, and less pronounced on the bronzed parts. The patient had not previously been sensitive to sunlight. The rash lasted 4 days and was accompanied by a fever up to 103°.

Case 3 received sulphanilamide for chancroid, 4 g. daily for 10 days, during which he went in the sun wearing an open-necked shirt, elbow-length sleeves, long trousers, and rubber shoes. He has always sunburned easily. On the ninth day he developed a slightly itchy morbilliform rash, confluent on the necklace area, back, and outer upper arms. It was also present on the bronzed parts to a lesser degree. Except for a small patch over each great trochanter no rash appeared below the waist. There was no fever or malaise. The rash lasted 3 days.

Case 4 received sulphapyridine for gonorrhoea, 26 g. in 7 days. He had always sunburned easily. On the fifth day he took an open-air shower-bath in the sun, but was otherwise in bed until the seventh day, after which he went out in an open-necked shirt, long trousers, and shoes without socks. On the tenth day a morbilliform and roseoliform rash began. It was confluent on the face, forearms, and dorsum of the feet; discrete on the knees and trunk above the waist; and scanty on the trunk below the waist, upper arms, thighs, and legs. The bronzed parts suffered equally with the others. Itching was slight. The patient was afebrile, but complained of backache. The rash faded in 5 days.

Case 5 received sulphapyridine for gonorrhoea, 26 g. in 7 days. There had been no previous sensitivity to the sun. On the ninth day a dusky-red morbilliform eruption appeared, maximal on the shoulders and outer arms, less marked elsewhere, and especially scanty on the bathing-drawers area and in the axillae. The face was unaffected, but the other bronzed parts suffered equally with the remainder. There had been exposure during chemotherapy. The rash faded in 3 days. A low fever, malaise, vomiting, and headache occurred for 2 days with the rash.

Case 6 received sulphapyridine for gonorrhoea, 26 g. in 7 days. Sun exposure during this time was slight. He had never been sensitive to the sun. On the eighth day a morbilliform rash appeared; this was not itchy. It was confluent on the back, chest, and outer upper arms. Below the waist it was scantier, with a cluster of lesions over each trochanter. There was little if any involvement of the bronzed parts—face and forearms—or of the legs. It faded in 3 days. On the seventh, eighth, and ninth days he had a fever up to 103°, with headaches, backache, anorexia, and conjunctivitis. This was considered to be phlebotomus fever, an epidemic of which was raging at the time.

Case 7 received sulphapyridine for non-specific urethritis, 4 g. daily for 8 days, most of which time he was in bed, but sometimes up in a shirt with elbow-length sleeves and long trousers. He denied being in the sun without a shirt in the past 2 months. He had never sunburned easily. On the eighth day an itchy maculo-papular rash appeared, lasting 3 days. It was generalized—being maximal on the back above the waist and the forearms, and minimal in the axillae. The temperature rose to 99.4°.

Case 8 received sulphapyridine for gonorrhoea, 26 g. in 7 days. Sun exposure and previous sun sensitivity were denied. On the eighth day the patient developed a roseoliform eruption, very itchy, and confluent on the outer upper arms and the trunk above the waist. It also involved the trunk below the waist, the arms and legs, most of the lateral pelvis, and thighs, ankles, and dorsum of the feet. Accompanying this was a suspected attack of phlebotomus fever.

Case 9 received sulphanilamide for non-specific urethritis, 3 g. daily for 10 days. There had been little exposure to the sun. Previously he had always sunburned easily. On the eighth day a rash appeared, consisting of maculo-papules running together into an erythema with wheals in it. The configuration was morbilliform and in places circinate. There was itching. The rash was maximal on the face, neck, upper trunk, forearms, and dorsum of the hands. It was present on the lower trunk, palms, legs, and thighs over the trochanters; but was absent from the bathing-drawers area and the left wrist, where a watch was worn. The exposed parts were not spared. The rash faded in 8 days, desquamation occurring on the face from the fifth day onwards. For 5 days he had malaise, fever up to 101°, and a distinct air-hunger.

Case 10 received sulphanilamide for a tonsillitis of 2 days' duration. The last exposure to sunlight had been 3 days previously, in shirt and shorts. He had never sunburned easily and was accustomed to going about in singlet and shorts. For 2 days 1 g. of the drug was given 4-hourly. On the evening of the first day a rash appeared on the upper trunk and upper arms, and then spread all over. Seen for the first time on the fourth day, the eruption consisted of erythema, vesiculation, and, in the worst places, profuse weeping and desquamation. Behind the ears a typical streptococcal intertrigo had supervened. Itching was severe. Its distribution was maximal on the face, the neck and shoulders where left uncovered by a singlet, the outer upper arms, the forearms, thighs, and legs. It was less marked on the chest and back, inner upper arms, and the feet. It was completely absent from the bathing-drawers area. At this stage the patient also showed an intense catarrhal stomatitis, glossitis, and pharyngitis, considerable prostration, and a fever of 102° for 10 days. The rash finally subsided in 2 weeks.

Discussion

Sulphanilamide was responsible for most of the milder cases (16 out of 17). The more severe cases were caused by sulphanilamide and sulphapyridine in equal numbers (5 of each). This greater incidence with sulphanilamide has been reported before, but in our cases it may have been due to the fact that only sulphanilamide patients were ambulant. In the largest series of cases in the literature at our disposal—that of Erskine (1939)—eruptions usually appeared at the eighth to tenth day, lasted 1 to 7 days, and were irritable in 20 out of 36 cases: although the majority of his cases were not described as light-sensitive, these features are in close agreement with our own observations.

Case 10 above merits separate discussion. It differs conspicuously from the remainder in its onset on the first day of chemotherapy, without sunlight exposure. Yet its distribution left no doubt as to its photosensitive character, affecting sites in order of their *previous* exposure to light. This early onset suggests an allergic origin. Epstein (1939) has described two types of photosensitivity from sulphonamides. Irradiating with ultra-violet light the site of an injection of sulphanilamide, he obtained an erythematous reaction. In the same subject 9 days later, irradiation of another injection site produced a more severe, prolonged, and exudative reaction, to which he gave the name "photo-allergy." Our own case was also atypical in its exudative nature.

Summary and Conclusions

In their power to cause an eruption in parts previously exposed to the sun sulphonamides resemble pellagra.

In all, 27 cases of light-sensitive sulphonamide eruption are described, 21 due to sulphanilamide and 6 to sulphapyridine. These represent 3.4% of the total cases treated with these drugs, under conditions favouring considerable exposure to constant strong sunlight. About half the cases occurred during July and August.

Photosensitivity occurs from the eighth to the tenth day of administration. Two cases were found to be photosensitive 2 days after stopping chemotherapy. It therefore appears that patients given sulphonamides for more than 6 days are possible victims of sunlight eruptions.

In many cases the presence of melanin is a protection against these eruptions. Three observations support this: (1) about one-third of the cases are subjects who sunburn easily; (2) the bronzed parts of the body tend to be affected less than the others; (3) no eruptions have ever been seen in Maoris, who comprised about 100 of the 800 cases treated during the 12 months.

The following parts are affected in order of severity: (*a*) parts exposed to the sun during chemotherapy; (*b*) parts exposed in the past; (*c*) pressure points, such as the great trochanters; (*d*) least of all, parts always kept covered, such as the bathing-drawers area.

The commonest lesions are erythematous papules in a morbilliform or roseoliform pattern, becoming confluent. Itching varies (severe in 5, moderate in 7, slight in 9, absent in 6). Less common lesions are oedema, urticaria, vesication, pustulation, and desquamation.

Drug fever and other toxic effects are common accompaniments (12 cases).

Most rashes subside in 2 to 4 days.

Further chemotherapy.—Avoiding exposure to sunlight, 6 cases completed their courses of chemotherapy and 3 had further courses later without ill effects. In the milder cases, at all events, a rash is no indication for discontinuing the drug.

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CHRONIC LEG ULCER IN PURPURA HAEMORRHAGICA

REPORT OF TWO CASES

BY

L. J. WITTS, M.D., F.R.C.P.

Nuffield Professor of Medicine, University of Oxford

The association of chronic ulcer of the leg with splenomegaly seems too frequent to be a mere coincidence, though the reason for it is not known. It has been described in sickle-cell anaemia, acholuric jaundice, Gaucher's disease, splenic anaemia, and Algerian splenomegaly. Last December I had two patients with essential thrombocytopenia, both of whom had had chronic ulcers of the leg. Although I had previously seen patches of purpura break down and ulcerate in patients who were acutely ill, the occurrence of chronic ulceration of the legs was new to me. The spleen was not palpable in either of these two patients, but in view of the important part which the spleen plays in purpura haemorrhagica, the cases seem worth reporting as a further contribution to this odd chapter of medicine and surgery.

Case Reports

Case 1.—A woman aged 21 was admitted to hospital because of menorrhagia. She had had the trouble ever since her periods started at the age of 12. At 15 there appeared on the left leg an ulcer which was very indolent and did not heal for more than two years. During this time it gradually increased in size until it measured about 10 by 5 cm. When she was 17 a similar ulcer appeared on the right leg, but cleared in a shorter time. Neither had broken down since. On the lower third of both legs there were large thin paper-like scars. There was no surrounding discoloration, and the scars were not tender. As the patient had only 19,000 platelets per c.mm., splenectomy was advised, and a spleen weighing 284 g. was removed by Mr. Elliot-Smith. The patient made an excellent recovery. She was completely relieved of all symptoms, and seven months after operation her platelets numbered 338,000 per c.mm.

Case 2.—A man aged 26 was admitted to hospital because of excessive bleeding after incision of a boil. All his life he had been subject to excessive bruising and bleeding. He had had chronic ulceration of the legs for 8 to 10 years. This had been treated without success by elastoplast and other methods used for varicose ulceration, though there was no varicosity. His story was that the lesions began as a red patch in the skin, of small size, changing to a light chocolate colour and coalescing with other similar areas. The skin then became thin and papery and might ulcerate. Once the chocolate stage was reached it never returned to normal. When he was up and about his ankles became oedematous and his legs ached. He often had to give up work on this account. On examination there were numerous small brown patches on the lower parts of his legs and on his feet. On the inner side of the left heel there was a larger area which had ulcerated at the centre and was covered with a thick brown scab. In the middle and lower thirds of the anterior aspect of the right leg there was a saddle-shaped lesion about 15 cm. in length, which was chocolate-coloured and ulcerated in its lower part. There were no bruises or purpura elsewhere on the limbs or body. As his platelets were usually below 20,000 per c.mm. splenectomy was advised, and Mr. Elliot-Smith removed a spleen weighing 122 g. Unfortunately the operation was not followed by any significant rise in platelets and there was only temporary healing of the ulcer, attributable to the rest in bed. Six months after the operation, although the bleeding time had fallen from 15 minutes to 3 minutes, there were still only 54,000 platelets per c.mm. and the ulcer of the right leg had broken open again.

Three out of every four negroes with sickle-cell anaemia have chronic ulceration of the legs (Cummer and LaRocco, 1940). Unfortunately the early stages of the lesion have not been observed, and by the time the ulcers come under medical care they are described as punched-out chronic ulcers with a base of granulation tissue. They respond to symptomatic treatment, but are likely to relapse owing to the intractable nature of the underlying malady. In acholuric jaundice ulceration of the legs is a much less frequent complication, though at least 18 cases had been recorded by the beginning of 1939 (Taylor, 1939). The lesions, which are commonly near the internal malleolus, begin as a dusky-blue area which breaks down in the centre. A ring of bluish cyanosis or dark pigmentation circumscribes the lesion. Vaughan and Turnbull (1936) described ulcers with pigmented margins and scars with pigmented borders; microscopical preparation showed that the dermis for a considerable distance beyond the margin was densely infiltrated with plasma cells and contained numerous macrophages loaded with granules of iron, while its vessels were greatly engorged. The French authors who reported chronic ulceration of the legs in splenic anaemia (Grégoire and Emile-Weil, 1929) and Algerian splenomegaly (Lombard and Nanta, 1928) thought that the leg ulcer was primary and formed the portal of entry for bacterial or mycotic infection, but this idea is not in keeping with modern views of the pathology of splenomegaly. In the cases which I am reporting the lesion appeared to begin as an extravasation of red blood cells with subsequent ulceration over the purpuric area. It is very similar in appearance and pathology to the pigmentation of the legs in Gaucher's disease (Bloem, Groen, and Postma, 1936). It is clear that thrombocytopenia is not a common factor, for the platelets are normal in acholuric jaundice and sickle-cell anaemia. Nor is the ulceration explained by the anaemia, for chronic ulceration of the legs has not been described in pernicious anaemia or chlorosis. Mere size of the spleen is not significant, inasmuch as ulceration is absent in the gross splenomegaly of leukaemia and present with much less enlargement. Finally, there is no correlation with clubbing of the fingers, another peripheral abnormality which is curiously associated with splenomegaly. Both clubbing of the fingers and chronic ulceration of the legs are suggestive of vascular changes in the limbs, and in more leisured times it would seem appropriate to carry out careful studies of the peripheral circulation before and after operation in similar cases.

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CHIP FRACTURES OF THE OS TRIQUETRUM (CARPAL CUNEIFORM)

BY

T. J. FAIRBANK, M.B., B.Ch., F.R.C.S.
Major, R.A.M.C.

Eleven fractures of the os triquetrum have been seen out of a total of 86 wrist injuries referred to a small fracture clinic during the last year. This gives a false impression of their relative frequency, in that all triquetral fractures were sent to this clinic while many other wrist injuries were treated elsewhere; nevertheless, they are much more common than was previously supposed. Greening (1942) has recently stressed this frequency, quoting 20 out of 580 wrist injuries seen at Charing Cross Hospital during two years. He has described how the bone may be crushed between the pisiform and the lower end of the ulna, classifying the fractures according to their *x*-ray appearances, and giving a full bibliography, to which unfortunately there is no access in this station. A study of the cases seen here agrees largely with his analysis, but has brought out certain differences which it is proposed to describe. Of the 11 fractures 10 were small chips or flakes about 3 mm. in diameter separated from the middle of the ulnar dorsal border; the eleventh was a complete fracture through the middle of the bone in the sagittal plane with no displacement. In no case was there any other associated bone injury.

Aetiology

All were due to a fall on the hand, one in volar flexion, the remainder in dorsiflexion. Six of the latter gave the following clear-cut history: Each patient said that he was walking downhill when his feet skidded forwards; he then fell backwards on to his outstretched hand, was unable to save himself, and finished up on his back. They were unable to remember in which direction their fingers were pointing, but it is suggested that they were pointing outwards to the side, that the first strain was one of dorsiflexion, immediately followed by forcible ulnar deviation as they rolled backwards over the ulnar border of the hand, and that this is the trauma *par excellence* that would crush the os triquetrum against the lower end of the ulna. All the patients were soldiers, their ages varying from 23 to 37. In this station the roads are steep and the asphalt often slippery, and boots with hobnails polished smooth take little grip. Although one-third of all the wrist injuries seen occurred in men of the Royal Navy there were no triquetral fractures among them, an immunity possibly due to the plain leather soles of Naval footwear.

Physical Signs and X-ray Appearances

The patients presented a stiff weak painful wrist with maximum pain, swelling, and tenderness over the dorsum of the os triquetrum. In only one was the fragment palpable. A combination of dorsiflexion and ulnar deviation was typically the most painful passive movement. Only two men had signs of a sprain of the ulnar collateral ligament; the history of their injuries and the *x*-ray appearances confirmed the presence of an avulsion fracture in each case.

At *x*-ray examination the chip fractures were best seen in the lateral and were invisible in the antero-posterior view. From the lateral it was not always easy to say whether the fragment had come from the dorsum of the os triquetrum or of the lunate ; the oblique view, which is most important, showed the site of fracture in every case. This point was specially studied in view of the high figure (59 out of 1,106) for avulsion fractures of the posterior process of the lunate in Schnek's series as quoted by Böhler (1935). In the lateral view they varied from a minute flake to an oval fragment 4 mm. in greatest diameter. In the two men with ulnar collateral ligament damage the fragment had been pulled proximally ; of the remainder it lay over its bed in 3 and had been pushed distally in 5. In no case were there any radiating cracks or fissures through the rest of the bone. The accompanying radiographs show the largest and the smallest fragments.

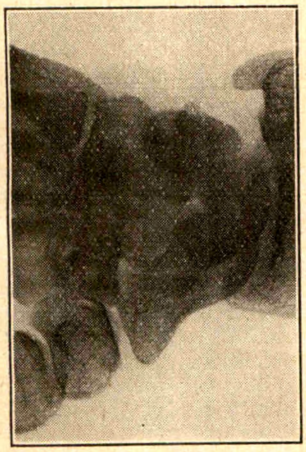
FIG. 1.—Pte. A.: Oblique view.

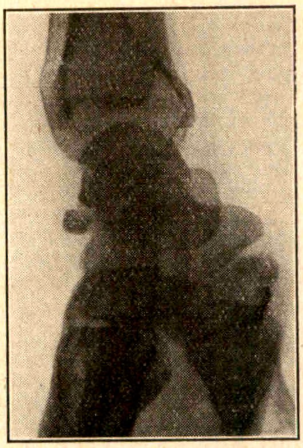
FIG. 2.—Pte. A.: Lateral view.

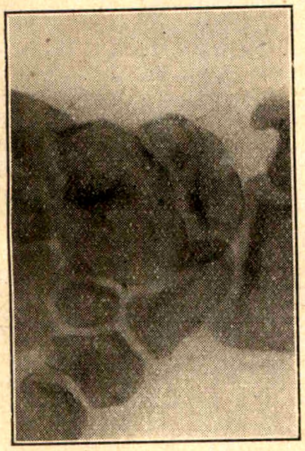
FIG. 3.—Pte. B.: Oblique view.

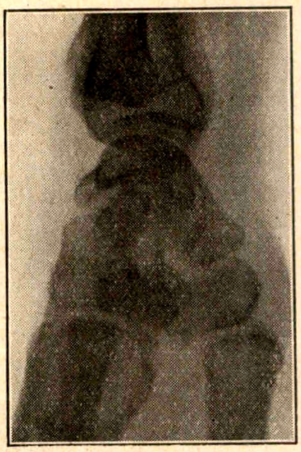
FIG. 4.—Pte. B.: Lateral view.

Treatment and Results

No attempt was made to reduce any displacement, which was never pronounced. The one complete fracture was immobilized in plaster-of-Paris for 15 weeks before union showed radiologically. The patient returned to full duty 4 weeks later. Eleven months after the injury the wrist was normal except for slight tenderness in the triquetral area.

The two avulsion fractures were also immobilized in plaster, one for 4 weeks, the other for 9 weeks ; these men were fit for all duties respectively 7 and 10 weeks from the injury. Nearly a year later they were both trouble-free, but one has limited flexion and very occasionally local pain ; in his case *x*-ray examination at 6 months showed union incomplete, but at 12 months union had taken place.

With the exception of one man with a severe sprain put in plaster recently and still under treatment, the remainder (7 cases) were treated with elastoplast strapping only, and were fit for full duty in 1 to 28 days, the average time being 10 days. They have been "followed up" for periods varying from 2 to 12 months. Of the 7, 4 are now normal in every way, one is normal except for slight limitation of flexion, and the other 2 suffer no inconvenience but still get slight pain on forced dorsiflexion. Radiographs show union to have taken place in all of them, although in some it was slow and still appears to be incomplete.

Conclusions

With such a small series it is impossible to draw wide conclusions, but the figures agree with those of Greening in showing that the fracture is more common than was formerly supposed. It is usually due to forcible dorsiflexion and ulnar deviation of the wrist, frequently the result of a backward fall on the outstretched hand. In *x*-ray diagnosis the oblique view shares importance with the lateral, and the chip of bone appears to be pushed off more often than pulled off. In the former the prognosis is excellent and recovery very rapid with minimal treatment ; although bony union may be delayed, immobilization does not appear to be necessary. The avulsion fractures, however, involving as they do damage to the ulnar collateral ligament, are more serious injuries and require longer treatment. It was a little surprising that the one complete fracture took so long to unite when immobilization was carefully maintained in a patient who had been using his hand to the full. Slight symptoms may persist for many months, but they do not interfere with the activities of the patient.

My thanks are due to Colonel J. R. N. Warburton, *M.C.*, A.M.S., and to Colonel W. A. Jackman, A.M.S., for permission to publish these cases, and to Major W. N. Brown, R.A.M.C., for his unfailing patience and excellent radiographs.

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Medical Memoranda

Pneumococcal Meningitis successfully treated with Sulphapyridine

The following case, in which the chief features were the sudden onset and the rapidity of cure with sulphapyridine, is reported in order to draw attention to the possibility of lowering the mortality rate of pneumococcal meningitis.

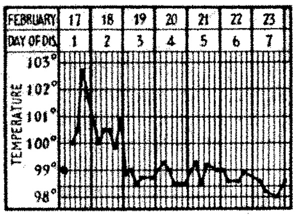
CASE REPORT

An unmarried woman aged 21 was admitted to hospital at 11 a.m. on Feb. 17, 1940. On Feb. 15 she had not felt very well, and on the 16th had sent for her doctor, who diagnosed influenza. Some spots were then present on her arms and legs and she also complained of diplopia. At 3 a.m. on the 17th she was very restless and started getting out of bed. She vomited 3 times, and by 5 a.m. was definitely unconscious.

On admission the patient was found to be comatose but very restless. Her head was retracted and her knees and hips flexed. She was lying on her side and giving out occasional meningeal cries. There were spots of an erythematous nature on her legs, and she was incontinent of urine and faeces. According to her mother she had not passed urine for 12 hours. It was difficult to examine her very thoroughly, as she was so restless, but there was definite evidence of squint and ptosis of both eyelids, the left being more marked than the right. Kernig's and Brudzinski's signs were positive, Babinski's sign was flexor, and the abdominal reflexes were absent. The only abnormal finding in her chest was evidence of slight consolidation at the left base. Her tongue was furred.

Under general anaesthesia 12 c.cm. of soluble sulphapyridine (equivalent to 4 g. of the drug) was injected intramuscularly. Lumbar puncture was performed, and turbid fluid ran out under considerable pressure, too high to measure with a manometer. A deposit soon settled at the bottom of the 40 c.cm. of cerebrospinal fluid that was taken, and from this deposit a slide was made which demonstrated extracellular pneumococci. There were 25,000 cells per c.mm., mostly polymorphs, with occasional red cells and macrophages ; protein, 0.5 g. % ; sugar, trace only ; chlorides, 725 mg. per 100 c.cm. Urine showed albumin +, sugar +, and acetone + ; its specific gravity was 1020. By 9 p.m. the patient was notably improved. Whereas previously she had been quite unconscious, she now recognized her doctor and was able to answer questions. A further injection of 12 c.cm. of soluble sulphapyridine was given and pot. brom. 30 gr. and chloral 15 gr. were administered by mouth.

Feb. 18.—The patient had passed a fair night, but was still very restless. She had drunk about 35 oz. of fluid since admission and had been incontinent of urine and faeces. She now knew where she was. Her colour, which had been pale and somewhat cyanosed, was improved. The pulse was good and the blood pressure 80/50. Kernig's sign was positive; Brudzinski's and Babinski's signs were negative. The head was still retracted, and there was still marked squint and ptosis. Slight papilloedema of both disks was noted. The white blood cells numbered 20,000 per c.mm.—76% polymorphs, 22% leucocytes. The urine was normal. Lumbar puncture was performed under general anaesthesia, 40 c.cm. of fluid being run out under pressure too high to read with a manometer. The fluid was considerably less turbid, and intracellular pneumococci were demonstrated. An injection of 6 c.cm. of soluble sulphapyridine was given intramuscularly in the morning and again in the evening.



Feb. 19.—The patient's condition was still improving. She had no headache, but complained of stiffness in her neck. She still rolled about a great deal in bed, and kept her knees well drawn up. Lumbar puncture was performed under general anaesthesia, 25 c.cm. of less turbid fluid being drawn off under pressure still too high to read with an ordinary glass manometer. 500 red cells and 500 white cells were found per c.mm.; protein, 0.08 g. %; chlorides, 760 mg. per 100 c.cm.; sugar, positive; Nonne-Apelt reaction, slightly positive. 6 c.cm. of soluble sulphapyridine was administered intramuscularly in the morning and again in the evening. Altogether 48 c.cm. of the soluble substance was administered in 3 days. The fall in temperature over this period can be seen from the Chart.

Feb. 20.—Lumbar puncture was performed under local anaesthesia and the fluid ran out at the rate of about 1 drop in 3 seconds, now being clear. The general condition of the patient was much improved, but Kernig's sign, head retraction, and ptosis of both eyelids, as well as diplopia, were still present. The squint was less marked. During the 24 hours 2 g. of sulphapyridine was administered by mouth.

Feb. 21.—The findings were similar to those of the previous day, but lumbar puncture was not performed. The blood pressure was 120/70. 2 g. of sulphapyridine was given by mouth.

Feb. 22.—A blood count showed 6,400 leucocytes per c.mm. There was no head retraction, Kernig's sign was negative, and slight ptosis and slight "blurring" of vision were still present.

Feb. 23.—Sight quite normal. No ptosis. Felt quite well.

May 1, 1942.—It has been ascertained by one of us (E. W. M. W.) that this patient has remained quite well; there have been no sequelae, and it is interesting to note that she is now serving with the Forces.

We wish to thank Dr. C. M. Hinds Howell for his kind advice throughout this case.

E. W. MEURIG WILLIAMS, M.B., B.Ch., B.Sc.,
Member of Hon. Medical Staff.
ELLIOT PHILIPP, M.R.C.S., L.R.C.P.,
Late House-surgeon.
Harrow and Wealdstone Hospital.

In a bronchoscopic investigation of asthmatic children E. L. van Loon and S. Diamond (*Amer. J. Dis. Child.*, 1942, **63**, 217) found no support for the theory of a bronchospastic origin of the wheezing and dyspnoea. Admitting that the bronchoscopist cannot explore the small peripheral bronchi and bronchioles, they agree with Jackson that spasmodic contraction of such small bronchi is hardly compatible with the production of a wheeze audible at the open mouth. In 100 asthmatic children non-specific inflammatory changes were observed in 91, and in 20 in whom bronchography was done 5 were found to have bronchiectasis. The only constant feature found in children examined during an attack was the presence of a thick viscid secretion within the bronchial lumen.

Reviews

PULMONARY TUBERCULOSIS

Pulmonary Tuberculosis and its Treatment. By Hans Jacob Ustvedt, M.D. Translated by A. L. Jacobs, M.R.C.P. With a foreword by W. D. W. Brooks, D.M., F.R.C.P. (Pp. 252. 25s.) London: John Bale Medical Publications, Ltd. 1942.

Dr. H. J. Ustvedt has written an extremely interesting volume on pulmonary tuberculosis, and, especially on the side of treatment, has gathered together a great many facts and observations which are well placed in the making of a readable book. He has evidently studied tuberculosis with a critical eye to the types prevalent at different ages and to the varying modes in which the disease tends to express itself in persons of means on the one hand and those subjected to want on the other. He is also prepared to see in immunity and resistance two of the principal factors on which the defence of the body depends. "In tuberculosis," he says, "as with other infections, *immunity* is the specific increase in resisting power which the organism acquires as a result of the infection. . . . *Resistance* is that power of withstanding the attack of the tubercle bacillus which the organism possesses apart from the effects of the infection itself." This distinction has long been made in England, though what Ustvedt calls "resistance" is usually spoken of as "natural immunity." He quotes the findings of Heimbeck and of Scheel, already familiar to tuberculosis specialists in this country, on the B.C.G. vaccination of tuberculin-negative probationer nurses at Ullevaal, by which they were brought up to the same level as the originally positive group—a finding which strongly suggests to him "that it is not only resistance but also immunity which is responsible for the low morbidity among the positive reactors." He notes, too, the marked effect of environment on the continued latency or the progressive development of the disease, citing malnutrition, poverty, occasionally pregnancy, strain, and other human trials as calculated to lead up the implanted infection to the clinical level.

Speaking of silicosis and the inhalation of dust, he remarks that "if we are to show a causative relation between a single factor associated with a particular occupation and the incidence of tuberculosis, all the other factors enumerated above"—here he means the environmental factors which we have mentioned—"must be taken into account. If this is done it becomes doubtful how far silicosis in itself really predisposes towards the development of tuberculous changes." We can only suppose that the author's acquaintance with silicosis is based on a much smaller experience than his knowledge of tuberculosis. As to the symptomatology of phthisis, his remarks are exceedingly valuable and should be read with interest and profit by all students of the disease. There is a good description of tuberculous meningitis—though it is assumed that this is nearly always connected with an attack of miliary tuberculosis—and there is no mention of tuberculoma of the brain. The author might well acquaint himself with the work of Arnold Rice Rich of the Johns Hopkins Hospital and of others on this subject.

In the book under review the question of treatment practically resolves itself into a consideration of collapse therapy. This concentration on what is perhaps the only type of treatment that counts at present is right and proper in a book intended to be a modern expression of the tuberculosis problem. The author very correctly condemns "high-pressure pneumothorax treatment," but we cannot agree with him that "the immobilization of the lung is almost entirely illusory" and that "the effect of treatment is at all events not related to this factor." Nobody believes that the lung is completely immobilized, but it is *relatively* immobilized by the cushion of air which prevents the constant drag of the expanding and contracting thoracic wall, and this must go far to explain the good results of pneumothorax therapy. We quite agree with him that this treatment really amounts to "a mechanical treatment of cavitation"; in fact, we are of the opinion that nearly every secondary tuberculous affection of the lung is accompanied by cavity formation, whether the cavities show in the radiograph or not. Ustvedt believes in bilateral pneumothorax, and devotes a considerable amount of space to this excellent measure. It is a curious side-light on his limitation to the Scandinavian and German literature that he fails even to mention the name of Parry Morgan, the distinguished Welshman who first introduced bilateral pneumothorax to the profession.

The author records his impression that "there are hardly sufficient grounds for the belief that superinfection is to any great extent responsible for tuberculosis morbidity," and expresses the opinion that "as for massive infection it appears that under existing conditions we are justified in disregarding this theoretical consideration." On these issues we might well join battle with him, for we regard both types of infection as extremely important. But we must not part from Dr. Ustvedt on a controversial note. We have read his book from cover to cover with the greatest pleasure and we commend it to all British tuberculosis officers and general practitioners. A tribute should also be paid to the excellent rendering of it into English by Dr. A. L. Jacobs.

THE AUTONOMIC NERVOUS SYSTEM

The Autonomic Nervous System. By James C. White, M D., and Reginald H Smithwick, M.D Second edition. (Pp. 46 35s) London: Henry Kimpton. 1942

The reputation of the Peripheral Vascular and Cardiac Clinics of the Massachusetts General Hospital is splendidly upheld by the second edition of White and Smithwick's book on the autonomic nervous system, for although they give a comprehensive survey of the contributions made by anatomists, physiologists, and clinicians working elsewhere, the book is surely founded upon their own extensive experience. Judicious pruning of the first edition has enabled the authors to add an enormous amount of new material in only eighty more pages; every chapter has been thoroughly revised, those dealing with physiology and pharmacology as well as the later ones on the clinical and surgical aspects of the disorders of the anatomic system. The authors have wisely stuck to the plan of placing the description of surgical technique in a separate section of the book, for although there have been striking changes in this field during the past seven years, the rest of the volume shows how greatly experience and experiment have altered the approach to many of the problems of the autonomic system—matters of interest not to surgeons alone but to all clinicians. The work proceeds, and there are still many gaps to be filled, but we welcome this volume as the most authoritative book on the subject at the present time.

AMPUTATIONS AND ARTIFICIAL LIMBS

Amputations and Artificial Limbs By R D. Langdale-Kelham, M.R C S., L R.C P., and George Perkins, F R.C S. (Pp. 96. 5s. net.) London: Oxford University Press. 1942.

Here in the neat form of the *Oxford War Manuals* is all that the student and surgeon need know about amputations at the present time. The experience of the authors at the Ministry of Pensions Hospital at Roehampton is a guarantee of the sufficiency of the information.

The strictly surgical aspect of the problem is considered in 47 pages. Such conciseness is only possible by virtue of the excision of all dead and dying wood. A sentence from the preface shows to what extent this has been achieved: "Chopart, Stokes-Gritti, Carden, Smith, Pirogoff, Furneaux-Jordan, Farabœuf, Lisfranc, Syme—must they all go? We are afraid so, even Syme." That the desirable amputations in the lower extremity could be brought within the bounds of three main types has been generally accepted for some time, and this book systematizes the subject on these lines.

The authors define the seat of election for below-knee amputations as 5½ inches below knee level. For above-knee sections they advise that 10 to 12 inches of femur should be left, measuring from the great trochanter. Their advice on the cutting of flaps and the detailed technique of the operation is worth careful study. Their advice as to when to amputate is brief and to the point, though some surgeons would consider that they tend to an undue conservatism, at any rate in relation to severe injuries in the lower half of the leg. The chapter on the post-operative treatment of stumps is of great value and contains many useful practical hints; the sections on teaching the patient to use an artificial leg or arm, respectively, are particularly interesting. The latter half of the book is devoted to mechanical or engineering details of the artificial limbs in current use. Much of this information made available from the authors' extensive store will be new to many surgeons.

This brisk and confident volume can be recommended to the student; but it is to the surgeon who hitherto has had little practical experience of the subject that it will prove an invaluable source of sound advice.

ORBITAL TUMOURS

Orbital Tumors: Results Following the Transcranial Operative Attack By Walter E. Dandy. (Pp 168 25s) London: H. K Lewis 1942.

Tumours of the orbit present considerable difficulties in diagnosis and treatment, and when examined histologically a proportion of such tumours prove to be inflammatory masses—the so-called pseudo-tumours of the orbit. Small masses situated anteriorly in the orbit are fairly easily removed by an incision through the conjunctiva or the lid, but deeply situated tumours have taxed the ingenuity of both ophthalmologists and general surgeons. The classical Krönlein operation was devised to allow access to the deeply situated tumours, and the large number of modifications that this operation has undergone provides a doubtful testimony to its efficacy. Moreover, when a deeply situated tumour is exposed by the Krönlein operation, or some modification of it, complete extirpation of a neoplastic mass is more often assumed than seen. Clearly this is an unsatisfactory state of affairs, particularly in the light of pathological investigations, which have shown that many orbital tumours are orbital extensions of intracranial growths. It was only by slow degrees that the obvious procedure of an intracranial approach to the orbit allowing inspection of both intracranial and orbital contents was evolved.

Dr. Dandy in this valuable monograph tells of how at one intracranial operation he was forced to open the orbit and of his fears that a pulsating exophthalmos would inevitably follow. The almost trivial incident through which intracranial exposure of the orbit came to be elaborated is but an illustration that in the hands of a master a difficulty becomes the key to a solution. Ophthalmologists and neurosurgeons alike owe to Dr. Dandy an operative procedure which is giving increasingly satisfactory results in competent hands. The present monograph is largely a record of twenty-five cases studied at operation, together with seven additional non-operative cases. This group, probably the largest that any individual surgeon has dealt with, reflects the difficulties in pathological classification, no fewer than fourteen different conditions being met with; only 20% of the cases were confined solely to the orbit. Malignancy of some degree or other was present in most cases; in only three of them could one be sure of a permanent cure. The operative approach is similar to that for the pituitary: the roof of the orbit is removed after evacuating the cisterna chiasmatis; retraction of the frontal lobe then provides sufficient room. A considerable simplification of the operation has come about through the introduction of avertin. With avertin anaesthesia the brain does not swell as it does with ether, and a smaller flap can be planned.

Notes on Books

Expectant Motherhood, by Prof. NICHOLSON J. EASTMAN of Johns Hopkins University, is published in this country by John Murray (price 6s.). "If you are going to have a baby you will want this book," according to the advice given on the attractive loose cover in which this little volume is dressed Possibly few of our readers will qualify for a copy on this basis alone, but all who are engaged in obstetrical work will be interested in Prof. Eastman's compilation. It is written in the hope of dispelling that widespread ignorance which causes so much fear, anxiety, and at times needless suffering to pregnant women and women in labour. For this reason it is written simply and with a sympathetic kindliness that cannot fail to appeal to its readers. Much more information is given than one woman will need to know on subjects ranging from the symptoms and signs of pregnancy to the care of the unborn babe. Controversial matters such as anaesthesia and analgesia in labour are wisely and fairly handled in such a way that both sides of the problem are presented to the patient while still leaving freedom of choice and action to the doctor she has engaged. This is a book which could be recommended with confidence to expectant mothers.

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THE SULPHONAMIDES IN OPHTHALMOLOGY

Though the interior of the eye is prone to a variety of inflammatory reactions, microbial infection is not common, and when it occurs it generally leads to rapidly destructive panophthalmitis. The sulphonamides, with their largely selective actions on the streptococcus, pneumococcus, meningococcus, and gonococcus, would not, therefore, appear to be promising in combating anything beyond the microbial infections of this type seen in the conjunctiva. Actually, the clinical use of the sulphonamides in ophthalmology has been both unexpectedly successful and disappointing. The most striking results are seen in ophthalmia neonatorum. Here sulphanilamide itself proved rather erratic, and more was hoped from sulphapyridine with its greater selectivity for the gonococcus, the causal organism in some 30% of cases. In practice sulphapyridine proved remarkably effective in all types of ophthalmia neonatorum, in the staphylococcal no less than in the gonococcal type[1] or in inclusion blennorrhoea.[2] The results in ophthalmia neonatorum are so uniformly good that bacteriological examination to establish the identity of the causal organism is almost superfluous; in all cases a clinical cure may now be expected in as many days as weeks were formerly needed. With appropriate treatment, as recently recorded in these columns,[1] ophthalmia neonatorum should cease to carry dangers to sight from corneal complications. Equally gratifying results are obtained in purulent conjunctivitis in older children and adults; this is clearly the case in gonococcal and meningococcal infections, but is less fully established for staphylococcal infection. Hypopyon keratitis, generally caused by the pneumococcus, often responds well to treatment, but failures are not uncommon. In trachoma, early reports[3] raised hopes of a quick cure of this stubborn infection, a hope supported by the efficacy of the sulphonamides against the allied virus of lymphogranuloma inguinale, but it would appear that the sulphonamides are merely a valuable adjuvant to the classical methods of treatment, acting, perhaps, only by their effect on the secondary infection which is almost always present.

Isolated case reports have been published on the value of the sulphonamides in a variety of severe intra-ocular infections, including sympathetic ophthalmia and panophthalmitis.[4] There is more convincing evidence of their efficacy in post-operative inflammation and in infections seen in perforating injury of the globe with retained foreign bodies.[5] Good results are seen in many cases of acute iritis and iridocyclitis, though unfortunately this is not the rule, while in chronic iridocyclitis and uveitis, even when presumably due to the gonococcus,[6] the results are disappointing. Good results are also reported in herpes of the cornea.[7] In orbital infection and dacryocystitis the sulphonamides are valuable but do not lessen the need for evacuating pus where this has formed. There is an isolated case on record of recovery from orbital cellulitis complicated by meningitis.[8] Remarkably few ocular complications have been recorded from the widespread use of sulphonamides. An early report[9] suggested the danger of optic neuritis, but a transitory myopia appears to be the one frequent complication encountered.[10]

Experimental studies have been more concerned with assessing the level of concentration that the various sulphonamides reach in the ocular tissues than with the efficacy of these drugs in different experimental infections. There is substantial evidence that they are effective in streptococcal infection,[11] and possibly in infection due to the Koch-Weeks bacillus (*H. influenzae*).[12] Some work has also been done on *B. pyocyaneus* infection, but the evidence is conflicting.[13] Corneal lesions produced by intracorneal inoculation with staphylococcus appear to be favourably influenced by the local application of a soluble sulphanilamide.[14] The work dealing with levels of concentration of the sulphonamides in the eye has followed two distinct lines—one concerned with assessment of the relative value of the various sulphonamides in reaching the eye and maintaining high levels of concentration, and the other aiming at a similar evaluation of the various methods of local administration. There is probably little difference in the aqueous level of sulphanilamide and sulphapyridine. Sulphadiazine reaches high aqueous levels (about 75% of the blood level) after an initial lag, but sulphathiazole attains distinctly low concentration in the eye, somewhere around 20% of the blood level.[15] This would imply that the value of sulphathiazole in ophthalmology is limited, and there are no clinical data to contradict this; in ophthalmia neonatorum it has been found less effective than sulphapyridine.[16] As for the relative value of the various methods of local application, ointments are more effective in giving and maintaining high levels than solutions.[17] The complexity of the molecule of the particular drug used is also of significance: a complex sulphonamide, like prontosil soluble, fails to be absorbed into the aqueous when injected subconjunctivally.[18] A suitable sulphonamide, such as sodium sulphacetamide ("albucid"), gives high levels in ocular tissues when introduced in fluid form into the conjunctival sac,[19] but it is likely that under clinical conditions application in ointment form is the better method. The values that have been reached with local application of sulphonamides are distinctly higher than those that can be safely reached by oral administration. In man aqueous concentration of 20.7 mg. per 100 c.cm. has been obtained by the insufflation of sulphanilamide powder into the conjunctival sac[18]—a value about three times that obtainable by oral administration; in animals concentrations many times higher than this are easily obtained.

If concentration were the only factor in assessing the efficacy of a particular sulphonamide or of a particular method of administration, it is clear that local therapy with soluble sulphonamides would be the method of choice.

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[2] Thygeson, P. *Arch. Ophthal.*, Chicago, 1941, **25**, 217.
[3] Kirk, R., McKelvie, A. R., and Hussein, H. A. *Lancet*, 1938, **2**, 994.
[4] Guyton, J. S., and Woods, A. C. *Amer. J. Ophthal.*, 1941, **24**, 428.
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[7] Kleefeld, G. Quoted by Jasseron and Morard, *Arch. d'Ophtal.*, 1940, **3**, 875
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[11] Rambo, V. C. *Amer. J. Ophthal.*, 1938, **21**, 739. Venco, L. *Ann. Ophthal.*, 1939, **67**, 179.
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[13] Joy, M. H. *Proc. Soc. exp. Biol.*, N.Y., 1940, **45**, 709. Robson, J. M., and Scott, G. I. *British Medical Journal*, 1942, **1**, 5. Sorsby, A., and Klein, M. At Annual Congr. Ophthal. Soc. U.K., May, 1942.
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[15] Scheie, H. G., and Souders, B. F. *Arch. Ophthal.*, Chicago, 1941, **25**, 1025. Bellows, J. G., and Chinn, H. Ibid., 1941, **25**, 294. Liebman, S. D., and Newman, E. H. Ibid., 1941, **26**, 472.
[16] Lewis, P. M. *J. Amer. med. Ass.*, 1941, **117**, 250.
[17] Guyton, J. S. *Amer. J. Ophthal.*, 1941, **24**, 292
[18] Lee, O. S., Rottenstein, H. S., and Chao, H. Y. *Chinese med. J.*, 1941, **60**, 207.
[19] Robson, J. M., and Tebrich, W. *British Medical Journal*, 1942, **1**, 687.

Both clinical and experimental evidence seem at the present to indicate that oral administration, in spite of its lower levels of concentration in the ocular tissues, gives much more satisfactory results, but that the problem is still undecided is obvious from the somewhat contradictory results reported at the last annual congress of the Ophthalmological Society.

THE SHAPE OF A SMELL

Too often physiology and medicine are linked only in the memory of the practitioner. In wartime particularly a disorganized practice, the filling up of forms, a call to the colours, in addition to preoccupations with social problems and financial perplexities, distract the doctor from the foundation of his training, and advances in the true science of medicine become for him faint echoes from a remote campaign. Progress in the more specialized technical fields is especially hard to follow, as the communiqués are usually spiced with new jargon and are often reserved to the point of inscrutability. Our attention is attracted, however, by the two extremes—the bizarre and the practical—examples of which are to be found in publications on electrophysiology, once patronizingly called the prodigal son of biology, now a fast-growing aid to neurologists.

One of the earliest and simplest uses of electrophysiological methods was in the study of the special senses. An animal cannot describe its sensations, and to take the place of subjective reports methods have been devised to record from the nerves and brain the stream of nerve impulses set up when a receptor is stimulated. In this way the anatomical distribution of sensory tracts has been physiologically plotted, and, what is more, the means whereby differences in strength and quality of stimuli are conveyed to the brain have been analysed. It seems that differences in strength and intensity are transmitted from receptor to brain as variations in the frequency of impulses, each one of which is always the same size. Variations in quality are perceived by selective sensitivity of different end-organs. This rule is known to apply to the simpler end-organs of skin and muscle, but whether it holds true for the ear, eye, and nose is not so certain. The sense of smell particularly has puzzled both physiologists and psychologists, for no clear physical basis is known for the elusive and private world of odour.

In human affairs smell has degenerated into an aesthetic side-show, a pivot for a luxury trade, and it is only recently that the ability to distinguish between musty hay, geraniums, and garlic has regained its status as a factor in survival. So ancient in evolution is olfaction that in most mammals its nervous centres have been overlaid with a more recent acquisition, the neopallium, so that the olfactory nerve and cortex are relatively inaccessible to the physiologist's electrodes. This obstacle has been surmounted by Prof. E. D. Adrian, O.M.,[1] who has pressed into service the common hedgehog, because its simple and unambitious brain leaves exposed a part of the pyriform cortex and the olfactory bulb. When the animal was lightly anaesthetized normal breathing produced a regular series of large potential waves in the pyriform area at each inspiration. These waves were the result of mechanical stimulation by the air of the olfactory epithelium. Their frequency could be raised by forcibly blowing air through the nose. When a distinct odour, say of cloves or asafoetida, was added to the air, these regular waves vanished and their place was taken by small irregular waves. A very strong smell evoked a continuous discharge at a higher frequency. In Adrian's experiments the most potent stimuli were the smell of decaying worms and cigarette smoke.

The significant difference between the results of mechanical and olfactory stimulation is that the former has a uniform effect giving large synchronous waves in the cortex, whereas the latter is not uniform and has a more selective action on different parts of the receptor mechanism. Adrian suggests that "different chemical stimuli produce different distributions of excitation, and that a familiar smell, like a familiar sight, is recognized by the specific pattern which it arouses in the brain." If borne out by further experiment this hypothesis would bring the sense of smell into line with other senses, both in the peripheral mechanism whereby chemical changes are converted into nervous impulses, and in the central nervous processes, in which synchronized electrical activity is associated with physiological rest or passivity. Even if we cannot yet talk of the shape of a smell we may perhaps look forward to the adoption of the "standard hedgehog" for biological perfume assay and the calibration of rival brands of cigarette. Apart from this slightly frivolous speculation there are several features of the sense of smell which may be explored by Adrian's method. It would be interesting to know whether the remarkable degree to which adaptation may occur in olfactory sensation depends upon a peripheral or a central mechanism. The neutralization of one smell by another seems little understood although it is in daily use.

The generalization that a stimulus capable of arousing a discriminatory response also suppresses synchronous electrical activity in the central nervous system is met with again in the application of electrophysiology to neurological problems—electro-encephalography. The normal resting electro-encephalogram consists almost entirely of the synchronous electrical rhythm from the visual integrative areas, the so-called alpha rhythm. This rhythm, as Adrian was the first to prove, tends to disappear when the eyes or mind are engaged in discriminatory activity, and the human cortex behaves in this respect like the primitive olfactory centres of the hedgehog. But synchronous rhythms are not the exclusive property of resting normal neurones. Abnormal conditions evoke slower rhythms, and these can be located in cases of cerebral tumour, brain injury, and so forth. The difficulty in interpreting abnormal electro-encephalograms is to be sure of the extent of normal variation, and much tedious work must be done to establish this. In a survey of 900 subjects Williams[2] found that in flying personnel of the R.A.F. only 5% showed anything which could conceivably be called abnormal, whereas twice as many were found in a group of non-combatants of other services; five times as many in a series of psychoneurotics. Judged by the same criteria, 60% of all epileptics were abnormal—a figure confirming the early results of other workers in this country.

There can be no doubt that the electrical behaviour of the brain reflects in a very precise way the constitution and potentialities of the nervous system, apart from the presence of gross pathological changes. The detail of the picture still depends upon the refinement of method and the experience and patience of the observer, but a powerful tool is available to all interested in human problems, from the philosopher to the recruiting board. If the hedgehog symbolizes for us the idea of defensive lethargy and the fighting airmen the very reverse, we can be satisfied that the qualities we most admire, whether in peace or war, are reflected by impersonal instruments as an image of vigorous individual activity, even in the minute and innumerable units of the brain.

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[1] *J. Physiol.*, 1942, **100**, 459.

[2] *J. Neurol. Psychiat.*, Chicago, 1941, **4**, 257.

DR. A. G. NICHOLLS AND THE C.M.A.J.

Dr. Albert George Nicholls, F.R.S.C., F.R.C.P.C., has retired on grounds of health from the post of Editor of the *Canadian Medical Association Journal* and is succeeded by Dr. H. E. MacDermot. Dr. Nicholls was born at Shotley Bridge, Co. Durham, and had a most distinguished career at Montreal High School and at McGill University, and after graduating in arts and medicine was a member of the teaching staff of his university for seventeen years. He then became professor of pathology at Dalhousie University and director of the Public Health Laboratories at Halifax, N.S., and during the last war he was D.A.D.M.S. Sanitation with the rank of Major C.A.M.C. Dr. Nicholls is the author of some 50 monographs and other publications on medical subjects, and succeeded the veteran Dr. A. D. Blackader as Editor of the *C.M.A.J.* in 1929. Under his editorship our contemporary has done fine work for Canadian medicine, and he has upheld the tradition of cordial good will towards the British Medical Association and the *B.M.J.* A man of wide interests and culture and an accomplished writer and journalist, his friendship is valued by many colleagues in this country. The Canadian Medical Association has appointed Dr. Nicholls Consulting Editor so that he may retain an active interest in the *C.M.A.J.*, and has paid him the high compliment of election to Honorary Membership. According to its constitution there can never be more than 25 Honorary Members at any one time.

OXYGEN POISONING

The work of Paul Bert,[1] Lorrain Smith,[2] and others has established that for very prolonged treatment by inhalation of oxygen the gas should not be given at a higher concentration than 60% of one atmosphere. Though a great deal of recent research has been carried out on this point in connexion with the use of oxygen by aviators and its administration to patients with anoxia, nothing has occurred to alter the above general rule. The only difficulty has been to determine for how long the pure gas—that is, at 100% of one atmosphere—may be breathed without danger to human life. As J. H. Evans and C. J. Durshordwe[3] and others have shown, some patients can tolerate the pure gas for limited periods with great benefit to their condition. It is becoming apparent that the reactions of different subjects to the pure gas vary widely. As oxygen will diffuse less rapidly through a surface covered with an increased amount of fluid, pure oxygen is required in such cases so that enough oxygen may reach the blood. Some authorities have advocated that pure oxygen should not be breathed for longer than 48 hours, and, after that, the concentration should be lowered to 60%. It is also advised that pure oxygen should be given for continuous periods of not more than five hours at a time, with intervals at the lower and safe pressures.

Lorrain Smith found that prolonged breathing of oxygen at a higher percentage than about 70 caused congestion and consolidation of the lung in normal animals, and this seemed to establish that the lungs were the main site of the trouble. He used mice and small birds chiefly, but also some rats, guinea-pigs, and pigeons. Some animals were more sensitive than others, and the percentage of oxygen required to inflict the damage varied with the resistance of the individual. Most of the later researches give similar findings, but some observers report that death may occur without definite consolidation of the lung. Thus Argyll Campbell[4] found that cats were adversely affected when subjected for prolonged periods to only 60% of an atmosphere of oxygen; they lost appetite, became much weakened, and lost weight rapidly, with a fall of metabolism and body temperature before death. There was general wasting of tissue with collapse and congestion of some of the alveoli of the lung and the presence of a few catarrhal cells, without any sign really typical of pneumonia. He suggested that some poison was formed in the lung by the action of oxygen at high pressure upon the epithelium. His rabbits, monkeys, and guinea-pigs, like most animals, could tolerate oxygen at 60% without harm. Recently J. R. Paine and his colleagues[5] observed that dogs could not tolerate prolonged respiration of oxygen at over 75% of an atmosphere, and exhibited lethargy, anorexia, and dyspnoea. The pathological changes they report are congestion and hyperaemia of the lungs, liver, and kidney, pulmonary oedema, and pleural effusion. They suggest, as did K. Retzlaff,[6] that death might be due to constriction of pulmonary blood vessels with some derangement of vascular physiology, although there is also obvious irritation of the respiratory epithelium. They give the literature in which evidence was obtained that oxygen constricts the blood vessels of the retina and of the brain. However, this constriction of the retinal vessels does not always occur, as Argyll Campbell and Leonard Hill[7] report that Duke-Elder could not detect such constriction in their subject after breathing pure oxygen for five minutes. Other factors that influence oxygen poisoning, at all events at pressures higher than one atmosphere, are external temperature, carbon dioxide pressure, and starvation. A. Almeida[8] found that starvation promoted resistance to oxygen poisoning, and this was confirmed by Campbell,[9] who observed that a rise of external temperature to 33° C. increases sensitivity to oxygen poisoning. He found also that thyroidectomy has a protective influence[10] and that inhalation of oxygen at high pressure, even at 60%, increases the carbon dioxide tension in the tissues. Leonard Hill[11] demonstrated that when animals breathe carbon dioxide at 5% of an atmosphere they become less resistant to oxygen poisoning. R. Gesell[12] and others have suggested that under increased oxygen pressure, with the haemoglobin fully saturated with oxygen, the blood cannot remove carbon dioxide from the tissues, and this is a factor in oxygen poisoning. However, the problem is still far from complete elucidation.

J. R. Paine and his colleagues, from their results with dogs, agree that the administration of pure oxygen must be intermittent and also report on another aspect of the subject. They confirm the previous finding of others that oxygen inhaled at 95–100% of an atmosphere tends to remove the gases—nitrogen, etc.—from the obstructed intestine. They give some analysis of the enclosed gas which seems to indicate that, during the breathing of oxygen, the pressure of carbon dioxide in the free gas may fall temporarily to a very low level—namely, 0.4%. This is a surprising result, for we can find no other evidence that the CO_2 pressure within the body or lumen of the gut falls below that of the arterial blood, which is normally about 5% and tends to increase while breathing oxygen both in man and animals. Also even in pure nitrogen or air freshly injected into the stomach or elsewhere the pressure of CO_2 in the injected gas rapidly rises to that of the arterial blood and then exceeds it. Campbell[13] reviews the literature to 1931, and recent researches confirm the main conclusions therein. He[14] tried to remove the carbon dioxide from the body of an anaesthetized cat by vigorous and rapid mechanical inflation and deflation of the lungs with air; after more than two hours of this pumping CO_2 was still present in the arterial blood at a pressure of almost 1% of an atmosphere and at a higher pressure still in the tissues. Hence the low figures obtained by Paine and his colleagues need confirmation. The needle and syringe method of withdrawing samples of gas from the intestine and other cavities holding their normal contents is liable to error unless the withdrawal of the gas is carried out with the tissue and syringe under fluid to shut off external air. It is also advisable for confirmation to analyse a volume of 10 c.cm. of gas in a Haldane precision apparatus rather than a bubble in a micro-apparatus. If low results for carbon dioxide obtained by Paine and his colleagues are confirmed, it is probable that some local fixation of that gas occurs in the intestine during breathing of pure oxygen. The after-effects of the double operation on the dogs to obstruct the gut may also be exerting some local influence. In any case, if supported, the results confirm that among other processes the CO_2-controlling mechanisms are deranged by inhalation of pure oxygen, as several others have noted.

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[1] *La Pression Barométrique*, p 764 1878, Paris · Académie de Médecine.
[2] *J. Physiol*, 1899, **24**, 19
[3] *Anesth and Analges*, 1932, **11**, 193
[4] *Brit. J. exp. Path*, 1927, **8**, 347. 1937, **18**, 191.
[5] *J. thorac Surg*, 1941, **11**, 15
[6] *Z. exp. Path. u. Therap*, 1913, **14**, 391.
[7] *J Physiol*, 1931, **71**, 309.
[8] *C r. Soc. Biol.*, Paris, 1934, **116**, 1225.
[9] *J Physiol.*, 1937, **89**, 17 P.
[10] Ibid, 1937, **90**, 91 P.
[11] *Quart. J. exp. Physiol.*, 1933, **23**, 49.
[12] *Amer. J Physiol*, 1923, **66**, 5.
[13] *Physiol. Rev.*, 1931, **11**, 1.

CHAIR OF CHILD HEALTH AT NEWCASTLE

The University of Durham has gratefully accepted an offer from the Nuffield Provincial Hospitals Trust to provide a grant of £15,000 towards the cost of establishing a Chair of Child Health at King's College, Newcastle-upon-Tyne. The Senate and Court have appointed Dr. J. C. Spence as Professor, and the Council of King's College will provide him with the assistance necessary to the creation of a full teaching and research department. The Royal Victoria Infirmary, Newcastle, and the Babies' Hospital in that city, will co-operate with King's College by giving all possible facilities for the new department, which will be concerned with the preservation and restoration of the health of children. The Department of Child Health will provide undergraduate and postgraduate teaching in child health and the diseases of childhood; it will be a centre of research in those subjects, and will be at the disposal of local public health and education authorities of the region, for advice and consultation in the conduct of their child welfare and school medical services.

PAPWORTH'S PROGRESS

Paper shortage and "austerity" are responsible for the miniature report on the Papworth Village Settlement for 1941, but the facts recorded in it show that the settlement, in spite of the lamented death of its founder, Sir Pendrill Varrier-Jones, has fully maintained its rate of growth and expansion. Papworth has well-equipped hospitals, sanatorium units, and hostel units, and all these, with various annexes, cottages, and workshops, form an administrative whole—the Village Settlement. The surgical unit (the Nelson-Langermann Hospital) has a good record of work, and an attempt is being made to follow up all thoracoplasties done since its inception in 1936. The out-patient department deals with casualties and minor ailments among the patients and the village population, and also controls the clinics devoted to ante-natal and child welfare, physiotherapy, collapse therapy, and refractions. Sixty-six artificial pneumothorax inductions were made and 1,900 refills given during the year under review. The health of the village was excellent. Six healthy children were born. All children of school age and those from 3 to 5 years were examined by *x* rays, the results confirming the absence of any signs of active tuberculosis. The department of radiology does a large volume of work. Since 1933 over 13,000 radiographs have been taken and more than 18,000 screen examinations made. There is much activity in the research department, the pathological department, and the industrial physiology laboratory. The *Research Bulletins* recently reviewed in these columns record the results of investigations completed from time to time. The industries comprise wood, leather, fabric, and printing: the work has been adapted to wartime conditions. General Sir Reginald Wingate has been appointed chairman; the new vice-presidents are Lady Willingdon, Field-Marshal Lord Birdwood, and Sir Arthur MacNalty.

INFORMATION OR PROPAGANDA?

Last week we printed a full summary of the Shakespeare Committee's reports on economy of medical man-power published by the Ministry of Health on Sept. 3, and also reviewed the implications of these reports in a leading article. On the same day on which the *Journal* appeared—in the Home Counties at least—an account was given in the daily papers of a press conference held at the Ministry of Health on Sept. 3, and publicity to this was also given over the air. We much regret that the official information made available to us for transmission to those primarily concerned—namely, the doctors of this country—was not as complete and as informative as that which the Minister of Health saw fit to give to a press conference which the medical press was not invited to attend. Whatever may be the motives and reasons of the Government Department concerned in taking the general public more fully into its confidence than the medical profession itself—at least in so far as its chief organs of opinion are concerned—we cannot escape the conclusion that such lack of co-operation makes it less easy to preserve harmonious relations between the Ministry of Health and the doctors who actually carry on the work of caring for the health of the people. And this is just one incident among others. A recent letter in these columns from one who signed himself "Deputy Medical Officer of Health" drew attention to the fact that the "brochure" on diphtheria immunization issued from the Public Relations Department of the Ministry ignored the potential services of the general practitioner in the diphtheria immunization campaign now being prosecuted. At another press conference recently held at the Ministry the journalists assembled were told of the satisfactory state of nutrition existing in the population at large, and the Ministry of Health associated itself with the Ministry of Food in claiming the credit for this, but made no reference at all to the part played by the practising doctor, whose close daily contact with the men and women of the country makes it possible for them to partake of the benefits of modern medical science.

The facts given to the press conference—which we have had only at second-hand, being obliged to take them from press cuttings—are that, in attempting to solve the very difficult problem of allocating medical man-power, 800 alien doctors have been taken into employment, that since the outbreak of war well over 10,000 medical men have joined the Forces, that out of a pre-war total of nearly 19,000 general practitioners in England and Wales alone more than 4,500 have gone into war service, and that as a net result of this there is now one general practitioner for over 2,700 of the population. By scrupulously restricting our comment to the information given in the published reports we were able to tell the profession only "half the story." It is difficult to understand why the Ministry of Health disclosed part of the information in a published document and another part—perhaps the most telling part—to a lay press conference. We repeat the question in the title of this annotation.

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[14] *J. Physiol.*, 1923, **57**, 386.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith.

TRENCH FEVER

BY

Sir ARTHUR HURST, D.M., F.R.C.P.

It is generally stated that trench fever appeared for the first time during the war of 1914-18 and that it then disappeared, never to be seen again. But there is good reason to believe that the disease had long been endemic in parts of Poland and that it has persisted there until the present day, although it was regarded as a form of malaria or influenza by the country doctors, who alone were familiar with it. References to a *febris quintana* appeared in the Russian literature a century ago, and the Moldavia fever described by Dehio as occurring during the Russo-Turkish War in 1877 was almost certainly trench fever. Franke stated that he was familiar with the disease at Lemberg, in Galicia, before the last war, but that it was thought to be a form of influenza. The first German reference to trench fever was made by His in February, 1916; he described it as *febris wolhynica*, having observed it among German soldiers in the Volhynia province of Poland, just to the north of Moldavia and Galicia. The short form was subsequently known in Germany as "gaiter fever" and the long form as "five-day fever," corresponding with the earlier *febris quintana* in Poland. Trench fever was probably conveyed by lice-infested German soldiers from the eastern to the western front early in 1915, quickly spreading to the British and French Armies in France and Flanders, where its specific nature was recognized by Graham, and subsequently by Hunt and Rankin and by McNee, Renshaw, and Brunt, a year earlier than the first observations recorded by the Germans and the French and two years earlier than those of the Italians.

The clean clothes provided for all soldiers admitted into British hospitals prevented the conveyance of the infection to their homes when they went on leave, so that it never reached the civilian population in England. After the armistice the small army still remaining on the Continent lived under such good hygienic conditions that lice infestation, and with it trench fever, quickly disappeared, and no further cases developed after the first few weeks of 1919. Since that time it has never reappeared in the British Army. The low incidence of lice infestation in the Army in France in 1939 and 1940 would have prevented its development even if the disease had become endemic there; but it died out after the last war as quickly in all parts of Western Europe as in the British Army. Since it had never occurred in England, the herding of lice-infested people in air-raid shelters did not result in the appearance of the disease, as it certainly would have done in epidemic form had it been endemic in this country. There is, however, some evidence to show that trench fever remained endemic in Poland, though it was still not recognized as a distinct infection. In 1922 the extracellular rickettsia, *R. quintana*, which is believed to be the causal organism, appeared among the stock of 350,000 lice maintained for experimental work on typhus fever in Weigl's Pathological Institute in Lemberg, where it caused an outbreak of fever among the 50 people employed as feeders for the lice. The infection was named Weigl's disease, but it was clinically indistinguishable from the short form of trench fever. A similar event occurred in the same Polish laboratory again in 1939 (Herzl). It seems likely that the laboratory stock of lice became contaminated by the blood of feeders who had contracted the infection in Lemberg, where Herzl during the second epidemic actually isolated the organism in two patients unconnected with the Institute who were thought to be suffering from influenza.

If Weigl's disease is actually trench fever and if it has really continued to be endemic in Poland in the period between the two wars, there can be little doubt that it must have reappeared in the lice-infested Polish, Russian, and German armies. An epidemic of typhus fever is said to be raging in the German Army in Poland, the Ukraine, and the Baltic States, particularly Lithuania. A German announcement in December, 1941, explained that typhus-bearing lice had become more numerous and dangerous since winter began because of the difficulty of keeping clean and because the thicker clothing then worn harboured more lice, and official Russian reports describe the almost universal lousiness of German prisoners. A newspaper published in Cracow has recently stated that all schools in Volhynia, where trench fever was first recognized among German soldiers in the last war, have been closed because of the danger of a typhus epidemic among the children. As trench fever, like typhus, is conveyed by a lice-borne rickettsia, it seems likely that a trench fever epidemic would appear simultaneously; but the comparatively trivial symptoms might well not be recognized as those of a distinct disease by medical officers working in hospitals crowded with men seriously wounded or suffering from typhus. As I have been unable to discover whether trench fever was recognized by the Russian Army doctors during the last war, although it is certain it must have been at least as common among Russian soldiers as among the soldiers of the other European armies, it is natural that nothing should be known here as to whether it has reappeared in epidemic form during the present war. The fact remains that it will be of the utmost importance to keep British soldiers free from lice infestation if at a later period they come into close contact with the Russian Army in the Caucasus or elsewhere, not only in order to prevent typhus but also to prevent the much less serious but none the less incapacitating trench fever.

Trench fever first appeared in the British Army in France in the early summer of 1915. Its incidence rapidly increased until it accounted for about 15% of admissions into the clearing stations for all forms of sickness. It was estimated that about 45,000 per million men were lost each year by evacuation to the base on account of trench fever, and that 90% of them were off duty for at least 3 months. It did not occur in Gallipoli, but was brought to Salonica in December, 1915, and to Mesopotamia in May, 1916, by divisions which had previously served in France.

Pathology

It was soon recognized that the infection of trench fever was lice-borne, and later investigations showed that it was caused by a rickettsia, *R. quintana*, which develops in the lumen of the louse's gut, in contrast with the rickettsia of typhus, *R. prowazeki*, which invades the epithelial cells of its wall. Rickettsia is a well-defined group of minute living organisms, the position of which in relation to bacteria and viruses is still uncertain. *R. quintana* multiplies in the louse's gut and is then excreted in the faeces. It is transmitted to man when an area of skin on which the infected lice have been crushed is scratched. The conditions of life in the trenches naturally resulted in its incidence being much higher there than at the base, but cases occurred among hospital orderlies and occasionally in areas some distance from the front line.

Symptoms

The incubation period is between 15 and 25 days. Trench fever generally begins suddenly without premonitory symptoms, but it is occasionally preceded by a feeling of malaise for a day or two. The earliest symptom is a severe headache, especially frontal and behind the eyes; this is rapidly followed by pain in the lower part of the back and, on the second or third day, in the legs. The onset is sometimes extremely abrupt: the patient suddenly feels giddy and his legs give way under him. He may be very short of breath. He has to fall out if marching, and often has great difficulty in returning to camp without assistance. Pain in the neck may occur; it is occasionally accompanied by stiffness and may be severe enough to suggest the presence of meningitis, which cannot be excluded without lumbar puncture. The patient generally shivers at the onset, but there is never a definite rigor. He is sometimes flushed and often sweats profusely. The bowels are regular or constipated, and there is no nasal or bronchial catarrh. The appetite is lost, the tongue is moist and often slightly furred, and occasionally mild pharyngitis is present. Herpes labialis sometimes occurs. There is usually no rash. The shins are always tender, even if the patient complains of no pain in the legs, but there is no muscular tenderness. The pressure of puttees may be enough to cause pain, and the patient often removes them in order to relieve his discomfort. In the first attack of pyrexia the spleen is sometimes palpable. Leucocytosis is often, but not always, present during each febrile period.

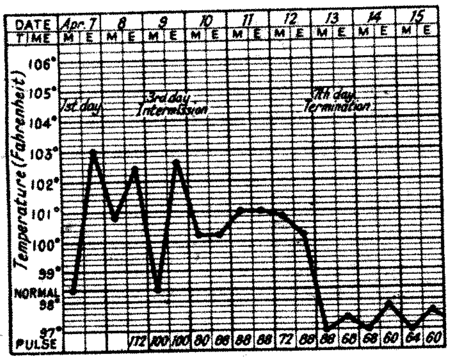

FIG. 1.—Temperature chart of the short form of trench fever.

In the short form of trench fever the temperature rises rapidly to between 102° and 104°, but the pulse rate is only slightly increased (Fig. 1). On the third or fourth day the temperature sudddenly falls, generally to normal or subnormal, but there is no corresponding improvement in the symptoms. After an interval of a few hours it rises again, and then after another 2 to 5 days it falls to normal. On this occasion there is immediate relief from all of the symptoms. Sometimes the remission on the third or fourth day does not occur, the temperature remaining raised for about a week. There is often a single relapse after an interval varying from a few hours to 10 days, but generally less than 4 days; the temperature rises to 100° or 101° for 24 to 48 hours, during which the symptoms return with diminished severity. The patient is usually fit for duty almost immediately after the temperature falls again.

In the long or periodic type of trench fever the temperature rises to between 101° and 104° on the first evening (Fig. 2). The initial attack is variable in duration: the temperature may be normal the first morning, high in the evening, normal the second morning, and rather less high the second evening than the first, after which it remains down. In other cases the first attack may last as long as 4 or 5 days, the temperature always being lower in the morning than the preceding and following evening, and reaching its maximum on the second or third day. With the fall in temperature at the end of the initial attack all the symptoms disappear. After being well for from 2 to 10 days the patient complains of a return of headache and pain in the legs which culminate at night; the temperature rises in the evening to a point that is generally a little lower than the highest temperature in the first attack. The temperature falls to normal or nearly normal the next morning, and either remains down or rises to a less extent the second evening, thereafter to remain normal. The general symptoms are much less severe than in the first attack, but the pain in the legs and the tenderness of the shins are usually greater, and they may not disappear completely in the interval between the second and third attacks, though the headache, which generally remains the most prominent symptom during the attack, is never present in the apyrexial periods. The pain in the legs is sometimes extreme and may prevent sleep. In other cases it is comparatively slight, and the patient looks and feels remarkably well considering that he has a temperature of 101° or more.

Recurrences follow periodically, the maximum temperature always being reached in the evening. The intervals between the attacks are fairly constant in each case, but vary in different cases between 4 and 8 days, 5 being the most common. As a rule each succeeding attack is milder than its predecessor and the temperature is rather lower, but in severe cases the patient feels weaker in the later intervals and the pain and tenderness of the legs are more persistent. The later attacks may be of such short duration that the rise in temperature is not recorded at all if it is taken only twice a day. On the afternoon and the evening of the day on which the attack is expected the temperature should therefore be taken every 2 hours, especially if there is any pain in the head or the legs, as in most instances the patient knows from his sensations that there is going to be a relapse even before the temperature rises. The temperature is sometimes raised for only 3 or 4 hours.

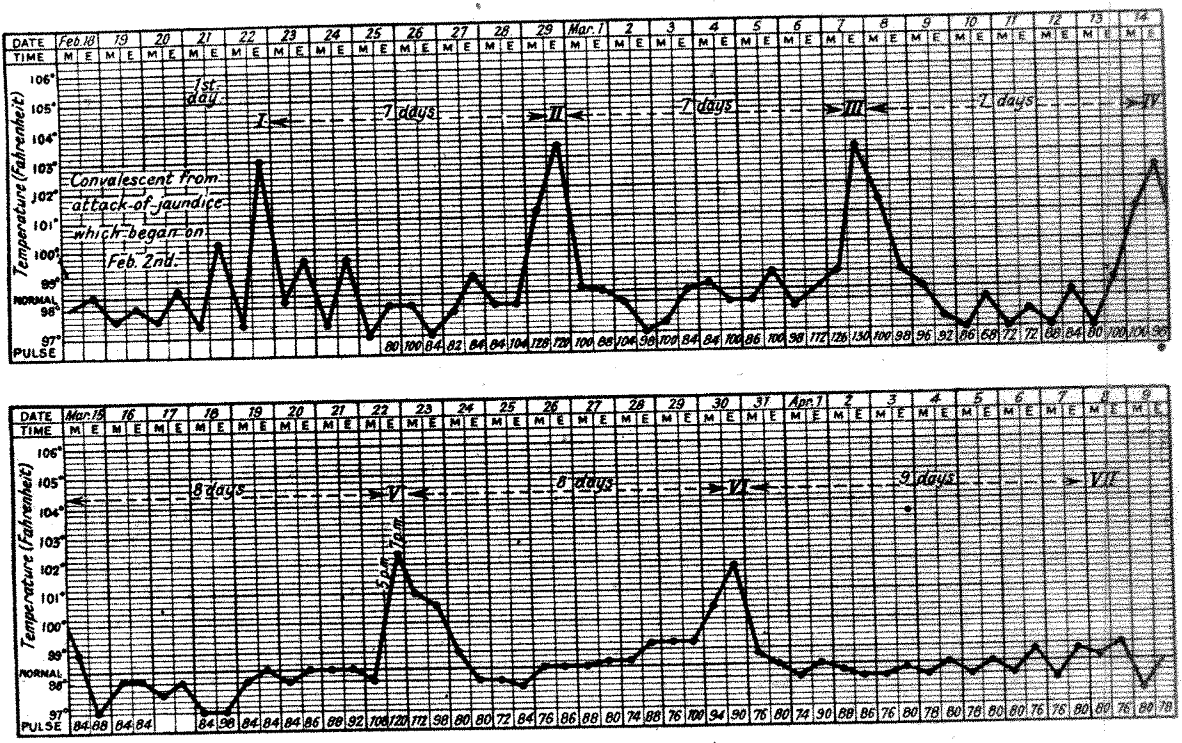

FIG. 2.—Temperature chart of the periodic form of trench fever.

Diagnosis

The diagnosis can be made with certainty from a study of the temperature chart, but the association of pyrexia with tender shins is already very suggestive of trench fever in the first attack. The majority of cases were at first diagnosed as influenza, though it was generally recognized that they were not identical with the familiar forms of that disease. Thus there was never any nasal or bronchial catarrh, the patient rarely appeared or felt seriously ill, except sometimes during the first two days of the first attack, and respiratory complications never occurred. The periodic return of pain and pyrexia, and the pain and tenderness of the shins, are quite characteristic and prevent confusion with influenza except at the onset.

The diagnosis from dengue fever may be very difficult, especially in tropical and subtropical coastal and inland river areas, where the vector of the latter—a mosquito, *Aëdes aegypti*—abounds. The onset of dengue is sudden; the temperature rises rapidly to 102° to 103°, dropping by crisis 3 or 4 days later, but often rising again for 2 or 3 days after a short interval. Severe backache and joint pains occur, and a rash, described as half-way between that of measles and scarlet fever, develops during the second pyrexial period.

The possibility of malaria must always be considered, and in cases of doubt a blood film should be examined for the malarial parasite before making a definite diagnosis, especially if the patient has previously had malaria and in countries where it is prevalent. The longer intervals between the attacks, their invariable occurrence in the evening instead of at various times of the day, the absence of true rigors, and the failure of quinine to modify the course of the illness are distinguishing features of trench fever.

A few cases of true spirochaetal relapsing fever occurred in British troops in Gallipoli, Egypt, and Salonica. The initial pyrexial period was usually longer than in trench fever, varying between 5 and 7 days, and the maximum temperature was often over 104°. In most cases only a single relapse, lasting between 3 and 5 days, occurred after an interval of from 8 to 10 days. Headache was severe, and pain was present in the muscles and the joints of the legs, but not especially in the shins. Slight jaundice, slight enlargement of the liver, and albuminuria were often present. The spirochaete was found without difficulty in the blood during the pyrexial stage.

Prognosis

There were no fatal cases of trench fever, and the patient never appeared seriously ill, except occasionally for a very short time in the first pyrexial period. The total duration of the periodic type from the onset to the end of the last attack was generally between 4 and 6 weeks; but some cases appeared to abort, and in a few others attacks recurred for several months, the patient remaining quite well in the intervals. In most cases the patient rapidly recovered his strength after an attack, and was usually fit for duty after the second period of pyrexia, though he might have to rest for a few hours when the later attacks occurred.

Patients with trench fever who were kept in base hospitals too long, especially if they were transferred to hospitals in England, showed a great tendency to become chronic invalids, and large numbers were eventually discharged from the Army as cases of "neurasthenia" and "D.A.H." The former complained chiefly of exhaustion, irritability, headache, and pains in the legs and back, the latter of breathlessness on exertion, palpitation, precordial pain, giddiness, and fainting. I am convinced that the neurasthenia and D.A.H. were only to a minor degree a direct result of the toxaemia of trench fever and were mainly functional and preventable conditions. They developed most frequently in hospitals where over-conscientious medical officers were too much impressed with what they took to be a slight enlargement of the heart or an apical systolic murmur, and where an over-sympathetic nursing staff in English V.A.D. hospitals was too much impressed with complaints of fatigue and general unfitness. There was a remarkable difference in different hospitals in both France and England in the average stay of patients with trench fever coming from the same units, and my impression was that a long stay in hospital was the cause and not the result of a case becoming chronic. I do not think that there was ever any justification for invaliding a man from the Service for trench fever, and no cases need be allowed to develop either neurasthenia or effort syndrome.

Prophylaxis

As trench fever is conveyed by lice, which become infected by biting a patient during an attack, it should be possible to prevent the disease by keeping troops free from infestation. All cases should either be sent to hospital or be isolated, and the patient's clothes and bedding should be specially disinfected as well as that of all men who have recently slept near him. After the initial or the second attack a man is often able to return to duty. It is very important that he should be kept under observation, and if he again becomes lice-infested his clothes and bedding should again be disinfected.

A determined attempt to prevent the reappearance of trench fever in the present war is being made by the provision of sufficient baths, laundries, and vermin destroyers, and this has so far proved completely successful (August, 1942). Between 1914 and 1918 men were often crowded in dug-outs and cellars and could change their clothes or bathe only at rare intervals, with the result that lice-borne trench fever spread. Although measures to exterminate lice were energetically pursued from an early stage of the last war, it was not until the middle of 1917 that equipment and facilities were sufficient to have any obvious effect in reducing the incidence of trench fever.

Treatment

No treatment was found which prevented the periodic return of attacks. Aspirin was the most effective drug for the pains. It is of great importance not to keep the patient in hospital longer than is absolutely necessary. He should be sent as soon as possible to a convalescent depot, where fresh air, good food, and progressive exercise quickly restore him to full capacity, so that he is able to return to duty. If possible he should not be sent to hospital in England, as the longer he is in hospital the less likely is he to recover rapidly and completely.

The accompanying charts are reproduced from Sir Arthur Hurst's *Medical Diseases of War*, 2nd edition (Edward Arnold and Co.).

MEDICAL RESEARCH COUNCIL OF IRELAND

It is complained in the annual report of the Medical Research Council of Ireland that the income placed at the disposal of the Council—namely, £5,000 from the Hospitals Trust Board, guaranteed by the Minister of Local Government and Public Health of Eire—is not adequate for the efficient discharge of its functions. The absence of any assurance that the endowment will be continued for a long period makes it impossible to plan for more than a year in advance or to invite at frequent intervals the services of new workers. It is hoped that when it approaches the Minister for renewed support he will find himself justified in making arrangements of a more liberal and stable character. Among the investigations carried out during the year by means of grants from the Council was a survey of the distribution of vitamin C in the Irish natural food products and emergency sources, together with a study of vitamin supplies and requirements under present conditions. This is being done in the Department of Biochemistry, Trinity College, Dublin. In the School of Pathology at Trinity, grant-holders of the Council have shown that the addition of talc or any one of some twenty insoluble inorganic substances renders distilled water capable of supporting the growth of coliform and similar bacteria. These substances also render tap water growth-supporting. It is suggested that talc makes available for the growth of these organisms carbon dioxide and ammonia derived from the atmosphere, and work is being continued to investigate this theory. In the Department of Chemistry, University College, Cork, an investigation is proceeding into the prevalence of goitre in Tipperary, especially the distribution of goitre among school-children and the influence of iodine treatment upon the prevalence of the condition. Balance experiments have been undertaken to ascertain the influence of certain foods on the excretion of iodine, and suitable methods for the estimation of calcium and phosphorus excretion, with a particular study of their possible relation in goitrous conditions, have been worked out.

SURVEY OF SCOTTISH HOSPITALS

Hospitals in the West of Scotland are to be surveyed as a first step to what may become an all-Scottish hospital census that will provide a background of collated information for any projected scheme of reorganization after the war. The surveyors, appointed by the Secretary of State for Scotland, are two Glasgow University professors—Prof. J. M. Mackintosh (Chair of Public Health) and Prof. C. F. W. Illingworth (Chair of Surgery)—together with the Senior Deputy Medical Officer of Health for Glasgow (Dr. R. J. Peters). Their task, which is expected to last six months, will be to investigate the accommodation, organization, equipment, staffing, and the number and origin of patients treated in the general and special departments of West of Scotland hospitals. The survey will be complementary to the work of the Sir Hector Hetherington Committee now inquiring into and reviewing questions of principle likely to be involved in a large-scale hospital reorganization. When complete the survey will show the facilities each hospital possesses and the part it will be capable of playing in an integrated hospital service. A start has been made in the West of Scotland because it is the most populous area and contains a large number of hospitals of all kinds, the co-ordination of which into a regional service will present greater difficulties than will arise in other areas of Scotland. Prof. Mackintosh before taking up his university appointment was Chief Medical Officer of the Department of Health for Scotland; Prof. Illingworth is honorary surgical director in the West of Scotland of the Emergency Medical Service.

Correspondence

Medical Planning: the Main Issue

Sir,—One sentence in para. 24 of the report of the Medical Planning Commission summarizes the main issue with which the profession is faced. It runs as follows: "This involves the integration of the preventive and personal health services." If this principle is accepted as the basis of the medical service of the future, it is useless to put forward schemes which make no effective provision for such integration. The establishment of health centres as envisaged in para. 69 would effect co-ordination of services but would introduce a State service in a modified form, with the reduction of free choice of doctor and competitive practice to a minimum.

Those members of the profession who are opposed to any form of State control have two alternatives. They must either produce a scheme for the integration of preventive and personal services which will be free from control by statutory health authorities, or they must persuade the nation that "free choice," "competitive practice," and "freedom from bureaucratic control" are of more value to the medical service of the future than the integration of the preventive and personal factors of which such a service is composed.

It is to be hoped that the A.R.M. and the Panel Conference will meet the problem in a spirit of realism, bearing in mind para. 69 of the report, in which a definite choice is made in favour of health centres provided by statutory health authorities. Nothing will be accomplished by handing the baby back to the commission with a blessing on voluntary "group practice" but with no precise indication as to how this will achieve the objective which is so admirably summarized in para. 24.—I am, etc.,

Bury St. Edmunds **Bernard E. A. Batt.**

Planning, Research, and Autonomy

Sir,—In giving general support to the recommendations of Dr. Milligan and Dr. Simpson (Aug. 22, p. 227), I suggest that the "active intelligence service" of the former is necessarily related to "the research army working in the field" of the latter. An "intelligence service" operating in local or regional areas should perform functions similar to those discharged for the country as a whole by the M.R.C. It should also perform functions that are not performed at present by any body. There is room for a considerable degree of local autonomy in clinical and experimental research and for a still larger measure of local freedom in conducting "medical inquiries," which should precede "research." But this local freedom should be subject to advisory and financial control from the centre—that is to say, from a central medical inquiry and research council.

The functions of a regional council or unit would be: (1) inquiry into the facts concerning illness and disability in the area; (2) inquiry into the facts concerning local health conditions, etc.; (3) inquiry concerning the diagnosis, prognosis, and therapy of illness, etc., within the local area; (4) to maintain liaison between the regional and central councils; (5) to co-operate, on request, in carrying out inquiries or research initiated and conducted by the central council. The personnel of the regional or local councils should be drawn from all sections of the medical services, and contact should be established with a number of non-medical organizations concerned with health (industry, labour, and benefit and insurance societies, etc.).

I hold it to be as essential to preserve a real measure of freedom in the local bodies as it undoubtedly is to co-ordinate their work. It is still more important to set up a centre to which local practitioners can refer their problems, discuss tentative hypotheses, and be encouraged and guided in the search for fuller knowledge. These regional or local councils or centres will have to be established on a voluntary basis in the first instance.—I am, etc.,

Worcester **Howard E. Collier, M.D.**

Epidemic Problems in Wartime

Sir,—Your leader on post-war epidemic problems (Aug. 8, p. 161) rightly stresses the necessity for setting up co-ordinating machinery before the war ends so that no time may be lost in dealing with the most urgent problems of epidemics. In the midst of post-war Utopias which are conjured up around us it is good to hear sound advice on the need for laying foundations for post-war reconstruction of all kinds before the war ends. This is especially true of epidemics.

We should never forget the lessons of the last war. Then, nothing was done to establish co-ordinating machinery before the Armistice or even before peace was signed. In Eastern Europe I took some part in initiating measures and can therefore testify to the difficulties which threatened to swamp us because such measures were taken too late. There was almost total lack of co-ordination, and the fight against epidemics was taken up by various independent bodies such as the Rockefeller Foundation, the Society of Friends, the League of Red Cross Societies, the International Health Board, and, much later, the Council of Hygiene of the League of Nations. The result of such lack of cohesion was a devastating spread of epidemics which killed five times as many souls as had fallen victim to bloodshed during the war itself.

Such a calamity must be avoided to-day, especially as, according to all forecasts, epidemics threaten to be even more extensive than after the last war, because they will fall on populations that have reached their last stand of resistance. I believe that even England will not be immune. The need for establishing immediately the appropriate machinery for fighting all foci in the various countries of Europe has been considered, at my suggestion, by the Inter-Allied Red Cross Conference. As the Red Cross societies, thanks to the centralizing work of the International Red Cross, are the only bodies that can set up without delay an international machinery to combat European epidemics, a subcommittee has been instituted by the Inter-Allied Red Cross Conference to deal with these matters. Medical men all over the world should give their support and help, and it is to be hoped that the Red Cross societies will be able to carry out their great humanitarian task, and, by taking measures against the foci of epidemics occurring now, will prevent their post-war spread and thus the destruction of Europe.—I am, etc.,

A. P. Cawadias, M.D., F.R.C.P.

London, W.1 President, Greek Red Cross.

Serodiagnosis of Syphilis

Sir,—Several letters have appeared in the *Journal* dealing with the question of serological tests for syphilis following your annotation (March 14, p. 364). We have thought that an interchange of information on the subject might help workers in this particular field. We heartily agree with the author of the editorial article that: "The diagnosis, tests of cure, and exclusion of syphilis are of such importance both to the State and to the individual that none but the highest standards should be acceptable and every laboratory performing serum tests for syphilis should make it a point of honour to maintain these standards."

It stands to reason that much depends upon the way in which a test is carried out, and, as several of your correspondents have emphasized, the matter of serological tests for syphilis should not be in the hands of a technician alone. Moreover, it is much better to concentrate work of this kind in one large centre than have it scattered through small hospitals where there is inadequate supervision. It is, further, advisable that standard reagents should be supplied to approved laboratories, and that technicians should be trained in central serological institutions before undertaking this type of work.

The Department of Health of the Province of Ontario under Dr. A. L. MacNabb has elaborated a combination of methods as follows: The sera are subjected first to a screening (sifting) test which will eliminate all negatives and separate the positives and possibly some false positives. The method employed is the "presumptive Kahn procedure," using an antigen with its sensitivity adjusted so as to pick out the minimum quantities of "syphilitic reagin." If the result of this test is negative, the specimen is reported immediately as negative. If, on the other hand, any reaction at all occurs, no report is issued until a standard Kahn and a Kolmer-Wassermann test have been performed. If these two additional tests are both positive a quantitative Kahn test is performed and a positive report in terms of Kahn units is issued. Thus presumptive positives are submitted to three additional serological tests before a positive report is sent out. If there is any discrepancy between the Kolmer-Wassermann and the standard Kahn, or if the results of the two tests are doubtful—e.g., one plus—the specimen is reported as doubtful and a further sample of blood from the patient is requested. If the two additional tests are both negative, a negative report is issued and a further specimen is requested from the patient.

It might be considered that this routine is an unnecessary elaboration and possibly a waste of time, but too much trouble cannot be taken to eliminate the false positives, and the amount of work and the apparatus used are definitely less than would be required if two standard methods were routinely employed on every specimen of serum submitted. The vast majority of sera are negative and are ruled out by the highly sensitive screen test necessitating only one tube. Time is concentrated on the examination of the relatively few positives or possible positives.

Using the above technique a staff of four technicians and one pathologist can easily put through 500 sera a day. The major part of the time expended is connected with entering the speciments and typing the reports, not with the actual serological tests.—We are, etc.,

Queen's University,
Kingston, Canada.

JAMES MILLER.
E. P. JOHNS.

Hereditary Factor in Cardiovascular Disease

SIR,—Referring to the annotation under this heading (Aug. 1, p. 135), the pathology of inheritance is dealt with by Freiherr von Verschuer, at the time (1934) head of the department for anthropology, human inheritance, and eugenics at the Kaiser-Wilhelm-Institut, Berlin-Dahlem, in his work *Erbpathologie*. There may be a later edition. He deals with a very large number of diseases, defects, or abnormalities in a chapter on special pathological inheritance, pride of place being given, as might be expected, to nervous and mental disorders. Interesting and instructive, the need for much more work is, however, apparent.

As regards cardiovascular disease, while pointing out that in heart disease environmental conditions are operative in the majority of cases, authorities are quoted for the statement that there are families in which inflammation of the cardiac valves is very frequent; a hereditary basis, it is stated, plays an undoubtedly important role in these. Heart form and heart function are claimed as having such a basis, on the ground of work cited, which included observations on identical- and non-identical twins.

As regards arteriosclerosis and hypertension, I should expect inquiry among experienced family doctors to elicit that there is a family frequency in these conditions, associated with cardiac and renal disease, and tendency to early apoplexy—a hereditary element. If so, it would but emphasize the need for replacing impressions by reliable family histories on a uniform basis, to procure which a formidable amount of post-war planning will be necessary; to shirk this task would mean faint-heartedness and lack of vision. As to arteriosclerosis, von Verschuer confirms that in many families it occurs with frequency. In such it may be of a general kind or show preference for definite vascular areas, so that in some families cerebral vessels are affected: others show angina pectoris, or the renal vessels may be the seat of election. Authority is cited for these statements.

I quote from your annotation concerning cardiovascular disease: "When both parents died from other causes the percentage of policy holders dead from cardiovascular disease was 51; when the father died from cardiovascular disease, 57; when it was the mother, 56; and when both parents died from cardiovascular disease, 65. And from Weitz (quoted by von Verchuer) concerning hypertension:

One or Both Parents Died of Stroke or Heart Disease at Age	Of 82 Hypertonics	Of 267 Controls
To 50 years	11.0%	2.6%
From 51–60 years . ..	15.9%	5.6%
„ 61–70 „	36.6%	12.7%
Over 70 years	9.8%	9.4%

Further, after age 55 about half the brothers and sisters of the hypertonics suffered from or died of hypertonia. The condition could often be followed in direct succession through several generations (dominant inheritance). Inquiries in the case of twins, by authors quoted, show that in the matter of blood pressure the similarity between identical is clearly greater than between non-identical. Similarity is greater with increasing age in identical twins; dissimilarity in non-identical.

Such studies are required in increasing measure to enable us to estimate the degree of importance of the basic factor of heredity in disease. In the particular case of hypertony they serve to explain those instances in which the state appears early in life—with resulting injury to heart, blood vessels, kidneys—without the operation of such external influences as syphilis, alcohol, gout, psychical disturbances, overstrain, nicotine, etc.—I am, etc.,

Hove.

EDWIN GOODALL.

Special Clinics for Diabetics

SIR,—I am glad to see that Prof. L. J. Witts (Aug. 22, p. 226) stresses the necessity for special clinics for anaemia and diabetes and for their consideration in medical planning. As regards diabetes, he will be glad to hear that the Diabetic Association, essentially a body of lay diabetics, has already asked the Planning Commission to take steps to establish clinics on a regional basis throughout the country, as it considers this essential for the welfare of its members and diabetics in general. It is probably a novel situation for a body of sufferers themselves to ask our profession to make special arrangements for treatment, but it shows how the wind blows. They know that their health and working efficiency depend on advice based on laboratory tests and special experience outside the scope of most doctors and obtainable only at special centres.

We should not wait for post-war planning as the need is urgent now. Such clinics are simple and inexpensive to start, the laboratory requirements not elaborate, and I am glad to say that, although still quite inadequate in number and in geographical distribution, they are opening up all over the country through the efforts of interested doctors.—I am, etc.,

Diabetic Clinic,
King's College Hospital.

R. D. LAWRENCE.

Urethral Instrumentation

SIR,—Mr. Gordon Bohn (Aug. 29, p. 259) raises important points and asks for other opinions. In my experience, with a benign enlargement of the prostate a first attack of acute retention rarely results in permanent retention; with a malignant prostate, however, the history is one of increasing difficulty in micturition, and when retention supervenes it is more commonly permanent. In the former case, after a varying interval, micturition is re-established but the patient does not empty his bladder; in many cases the bladder is infected, and this in spite of the most scrupulous asepsis. Once retention has occurred the patient is on the downward path, and should he live long enough operation will become a matter of necessity. Operation being inevitable sooner or later, it is best done early while the going is good. It is impossible to generalize; each case must be decided on its own merits, the age of the patient and his "prospect of life," his renal and cardiac condition, the amount of residual urine, and whether it is infected or not, all being carefully weighed. Early operation gives better results and a lower mortality. Chronic retention resulting in overflow incontinence is in a different category, and after slow decompression operation is not a matter of expediency but one of necessity. Chronic retention is a much more serious condition than acute retention because the kidneys have been subjected to a long, slow, increasing back-pressure. Mr. Bohn's views will surely be endorsed by all urologists, and it should be an axiom that with bad vessels, a high blood pressure, or low-specific-gravity urine, slow decompression is vital, and catheterization should be considered a serious operation.—I am, etc.,

London, W 1. SYDNEY G. MACDONALD.

Sphincter Mechanism of the Bile-duct

SIR,—In the early part of your leading article (Aug. 8, p. 161) on the Hunterian Lecture given by Rear-Admiral Gordon-Taylor, you refer to the duodenal villous processes, but I take it that "duodenal" has here no special significance, and that you really have in mind the villous processes situated within the terminal portion of the common bile-duct. To these processes, with their core of muscle, Gordon-Taylor assigned the dual function of helping to control the exit of bile from the duct and preventing regurgitation from the duodenum. He emphasized the fact that an ampulla—the ampulla of Vater—is rarely present in man. *X*-ray examination with an opaque fluid passed into the common duct through a T-tube (cholangiography) confirms his opinion, for one rarely sees any distension of the terminal part of the duct. Gordon-Taylor and Prof. Kirk have kept the description of the sphincter within reasonable limits, but in the hands of others it becomes a thing of varying complexity in which at times three separate sphincters may be distinguished—i.e., a sphincter for the bile-duct itself, a sphincter for the pancreatic duct, and a sphincter for the so-called ampulla. The opinion expressed in your article that the flow of bile into the duodenum is irrespective of the duodenal movements would also seem to be supported by cholangiography. Some *x*-ray pictures taken for me show the opaque medium passing from the duct into the duodenum while the latter in strong contraction is forcing the dye not only downwards into the intestine but upwards into the stomach.

Much of the evidence against the sphincter has been obtained from experimental research in animals, but animals vary greatly in their biliary apparatus, some having gall-bladders with a good sphincter, while others have no gall-bladders and a sphincter which is negligible. It is much more to the point to study the evidence in man himself. I believe that much of the trouble for which the sphincter is blamed is really due to stones, or some condition such as biliary mud or grit. If the trouble is removed and the duct drained so that it and the liver may have a chance to recover, then I am sure much less will be heard of the failures of operation and less of the spasms of the sphincter.

For some years past I have made a practice of carrying out wherever possible cholangiographic investigations after exploration of the common bile-duct, and where stones have been removed and the bile-duct drained I have yet to see a case in which spasm of the sphincter has persisted after operation; the opaque medium can be seen to flow into the duodenum readily. To visualize spasm in such cases it is necessary to inject morphine, when the opaque medium can be seen to be held up abruptly at the termination of the duct. You quote Mirrizzi as saying that the ducts are dilated in these cases. Invariably they are, but to my mind this is due to back pressure caused by stones, and not to spasm of the duct. This is very clear in one of my cases where I had missed a stone in the duct; cholangiography showed a dilated duct with a stone obstructing its lower end, yet a thin stream of the opaque medium could be seen to flow past it and through the sphincter into the duodenum. In some cases where stones have been present in the gall-bladder but none found in the common bile-duct, cholangiography showed no increase of tone of the sphincter and no dilatation of the ducts. Puestow, from investigation of his cases which had undergone cholecystectomy and drainage of the common duct, found that not only was there absence of spasm of the sphincter but that there was strong evidence of decreased tone of the muscle.

If, as some assert, spasm of the sphincter is so pronounced in cases of stone of the common bile-duct, why is it that jaundice is absent in not less than 35 to 40% of cases (Lahey); and why is it that biliary colic and pain is absent in still greater proportion—according to Macdonald 56% of cases? Why also, it might be asked, is it that when drainage of the common bile-duct has been established for some time after removal of stones the drainage tube can be clamped without discomfort and bile flows readily into the duodenum? Finally, why is it that when the drainage tube is withdrawn a fistula does not persist and external drainage of bile ceases within 24 to 48 hours?

In any of the cholangiograms taken for me I have never seen evidence of a sphincter of the hepatic duct. On occasions the opaque medium has lagged behind in the hepatic duct and sometimes in the common duct, but closer inspection has shown the faint outline of the duct below with no evidence of muscular contraction. This bears out Gordon-Taylor's opinion that there is no sphincter of the hepatic duct, and is as one would expect, for, apart from the sphincter at the lower end of the common duct, histologists have found only occasional fibres of muscle irregularly scattered elsewhere in the bile-ducts.

I must confess that I have not been able to secure a picture of the duct of Wirsung in any of my cases. According to Mirrizzi this is a constant finding in cases of stone of the common bile-duct. Some of our cases have been misleading, and what was at first thought to be a shadow in the duct of Wirsung eventually proved on further *x*-ray examination to be dye which had passed into the stomach. I am rather inclined to think, however, that filling of the duct of Wirsung depends less on the presence of stone than on the anatomical arrangement of the sphincter, which on contraction in a small percentage of cases will put the opening of the common bile-duct and the duct of Wirsung into free communication. Otherwise one would expect acute pancreatitis to be a much more common disease.—I am, etc.,

London, W.1. MICHAEL J. SMYTH.

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Atypical Asphyxial Deaths

SIR,—Dr. Norman Patterson's article (Aug. 15, p. 188) came most opportunely to confirm the findings of a similar case of sudden death which occurred in this mental hospital on Aug. 8. This would indicate that these accidents are not so very rare. As this case is of interest because there were three other possible causes of sudden death to be considered—epilepsy, valvular disease of the heart, and phthisis—the case history is given below.

A male patient was admitted in 1925, at the age of 25, suffering from primary dementia, and tricuspid incompetence of indefinite duration was then noted. He demented slowly and recently he could only sit about the ward. On several occasions he was put to bed as a result of cardiac decompensation. In 1939 phthisis was suspected but not confirmed. In May, 1941, he had two severe major epileptic fits during which he nearly died because of his poor cardiac condition; there were no fits before or after these two.

During his evening meal on Aug. 8 he was seen to topple forwards over the table, with no cry, twitching, convulsion, or struggle of any kind. He was unconscious when reached. I saw him within 5 minutes when he was still unconscious, with face blue and slightly congested, and respiration almost stopped at a rate of not more than 5 per minute. The pulse was regular and was of moderate force and volume. His mouth was crammed with soft unmasticated food, which was removed so far as possible with a spoon handle. Artificial respiration was then begun, but after two respiratory excursions the chest became rigid and no air could be made to enter or leave the lungs. The pulse thereafter deteriorated rapidly and stopped within a few minutes, death occurring within 10 minutes of the original collapse. The absence of any tonic or clonic contractions excluded epilepsy, and the regular moderate pulse ruled out a sudden cardiac failure.

A post-mortem examination was performed 20 hours after death. There was no external patchy lividity to indicate asphyxia. The nose was packed tightly with soft unmasticated food, a piece formed a ball-valve over the entrance to the larynx, and more filled the larynx, the bronchi, and larger bronchial passages. The lungs were normal and showed no signs of active or healed tuberculosis. The stomach contained one pint of food from the midday meal, and the presence of whole potatoes indicated the patient's feeding habits; no soft food from the evening meal could be distinguished. The heart showed tricuspid incompetence, an enlarged right auricle and ventricle with hypertrophied and fibrosed myocardium, but there was nothing to show that compensation was not adequate at the time of death. The left side was normal in appearance. The brain and other organs were normal.

Apart from the regular moderate pulse persisting for 5 minutes after the initial collapse, these post-mortem findings and the clinical history would conform to the theory that these sudden deaths are due, not to ordinary asphyxia, but to syncope following shock from the presence of inhaled food in the respiratory passages.—I am, etc.,

JOHN HARKNESS,
Pathologist and Medical Officer.

Royal Asylum, Montrose.

Rehabilitation

SIR,—Mr. H. Morriston Davies has surely done well in calling attention to what he describes as the tragic consequences of the attitude of the Ministry of Health in connexion with rehabilitation centres as expressed by Sir Robert Stanton Woods in the statement by him which Mr. Morriston Davies quotes. If Sir Robert's statement truly represents the policy of the Ministry on this important question, one cannot help wondering if such policy is based on inadequate or wrong advice. The future of physical medicine lies undoubtedly in institutional treatment centres, because it is impossible without such institutions to cater for the numbers of injured members of the Services and war workers who are to-day left for unduly long periods in a state of complete or partial inefficiency owing to the lack of adequate facilities for the requisite treatment.

The initial cost of rehabilitation centres is usually put forward as the main block to progress in this direction, but, in actual fact, I firmly believe, in spite of the cost, the formation of such centres would constitute a sound economic procedure. The immense saving of money which would normally accrue from being able to return an injured man to his work at the earliest possible moment would be considerable. In addition, the opportunity for adequate treatment for restoration of function as soon as possible would materially lessen the likelihood of a worker's acquiring a permanent disability, as all too frequently happens, and an industrial man-power loss and much of the expenditure required to compensate him would be saved.

If Sir Robert's statement that "after the war it is almost certain that such institutions will be found necessary" is also the view of the Ministry, one can only have a feeling of despair at the opportunities that will be missed while the war lasts. If it be a fact, which surely few will dispute, that it is the inherent right of all sailors, soldiers, and airmen, war workers and members of the public injured by enemy action, to have opportunities accorded to them for treatment by the most modern methods, this attitude of waiting till after the war would seem to be quite indefensible.

Mr. Morriston Davies's letter raises another point regarding the meaning of the word "rehabilitation." It would appear that the public, and in particular certain members of Parliament and of the medical profession, are under the impression that rehabilitation is a newly discovered *method* of treatment for injury and disease, which it certainly is not. Rehabilitation means, when used in a medical sense, "restoration to a previous condition," and is therefore essentially an "end result" brought about by treatment by medical, surgical, or physical-medicine procedures. Such procedures are the agencies leading to a "state of rehabilitation." The use of the word "rehabilitation" in the sense of a *method* of treatment is confusing and will give a wrong impression to the uninitiated; and if in the future, as many of us hope and believe, rehabilitation centres or industrial clinics are established in many industrial parts of the country, it would be a pity if the public are misled into believing that such centres are places where a new method of treatment only is practised instead of a centre for rehabilitation of patients by all or any of the most modern methods of treatment.—I am, etc.,

MORTON SMART.

London, W.1.

SIR,—One sympathizes with Mr. Morriston Davies's concern over the facilities provided for "rehabilitation" under the Ministry of Health Emergency Hospital Scheme, a concern which has obviously arisen as a result of my own inadequate description of this provision in your issue of July 25. It was, however, made clear in that, necessarily short, summary that *very extensive* facilities for this exist at E.M.S. hospitals. After prolonged consideration the Rehabilitation Committee of the Emergency Medical Service decided against the establishment, during the war, of separate "centres" whose sole function would consist in the post-hospital treatment of civilians, a decision with which I am in agreement. Such centres would of necessity be, in many cases, residential.

In E.M.S. hospitals, Service and civilian sick and casualties begin rehabilitation in bed and as early as is safe and advisable, and progress through graduated stages until their discharge from hospital. Service patients continue their post-hospital rehabilitation in residential centres; in the case of civilians, patients attend from their own homes at the very numerous hospitals and clinics which have been either established anew or selected on account of their already existing facilities.

I feel sure that, on reperusal of a necessarily condensed description, Mr. Morriston Davies will realize that the sentences quoted in his letter confused two items of entirely personal advocacy—namely, the establishment *after the war* of residential centres for the rehabilitation of civilians, and some remedy for the present scarcity of medical men and women with experience of this work.—I am, etc.,

ROBERT STANTON WOODS.

Self-medication and the Chemist's Shop

SIR,—Dr. Loewenthal has made some excellent suggestions for curbing that most undesirable practice—"counter-prescribing" in chemists' shops. In the past the vested interests in the patent medicine industry have proved themselves immensely strong, but if the medical profession were sufficiently insistent now, legislation might be introduced with success. The opportunity is unique, when improvement in the health of the nation is of first importance in the prosecution of the war. Must we wait for a professor of social medicine to tell us what we know already, that "counter-prescribing" is responsible for a great deal of chronic illness and many deaths? Only a week ago I watched the sale of patent medicines at a street market in a large Midland town. A special line at 3s. 6d. a bottle was for St. Vitus's dance, and a cure was guaranteed in 3 weeks.—I am, etc.,

F. L. KING LEWIS.

SIR,—Dr. E. L. Loewenthal has written a most important and necessary letter. I venture to differ from him only on minor points and in that I would go further. First, the points of difference: "Big business" (I am in no way financially interested in it) has given a phenomenal impetus to pharmacological research, and, in my view, has secured its truly remarkable results not only by the expenditure of capital but by putting behind its research men the peculiar acumen and enterprise which are characteristic of business. I have experienced this both outside medicine and as an industrial medical officer, and I would like to see it encouraged rather than repressed, but with these safeguards. First, any discovery should be rigidly protected so that the firm concerned reaps a reasonable reward and so retains its incentive; secondly, all formulae and methods would have to be honestly and completely revealed under heavy penalty; thirdly, rigid accuracy and truthfulness in all brochures, circulars, descriptions, advertisements, etc., to doctors and chemists would be obligatory under crushing penalty; and, lastly, as Dr. Loewenthal insists, sale to the public except on prescription would be prohibited. My second difference is on a financial matter. Most people, as I know well, simply cannot afford to pay the doctor and the chemists as well. Any reform must take account of this, for, from the point of view of the most important person of all, the patient, it is the very crux of the whole matter.

There is, however, a more ugly side to this scandal, and that is the fact that so many of us simply neither prescribe nor dispense at all. We simply "dope out" stock mixtures, and, for myself, I would in case of illness as soon lay out a half-dozen patent preparations, select one of them by cutting a pack of cards, and take my chance on the one which turned up as swallow some of the "mist. this" and "mist. that" which are foisted upon the people who chance the doctor instead of the chemist. Hard words, perhaps, and not very temperately put, but when I was doing research in collateral subjects soon after qualifying I kept my hand in at medicine by doing a series of one-week "locums." I did many in various parts of the country, and the recollection of some of those dispensaries and methods is still with me these 17 years after. Slackness and cost, and scamped and hurried teaching are at the bottom of the reaction against drugs which is fashionable just now. Surely materia medica, pharmacology, and therapeutics are in importance not behind anything else we ought to be made to remember? I am convinced that if all of us had to keep our knowledge of these vital subjects fresh and up to date the "stocks" would all but disappear. It is certain that the manufacturer and the wholesaler would cease to vend them as soon as we stopped buying and/or "prescribing" them. Is it any wonder that many chemists do not regard their advice as being materially more dangerous than that of some of the doctors whose "prescriptions" they dispense? Our own ineptitude at the time of the introduction of the N.H.I. Acts is as much to blame as anything else, for we allowed the panel doctor to become a sweated worker with inevitable results to most of us. We tacitly admitted that medical attention was such a casual and unimportant thing that a man could dispose of a patient in five minutes or less. I do not digress, for this is an intrinsic part of the problem.—I am, etc.,

Sheffield ANDREW KEFALAS.

Emergency Blood Transfusion Scheme

SIR,—The standardization of the apparatus for blood transfusion is altogether desirable and is not the least among the benefits arising from the organization of the Emergency Blood Transfusion Scheme of the Ministry of Health described by Dr. L. W. Proger (Aug. 29, p. 252). It has one by no means insurmountable disadvantage. A large number of hospitals are in the habit of obtaining their supplies of saline solutions for intravenous infusion in the standard pint bottle with spring cap used by many firms of manufacturing chemists for this purpose; others use these bottles for the preparation of their own solutions. Certain hospitals before the development of the Emergency Blood Transfusion Scheme also used these bottles for purposes of blood transfusion. Under these circumstances, the same delivery apparatus could be used for the infusion either of saline solutions or of blood, or, if desired, as is not infrequently the case, of either alternately. Owing to the great difference between the size of the mouths of the Emergency Blood Transfusion Scheme bottle and the standard saline bottle this is no longer possible.

There are many occasions in both civil and military practice on which infusion of a saline solution rather than of blood or plasma is required, or on which it may be desired to alternate the two. Would it be reasonable to suggest that, having provided both blood and plasma in standard bottles, the Emergency Blood Transfusion Scheme should further make available saline solutions in the same bottles?—I am, etc.,

Wolverhampton. S. C. DYKE.

Food, Farmers, and Health

SIR,—A patient who ran away from a mental hospital sent for me, of course to complain: "The treatment is abominable, or, rather, there is no treatment—except a black draught once a week. But for that I should never be moved at all: I go a whole week without; and can you wonder? We get some sort of meat and a great pile of potato and always rice pudding; never any second vegetable except—twice a week—a sad, sodden spoonful of cabbage. I feel awful. I used to get salad before I went there, salad twice a day, and I felt fine." That was the effect of his words. Next day I saw a consumptive man on leave from a tuberculosis colony—"A lovely spot," I remarked. "Ye-es," he said, "it would be all right if they'd give us some vegetables. We never get any"—this of an old estate in the depth of a farming country. "When I used to get lettuce and dandelion at home," he went on, and then used the same phrase as the mental patient—"I felt fine." "Last year we sold £1,100 worth of stuff from this garden," the head gardener of a great public institution told me, "beautiful stuff." "Do you provide the patients with it"? I asked. "Not likely!" he said. "I offered some to the steward, but he said, 'I can get stuff good enough for these patients at two-thirds that price.'" No chicane—an honest, if mistaken, transaction.

There are very good farmers in the House of Lords. They are of various parties; but they all unite in their agricultural policy. Here are two items of it, or fragments of them: "A greater production and consumption of protective foods must form the basis of any sound agricultural and health policy"; and, "We lay down the distinction between those commodities (e.g., wheat, meat, sugar-beet, etc.) of which we must produce certain quantities in order to ensure good husbandry, but the production of which we do not desire to expand beyond" that limit, and "milk, poultry products, fruit, vegetables, for which a large potential market is available, and which can and should be expanded to a considerable degree in the interests alike of agriculture and the national health."

They, the farmer Lords, have realized this great truth. Have we, in our profession, grasped and used this means of making "positive health"?—I am, etc.,

Holmes Chapel, Cheshire. LIONEL JAS. PICTON.

A Maternity Service Scheme

SIR,—Dame Louise McIlroy's interesting article on a maternity service scheme (Aug. 15, p. 184) contains a phrase which may produce a wrong impression.

In speaking of the position of pregnant women in the U.S.S.R., she says: "Women in employment get full pay before and after confinement, if off work." By law, pregnant women in the U.S.S.R. are *obliged* to take 35 days' leave before confinement and 28 days' after, on full pay. Many other provisions are made for women before and after confinement. For instance, pregnant women in industry are not allowed to work overtime or night shifts, and their occupation is changed to lighter work if their original work is considered unsuitable. They have various privileges, such as being entitled to board a bus or train before anyone else. Women who return to work after confinement and who wish to take their children with them can leave them in the factory crèche. Arrangements are made by which the mothers are given time off at regular intervals, without reduction in pay, so that they can breast-feed their children.—I am, etc.,

London, W.1. D. E. BUNBURY.

Obituary

PROFESSOR CLAIRMONT

Prof. G. GREY TURNER writes: The death of Prof. Paul Clairmont of Zurich at the age of 67 recalls a very delightful visit to Vienna in 1912, when he was the very capable first assistant in the clinic of the late Prof. Von Eisleberg. In that capacity he was responsible for a great deal of the work and proved himself a very enthusiastic second to his great chief. It was not long previously that he had devised and introduced the operation which is now known by his name for the treatment of recurrent dislocation of the shoulder-joint. I remember how skilfully he demonstrated the method on the cadaver one evening and the next morning carried out the operation on a patient whose shoulder had been dislocated no fewer than 23 times. In the surgical laboratory there was a lively discussion between Clairmont and Prof. Perthes of Tübingen, who was also a visitor. The aetiology of recurrent dislocation and the respective merits of the operative management were discussed with some ardour. The matter ended by Clairmont's inviting his friendly rival also to demonstrate his plan on the body. Those were great days and only to be recalled with a certain amount of nostalgia.

It was not very long afterwards that Clairmont was appointed professor in charge of the surgical clinic at Zurich, so that he came to occupy a Chair upon which Sauerbruch had added great lustre. In 1924, as a visitor to his new clinic, one saw much of his notable activities. I recall that he started operating at 7.30 each morning and that his lists were formidable. Like most Continental surgeons he was in no sense a specialist, and on that occasion we saw a great variety of work, yet after the operations this man of energy insisted on taking us on a tour of the wards before luncheon. Clairmont was probably then at the height of his activity and reputation, and a good many foreign students were attached to his clinic. His hospitality on that occasion was boundless, and among other things we enjoyed a delightful evening at his house, which was marked by a dinner party served on two floors. Again, in 1937, when 62 years of age, friends tell me that his energy seemed to be unabated; in fact it was almost alarming. He never seemed to tire and did some of the biggest surgical operations with great vigour. His work was mainly practical and individual, but a great many British visitors will remember with pleasure days spent in his clinic and with profitable results.

Many members of our profession will learn with regret of the sudden death on August 7 of Mr. R. W. CRAWFORD TREASURE of the Medical Insurance Agency. When the last war began, Mr. Treasure was engaged in a commercial career in India, and was a member of a Volunteer Artillery Battery in which he served throughout the war, obtaining the rank of major. After demobilization he returned to England, where his father, the late Dr. W. B. Crawford Treasure of Cardiff, was a well-known and popular member of the Central Council of the B.M.A. He then obtained a position on the staff of the Medical Insurance Agency, rising to be deputy manager under the late Mr. Adamthwaite, and assistant manager under his successor, Mr. A. N. Dixon (now in the R.A.F.). Since Sqdn. Leader Dixon rejoined the Forces Mr. Treasure had been acting manager in his stead. He had for many years dealt with the sometimes thorny problems of claims against underwriters or insurance companies by clients of the Agency in connexion with motor-car accidents, always with great courtesy to clients and keenness in defence of their interests. When he had, as sometimes happened, the invidious task of explaining to a doctor that his claim was less well founded than he supposed, he did it with tact and kindliness, if seldom with terseness. His personal contacts with members of the profession, which were very numerous, always left the impression of complete devotion to the interests of the insured as well as of straightforwardness, and this combination of qualities was undoubtedly appreciated both by the Agency and by its clients. Mr. Treasure, who was twice married, leaves a widow; also a son by his first wife.

Dr. A. C. D. TELFER, who died suddenly on August 19 at Walthamstow at the age of 46, had been in practice there for the past 20 years. He studied medicine at St. Bartholomew's Hospital, graduating L.M.S.S.R. and M.B., B.S.Lond. (Hons. Foren. Med.) in 1920. He was a very ardent though most cheerful worker and was keenly interested in the psychological side of medicine. Recently his energies had been devoted to evolving a scheme for the early and continued treatment of war neuroses, and he published tentative suggestions on those lines in the *Journal* of Feb. 28, 1942. His passing will be deeply mourned by patients and colleagues as well as by a wide circle of friends.

The Services

Prisoners of War.—War Subs. Capt. H. C. Allan, R A.M.C., Acting Surg. Cmdr H. L. Cleave, R.N , Capt. F. J Fish, R A.M.C., Surg. Lieut.-Cmdr W. D. Gunn, R.N., Temp Surg. Lieut. C. A. Jackson, R.N.V R., Capt G Lancaster, R.A M.C., War Subs Capt. D. R. Macaulay, R.A M.C., Temp Major K. A. Moore, R.A.M.C., Surg. Lieut.-Cmdr J. A Page, R N., Major E J. Pryn, R.A.M.C., Temp. Major H. L. Thornton, R A M.C., Surg Cmdr. R. W. H. Tinckner, R.N.V.R., Temp. Surg. Lieut. R G. S. Whitfield, R.N.V.R., Flying Officer R. J. S. Wilson, R.A F.V R.

Missing.—Lieut.-Col. J W. Malcolm, O.B.E., M.C., R.A.M.C.

Universities and Colleges

UNIVERSITY OF LONDON

Sir Girling Ball and Dr. A. M. H. Gray have been reappointed representatives of the Faculty of Medicine and Dr. H E. A. Boldero representative of the General Medical Schools in the Senate for the period 1942-6. The membership of Convocation of Major-General P. H. Mitchiner has been continued until May, 1943 The title of Professor Emeritus of Anatomy in the University of London has been conferred on Prof. J. E. S. Frazer following his retirement, owing to ill-health, in 1940 from the Chair of Anatomy at St. Mary's Hospital Medical School.

The degree of B Sc. (Econ) (with honours) has been granted to W. E. Roper Saunders, M.R.C.S, L.R C.P., D P H., D P A

An additional second examination for medical degrees for internal and external students will be held in December As a temporary measure during the period of the present shortage of medical practitioners, the length of the clinical course for the M.B, B.S. examination has been reduced from 36 months to 30 months. The matter is to be reconsidered during the third term of the session 1942-3. The examination for the Academic and External Diplomas in Clinical Pathology has been postponed from Oct, 1942, to Jan., 1943.

UNIVERSITY OF ABERDEEN

Sir John Boyd Orr, M.D., F.R.S, director of the Rowett Institute for Research in Animal Nutrition, has been appointed by the Aberdeen University Court to be Professor of Agriculture in the university He will continue as director of the Rowett Institute.

SOCIETY OF APOTHECARIES OF LONDON

At a Court of Assistants held at the Society's Hall on Aug. 18 Sir Stanley Woodwark, Master, and Dr. F. Gymer Parsons and Mr. V. Warren Low, Wardens, were re-elected for the ensuing year. The Court resolved to revive the pre-medical examination in chemistry, physics, and biology. The name of William Spencer Lewis was removed from the Register of Licentiates.

The following candidates have satisfied the examiners in the subjects indicated:

SURGERY—A G. S Bailey, D M Carnegie, J A Dryden, H Gottschalk, J M Hanson, G Jarratt, R. Powell, D S Jones, T. C Masson, F R. C. Palmer, S. Yaffie.

MEDICINE—C. A Anderson, G. Jarratt, M Leven, T. W. Renton, E. A. Williams, P L. McN. Armstrong, A. G. S. Bailey, M. V Matthew, F. A. Rutland

MIDWIFERY.—A. G. S Bailey, R. Gunewardena, M A. Hamdy, G. Jarratt, J A Dryden.

The diploma of the society was granted to C A Anderson, R Powell, R. Gunewardena, T W. Renton, G. Jarratt, P. L. McN. Armstrong, A. G. S. Bailey, and F A. Rutland

Medical News

The Council of Epsom College will in December next award a "France" pension of £30 per annum to a necessitous medical man, fully 55 years of age, who has been registered for five years, and who is in need of help. Forms of application may be had from the Secretary's Office, Epsom College, Surrey, and must be completed and returned by Oct. 19.

The Paddington Medical Society has arranged an informal reception to be held in the board room of St. Mary's Hospital (Praed Street entrance) on Sunday, Sept. 20, at 2.30 p m., to meet medical men and women in this country on war service from the U.S.A., the Dominions, and India, and to exchange views on matters of general medical interest. Those who wish to attend are asked to communicate with the honorary secretary of the society, Dr. L. Zeitline (16, Norfolk Place, Hyde Park, W.2) by Sept. 15 at the latest

The *Times* of Aug. 31 published a list of British refugees from the Far East who are on board the S.S. *Tatuta Maru*, which arrived at Lourenço Marques on Aug. 27. The Foreign Office, in supplying the list, stated that the names were furnished by the Swiss authorities. The following medical practitioners and members of their families are included: From Japan and Manchukuo, Dr. Dorothy Faulkner, Dr. and Mrs. Leggate, Dr. A. P. and Mrs. Littlewood, Dr. Jean M. McMinn, ? Dr. H. W. Y Taylor. From Swatow, Dr. S. L. Strange, Dr. and Mrs H. F. Wallace and two children. (The question mark in front of Dr. Taylor's name appears in the printed list.)

The Institución Cultural Española in Buenos Aires has established a laboratory for histological investigation in memory of Prof. Ramon y Cajal, to be directed by Prof. Hortega of Buenos Aires, a disciple of Ramon y Cajal.

A medical aid car, paid for by money raised by the sisters attached to the first-aid posts throughout the city, was handed over to the Lord Provost in the quadrangle of the City Chambers, Edinburgh, on August 31. The purpose of the car is to ensure that a doctor and nurse can be carried speedily to the scene of an air-raid incident, and have at hand the equipment for first aid, resuscitation of suffocated persons, and for minor emergency surgery. There are racks for two stretchers, so that any gravely injured person may be sent to hospital accompanied by a doctor or nurse, if need be. The car is to supplement, but not to replace, the official mobile first-aid units, and other Scottish cities and towns may be asked by the Department of Health for Scotland to adapt cars for similar purposes. Dr. W. G. Clark, Medical Officer of Health, acted as chairman at the ceremony. Lord Provost Darling paid a tribute to the Civil Defence services, which, he said, went from strength to strength. Although Edinburgh had not been subject to heavy bombardment, they had not been idle; they had trained and planned to make their service more and more competent.

A mobile resuscitation van, believed to be the only one of its kind in the country, and designed for use in maternity cases in peacetime as well as for emergency operations and blood transfusions in war, has been presented to Bradford by the Princess Royal on behalf of members of the women's section of Bradford and District British Legion, who raised the funds. The van is fitted for use as an emergency operating theatre, and contains an operating table, special "rocking" stretcher for artificial respiration, generous cupboards and lockers for instruments and sterile dressings, a special store of transfusion fluids, wash-basins, a sluice, microscope, electric blanket, a centrifuge, and other equipment.

The report and accounts of the Cassel Hospital for Functional Nervous Disorders for the year 1941 is issued from Ash Hall, Bucknall, Stoke-on-Trent, and includes a brief tribute to the memory of Dr. T. A. Ross, with a bibliography of his published works.

According to the last published return the Japanese death rate is 17.4 per 1,000 as compared with 10 or 11 in the United States, and the mortality from tuberculosis in Japan is 204 as compared with 45 per 100,000 in the United States.

Infant mortality in the United States per 1,000 live births has fallen from 51 in 1938 to 48 in 1939 and 46.4 in 1940, and in New York City from 38.3 to 37.1 and 34.8 respectively.

Dr. Fauconnet has succeeded the late Dr. Carrière as director of the International Office of Public Health in Paris.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the only large fluctuations from the preceding week in the notifications of infectious diseases were a drop of 894 for measles and of 94 for acute pneumonia, and a rise of 110 for whooping-cough. The higher incidence of whooping-cough was due mainly to the epidemic in London, where 141 cases, compared with 97 in the previous week, were recorded.

A decline in the notifications of measles was general throughout the country, especially in Lancashire, London, Middlesex, and Kent, where the cases were 124, 168, 109, and 70 fewer than in the previous week.

There was no large outbreak of dysentery during the week, the biggest county totals being those of London 17 cases and Berkshire (Wallingford R.D.) 8 cases.

In *Scotland* there were relatively large decreases in the incidence of measles, 49 cases, and acute pneumonia, 47 cases. The decline in measles was fairly general throughout the country, but the trend of pneumonia was mainly influenced by the returns of Glasgow, which showed a reduction of 30 cases. A rise of 25 cases of dysentery was reported, the principal outbreaks being those of Aberdeen Burgh 13, Dundee 13, Edinburgh 11, Glasgow 12.

The returns for *Eire* have been distorted by the inclusion in the present week of returns for a Dublin institution for the period from February to July. As a result of this the weekly total for whooping-cough is overstated by 122 cases, and diarrhoea and enteritis by 56 cases.

Returns for the Week Ending August 29

The notifications of infectious diseases in England and Wales for the week included the following: scarlet fever 1,455, whooping-cough 1,212, diphtheria 717, measles 3,165, acute pneumonia 352, cerebrospinal fever 66, dysentery 91, paratyphoid 11, typhoid 18.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for. (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	68	5	23	2	7	135	7	28	—	6
Deaths		—	4				—	1		
Diphtheria	629	29	184	37	16	699	33	182	18	32
Deaths	20	1	1	—	—	20	1	2	2	—
Dysentery	59	17	69		—	196	9	67		—
Deaths		—		—	—		1		—	—
Encephalitis lethargica, acute	7	—	4		—	6	—	3		—
Deaths		—					—			
Enteric (typhoid and paratyphoid) fever						26	2	4	6	2
Deaths						2	—	—	—	—
Erysipelas			29	5	5			44	8	6
Deaths										
Infective enteritis, or diarrhoea under 2 years				192						
Deaths	42	5	18	21	8	51	3	9	21	2
Measles	4,089	307	77	22	32	1,914	78	24	83	3
Deaths	3	—	4	—	—	1	—	—	1	—
Ophthalmia neonatorum	86	5	20	—	—	91	5	17	—	—
Deaths										
Paratyphoid fever ..	8	—	1	—	—	166	2	14	—	—
Deaths		—	—	—	—	1	—	—	—	—
Pneumonia, influenzal*	346	19	6	1	5	378	13	2	—	2
Deaths (from influenza)	7	—	—	1	—	6	16	—	—	6
Pneumonia, primary ..	—	—	91	10		—	—	126	9	
Deaths				6	3				10	—
Polio-encephalitis, acute	2	—				2	1			
Deaths										
Poliomyelitis, acute ..	19	—	1	2	—	25	1	10	2	1
Deaths		1								
Puerperal fever ..	—	5	24	2	—	1	1	11	1	—
Deaths		—					—			
Puerperal pyrexia ..	172	12	27		2	104	7	15		—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	1,332	108	272	32	20	830	24	142	29	27
Deaths	—	—	—	—	—	2	—		—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	15	5	4	8	3					
Deaths			—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,235	141	17	176	16	3,190	193	56	32	16
Deaths .	11	—	1	3	1	18	4	2	2	—
Deaths (0–1 year) ..	315	32	62	35	29	248	18	45	45	10
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,639	545	532	180	122	3,610	456	530	167	108
Annual death rate (per 1,000 persons living)			12·0	12·0	†			11·5	11·1	†
Live births	6,118	721	838	382	285	5,097	406	810	355	180
Annual rate per 1,000 persons living ..			17 3	25·5	†			16·5	23 6	†
Stillbirths .. .	201	20	28			173	20	37		
Rate per 1,000 total births (including stillborn)			32					44		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Doctors' Illnesses: Clinical Accounts Wanted

Dr. D. M. C. CHURCH (44, George Square, Edinburgh) writes: I wish to get accounts from medical men of illnesses of any sort from which they themselves are suffering or have suffered, and of which they have a clear recollection. This is a corner of clinical research which appears to have been little worked, and I have been impressed recently by the unusual slant it gives a clinical description. Particularly I should like to have the story of the onset of malignant disease: what first attracted attention, what was the psychological reaction, and so on. As regards diagnosis and treatment a criticism of these should be given. If there is response to this letter endeavour will be made to acknowledge the communication, which should, if possible, be typed. If the material obtained warrants publication in whole or in part, anonymity is promised.

Income Tax

Basis of Assessment

W. B. inquires to which year precisely a demand "for the year beginning April 6, 1941," relates.

*** In reply to this correspondent, the point to keep firmly in mind is that professional earnings are assessed for any particular year on the basis of the amount earned in the previous year. Consequently, tax payable "for the year beginning April 6, 1941," will be calculated on the amount of the profits for the year *to* that date (or to December 31, 1940, for instance, if that is the date to which the professional accounts are prepared), and when tax thereon has been paid the practitioner will have accounted for his liability up to April 5, 1942. There are some exceptions to the general rule, which are briefly explained in the printed notes accompanying the form of return. (If, as seems to be the case, W. B. cannot obtain a reply from the local inspector of taxes, he would be justified in complaining to the Chief Inspector of Taxes, Somerset House, W.C.2.)

First Two Years of Employment

R. W. began general practice work in January, 1941, at a salary of £600 per annum. How should he be assessed for the two years ending April 5, 1941, and April 5, 1942, respectively?

*** The statutory basis of assessment under Schedule E in such a case is the earnings of the current year for each of the first two years. R. W. is therefore chargeable to tax on £150 for 1940–1 and on £600 for 1941–2. (If the appointment terminated before April 5, 1942, he would of course be entitled to a reduction of the £600 to the amount earned after April 5, 1941.) The tax can be notified to the employer, and deducted over the period applicable to the year concerned.

LETTERS, NOTES, ETC.

Powdered Sulphanilamide for Throat Infection

Dr. GODFREY B. TAIT (Alloa) writes: Much literature has appeared on the subject of local application of sulphonamides. This, to my knowledge, has been restricted to surgery and dermatology. Apart from the trial of sulphanilamide snuffs for disinfection of the nose, I have seen no other mention of its local use in "medical" conditions. The fact that I am extremely intolerant to sulphanilamide taken by mouth led me to use it locally when I started to have a streptococcal tonsillitis. The powdered sulphanilamide was deposited on the tonsils, fauces, and palate by means of an insufflator. The result was highly successful. Pain and swelling disappeared in a day and a half. I have since tried this method with intelligent patients and results have been uniformly good, the condition clearing very rapidly. To be successful the insufflation must be carried out very frequently, at least half-hourly, for the throat secretions soon wash the visible powder away. For this reason and because of the expense of an insufflator the method cannot have a wide application in general practice, but for the doctor who feels a "sore throat coming on" it is the ideal treatment. The powder I have used was 30% sulphapyridine in mag. carb. lev. I have used this method for a year now and have seen no bad results.

Ambulances for Home Guard

Dr. W. C. V. BROTHWOOD (Medical Adviser, No. 2 Zone, Home Guard) writes: I have read the account of the "Duerr-Moir" light trailer ambulance (Aug. 8, p. 160). No doubt it will have been read with great interest by other Home Guard medical officers and particularly those in rural areas. It is the duty of these officers to make arrangements for the transport of casualties from defended localities to collecting posts, whence they are removed by Civil Defence ambulances. Home Guard units at present are not provided with ambulances. Under existing arrangements, therefore, casualties have to be carried by hand on stretchers from the defended localities to the collecting posts. Efforts have been made to keep down the "carry" to a minimum, but in rural areas even a small "carry" requires much physical effort, and the provision for such areas of an ambulance of the "Duerr-Moir" type, which can be used as a hand ambulance, would be a boon. It is clear that much thought has been devoted to its construction.

Dr. K. W. MACKIE (Southampton) writes: The Duerr-Moir ambulance trailer appears to be most suitable for country districts where the present ambulance service is inadequate. I understand that the ambulances are not in production yet. I sincerely trust that their production will not long be delayed and that those in authority may be persuaded to adopt the ambulance for use in Home Guard units.

Corrigendum

Dr. J. P. MCGOWAN points out an important omission in the schematic representation of red blood cell changes in his letter at page 257 of our issue for Aug. 29. An arrow should have appeared *pointing up from the macroblast to the normoblast*, since he contends that the normoblast does not develop into the macroblast.

MEDICINE 100 YEARS AGO

Three advertisements appearing in the *Provincial Medical Journal*, September 10, 1842:

THE PARENTS of a YOUTH, about seventeen years of age, are desirous of placing him as DISPENSING ASSISTANT with a Medical Man. He has served part of his time with a Chemist, and is, therefore, competent to undertake such a situation. An annual remuneration of £10 will be required. Address, A. B., Messrs. Drew, Heyward, and Co., Druggists, Bush-lane, London.

* * *

WANTED, by a Surgeon, residing in a pleasant and healthful situation in the country, TWO well-educated YOUNG GENTLEMEN as HOUSE PUPILS, who will enjoy peculiar advantages in the acquirement of a practical knowledge of their profession, the Advertiser having the Surgical charge of ten large Collieries, where casualties of the most serious nature occur, in the treatment of which his Pupils participate. Great attention will be given to the domestic comfort of the Pupil, and he will be stimulated to the improvement of his classical and general attainments. The Advertiser, being a licensed Teacher of Anatomy, will, as often as opportunities present, give Private Instruction in Morbid and General Anatomy. Apply to Mr. William Morrison, Pelaw House, Chester-le-Street, Durham.

* * *

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MESSRS. I. C. and S. STEVENS have the honor to announce they will SELL BY AUCTION, at their Great Room, 38, King-street, Covent-garden, on Thursday, the 22nd of September, and six following days (Sunday excepted), at Twelve o'Clock, the very extensive and valuable MUSEUM of MORBID, HUMAN, and COMPARATIVE ANATOMY, formed by G. Langstaff, Esq., during a period of upwards of thirty years, with indefatigable labor, and at a very great cost. May be viewed three days prior to the Sale, and Catalogues (1s. each) had of Messrs. I. C. and S. Stevens, 38, King-street, Covent-Garden.

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BRITISH MEDICAL JOURNAL

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ESTIMATION OF HAEMOGLOBIN BY THE ALKALINE HAEMATIN METHOD

BY

J. W. CLEGG, M.R.C.S., L.R.C.P., D.C.P.Lond.

Area Clinical Pathologist (E.M.S.) at the Royal Infirmary, Blackburn, Lancs; formerly Assistant in Clinical Pathology, British Postgraduate Medical School

AND

E. J. KING, M.A., Ph.D.

Reader in Pathological Chemistry, University of London

(From the British Postgraduate Medical School and the E.M.S. Pathological Services, Sector VI)

Haemoglobinometry has at present two chief functions—first, the detection of diseases characterized by deficiency or excess of haemoglobin; secondly, the study of changes in haemoglobin concentration caused by loss or gain of plasma. For both purposes it is desirable that the method employed should estimate the concentration of all the forms of haem-pigment circulating in the blood. Ammundsen (1939, 1941) has shown that under modern conditions a normal adult may have from 2 to 12% of his total haemoglobin circulating in an inactive form. The inactive fraction is chiefly composed of carboxyhaemoglobin, methaemoglobin, and sulphaemoglobin. Drugs of the sulphonamide class often increase the proportion of inactive haemoglobin in patients receiving this form of treatment. Most methods of estimating haemoglobin are standardized by reference to determinations of the oxygen-carrying power of blood. These yield valuable information concerning one important function of the blood, but they may provide a false picture of the pigment metabolism, since they take no account of inactive haemoglobin which may be capable of regeneration to the active form. They may imply the presence of anaemia where none exists. Several methods of estimation are in general use, and it is pertinent to inquire not only into the accuracy of each but also if total pigment or merely active haemoglobin is being measured.

The Haldane method enjoys a wide popularity, yet, being based on the gas (CO)-carrying power of blood, it may not measure total pigment. Samples of blood are frequently encountered in which the colour is not comparable with the standard; this is probably due to the presence of a large amount of inactive haemoglobin which is not convertible to carboxyhaemoglobin. The standards available commercially are often unreliable and may quickly fade. In addition the method requires a source of carbon monoxide.

There are several acid haematin methods in use, of which the most familiar are the Sahli and Newcomer. Several disadvantages are common to them all. The colour developed by the test does not quickly reach a maximum; while most of it develops in the first 30 or 40 minutes, the greatest optical density is not reached for from 24 to 36 hours, and the velocity of the colour reaction is not constant. Some observers claim the colours are not easily matched and that there is a high degree of personal error: according to Heilmeyer and Von Mutius (1938) this may be as high as ± 10%. Wu (1922) has shown that the colour developed depends upon the concentration of protein and lipoid in the test; and, since acid haematin is insoluble and exists as a colloid suspension protected by the protein present, there is often turbidity or actual precipitation.

The pyridine haemochromagen method of Roets (1940) [cf. Rimington, 1942] depends on the following principle. Haemoglobin in the sample is converted by sodium hydroxide, pyridine, and sodium hydrosulphite into pyridine haemochromagen. The standard is crystalline haemin, which is converted to the haemochromagen with the same reagents. The two solutions are compared colorimetrically and the concentration of haemoglobin in the test is calculated on the assumption that each milligramme of iron in the haemin standard is exactly the equivalent of a milligramme of haemoglobin iron in the test. This method has the advantage of a standard which is readily reproducible, and in addition it measures total pigment; but most pathologists would probably agree that pyridine, because of its extremely objectionable odour, is an unsuitable reagent for use in a routine clinical laboratory.

Recently we have been searching for some method of haemoglobin estimation which fulfils the following criteria. It must measure total pigment with a reasonable degree of accuracy and yet be simple enough to be employed in a laboratory where many determinations are performed daily. Measurement must be in terms of some simple easily reproducible standard so that the results at one laboratory may be directly comparable with those obtained in another. This standard must be either haemoglobin or some other substance with constant properties which may be referred to haemoglobin. From a review of the literature we decided that the most likely procedure was the alkaline haematin method of Wu (1922), which is recommended by Peters and van Slyke (1932). Wu found that the acid haematin method of Cohen and Smith (1919), the CO method of Palmer (1918), the methaemoglobin method of McEllroy (1920), and the cyanhaemoglobin method of Stadie (1920) gave divergent results with sheep's blood; but that if the test solutions were all rendered alkaline before the colorimetric readings were made the differences largely disappeared. The acid haematin method applied to solutions of pure haemoglobin gave lower results than those obtained when plasma was added. The errors increased with increasing amounts of plasma, but were not proportional to the plasma present. With solutions of washed red cells the reverse was the case: added plasma decreased the apparent observed concentration of haemoglobin. These extraordinary effects, probably due to the colloidal nature of haematin in the acid medium and of proteins and fats from the plasma, were abolished by the addition of excess sodium hydroxide to the test solutions. Haematin exists in true solution in alkaline solutions of pH 10 and over, and plasma proteins and fat are likewise much better dissolved by alkali than by acid. The presence of variable amounts of the abnormal forms of haemoglobin (CO-, met-, cyan-), moreover, exerted a pronounced effect on the acid haematin method, but no effect when the solutions were made alkaline, the same amount of alkaline haematin being produced from any form of haemoglobin or from mixtures of them. The alkaline haematin method of Wu, then, appeared to satisfy our criteria of reasonable accuracy, of simplicity, and of measuring all forms of haemoglobin.

The majority of the standards in use for the different methods of haemoglobinometry are prepared from blood. This is a grave disadvantage, as the blood needs careful standardization by the oxygen capacity method, a procedure which requires elaborate apparatus and a skilled technique and which is difficult for those who are not experienced in gas analyses. The standards prepared from blood are, moreover, not easily preserved, and frequent restandardization is necessary. Because of these difficulties there has been a wide-spread adoption of coloured glass standards, but these have proved unsatisfactory because of lack of uniformity and of the failure to give an equally good match of the haemoglobin colours in light from different sources. The alkaline haematin method carries the great advantage that a simple reproducible standard can be prepared from crystalline haemin, a substance which is easy to prepare and which can be weighed out in equal amount and dissolved in soda by any worker to give standards of identical colour value.

Haematin Standards

Thirteen samples of crystalline haemin have been prepared by slightly different methods from ox and human bloods.[1] The iron content of each sample was determined and the results are shown in Table I. Solutions of alkaline haematin containing approximately 10 mg. of haemin per 100 c.cm. were prepared and the specific extinction coefficients of the solutions measured. The mean of the 13 samples is 0.769, with a standard deviation of 0.009 and a coefficient of variation of 1.18%. Three other samples, one prepared in bulk by B.D.H. and two kindly supplied by Dr. R. G. Macfarlane of Oxford, agree closely with the results in the table. These solutions, which have remained stable for over six months, obey the Beer-Lambert law. Clearly when alkaline haematin is prepared from crystalline haemin the intensity of the colour developed is proportional to the concentration of iron in the sample.

Table I.—*Specific Extinction Coefficients of Various Preparations of Haemin**

No.	Blood Used	% Fe	Analyst	Method of Analysis	Es† (for 1 mg	Es‡ Fe/100 c cm.)
1	Ox	8·55	Weiler and Strauss	"Micro Fe_2O_3"	0·764	0·768
2	Ox	8·29 8·28	Geochem. Labs. Delory	$TiCl_3$ "	0·782	0·786
3	Human	8·53	Weiler and Strauss	"Micro Fe_2O_3"	0·752	0·768
4	"	8·45	Delory	$TiCl_3$	0·760	0·752
5	"	8·21	"	"	0·779	0·766
6	?	7·81	"	"	0·793	0·800
7	Human	8·29	"	"	0·769	0·757
8	"	8·26	"	"	0·786	0·771
9	"	8·18	"	"	0·752	0·758
10	"	8·50	"	"	0·756	0·748
11	"	8·45	"	"	0·766	0·759
12	"	8·32	"	"	0·762	0·753
13	Washed cells	8·40	"	"	0·775	0·764
				Mean =	0·769	0·766
				Standard deviation (corrected) =	0·009	0·014
				Coefficient of variation =	1·18%	1·83%

* 10 mg. (approx.) per 100 c.cm. solution in N/10 NaOH. Two-stage Leitz compensating colorimeter; mercury-green illumination; 1·01 D Ilford neutral grey screen, average depth of solution 15 mm.

† Average of 3 separate determinations by 3 observers.

‡ Determined in photo-electric colorimeter (King, 1942), Chance green filter. The extinction coefficients re-determined on these same solutions 6 months after their preparation were identical with those shown.

Alkaline Haematin Method Applied to Blood

When adult human blood is added to decinormal sodium hydroxide, a brown colour is quickly developed which on spectroscopic examination contains the specific absorption band of alkaline haematin (607 mμ). Blood taken from infants develops this colour much more slowly owing to the fact that the foetal type of haemoglobin is more resistant to alkaline denaturation. Brinkman and Jonxis (1935) have shown that the foetal type of haemoglobin steadily diminishes after birth and is absent at 7 months; at about 3 years another type of alkali-resistant haemoglobin appears, and persists throughout life. This adult resistant haemoglobin occurs only in small concentrations and the main bulk of adult haemoglobin has little resistance to alkali. The rate of alkali denaturation of all forms is markedly accelerated by increasing the pH and the temperature. We have investigated the rate at which alkali denaturation becomes complete in samples containing varying proportions of resistant and inactive haemoglobin.

If a 1 in 100 dilution of umbilical cord blood in N/10 soda is made, the solution remains bright pink, with the absorption bands of oxyhaemoglobin clearly visible for some hours at room temperature. With brief heating the colour change is dramatic, and the oxyhaemoglobin bands are replaced by those of alkaline haematin. The effect of heat was studied by making a 1 in 100 dilution of umbilical cord blood and placing it in a boiling-water bath. Aliquots were removed at various intervals and promptly cooled under the tap before being compared in a colorimeter with a standard alkaline haematin solution. It was found that the colour reaction, often complete after 2 minutes in the bath, was invariably so after 5 minutes. For a further short and variable time the colour remained constant, but turbidity developed later, giving an apparent increase in colour. No significant turbidity was detected after only 5 minutes in the bath (Table II).

Table II.—*Effect of Heat on Alkali Denaturation of Foetal Type Haemoglobin*

Time of Heating	Blood A	Blood B	Blood C	Blood D
Before heating	0·50*	0·43*	0·88*	0·60*
2 minutes	0·318†	0·285†	0·670†	0·455†
5 "	0·308†	0·285†	0·662†	0·440†
10 "	0·310†	0·285†	0·680‡	0·440†
15 "	—	0·330‡	0·710‡	0·463‡

* Still pink. † Clear brown ‡ Turbidity.

The figures represent the extinctions E read in the King (1942) photo-electric colorimeter, Chance green filter.

Many observations were made on hospital patients to determine if any appreciable concentration of resistant haemoglobin might be encountered. 0.05 c.cm. of blood was added to 5 c.cm. of N/10 soda. After this unheated solution had been compared with a standard solution it was allowed to stand overnight, when the comparison was repeated. In many cases there was no significant difference between the two observations, but in some adults and all infants the overnight reading was significantly lower than the initial reading—i.e., the change from pink to brown was not complete in the few minutes before the first reading.

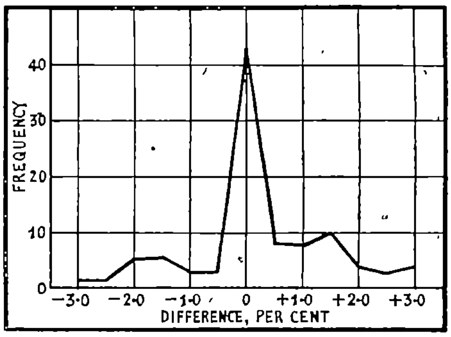

Fig. 1.—Difference in colour of blood in N/10 NaOH produced by heating for 5 minutes and by standing overnight at room temperature.

The effect of heating all specimens was then studied, 0.1 c.cm. of blood being added to 10 c.cm. of N/10 soda and the specimen divided. One-half of each test was placed in the boiling-water bath for exactly 5 minutes, cooled under the tap, and compared with the standard haematin solution. The other half was allowed to stand overnight and also compared with the standard. Fig. 1 is a distribution curve of 100 consecutive observations on 96 patients and 4 specimens of umbilical cord blood. No observation falls outside the limits of 3% of the same reading, 91% of cases are within 2%, and in 43% of cases the observations are identical. The mean overnight reading is 100.285 of the 5-minute reading, and the standard deviation is 1.72.

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[1] The methods of preparation and of iron analysis are published elsewhere (Delory, 1942).

A comparison was next made of a series of alkaline haematin values produced by 4–5-minute heating in sodium hydroxide with those developed by Wu's procedure—i.e., a 40-minute treatment of the blood with N/10 hydrochloric acid at room temperature followed by the addition of excess sodium hydroxide. Table III shows the close agreement of the two alkaline haematin methods, and the discrepancies between them and the acid haematin procedure.

TABLE III.—*Comparison of Haemoglobin Results by Different Haematin Methods. (Figures represent % of Haden Normal; Consecutive Routine Examinations.)*

Alkaline Haematin Methods		Acid Haematin Method	Alkaline Haematin Methods		Acid Haematin Method
Present Method*	Wu's Method†		Present Method*	Wu's Method†	
%	%	%	%	%	%
42	41	46	36	36	40
69	70	67	40	39	45
84	84	80	53	53	61
83	84	87	74	73	87
88	87	81	84	83	89
91	89	89	80	80	81
83	86	81	83	83	85
86	86	84	37	37	41
56	55	57	88	88	92
76	76	78	76	76	80
25	23	36	51	51	58
43	43	45	77	77	80
55	56	57	59	59	64
57	57	61	76	76	78
48	48	54	94	95	95
80	81	82	55	55	54
83	83	85	72	73	76
70	70	68	84	84	87
47	46	52	72	73	76
66	65	81	90	90	92
73	72	71	55	56	58
74	74	80	29	30	34
79	78	82	98	98	96
32	31	31			

* 0 05 c.cm. blood in 5 c.cm. N/10 NaOH, heated 5 minutes.

† 0·05 c.cm. blood in 4 c.cm. N/10 HCl, let stand 40 minutes, made alkaline with 1 c.cm. N/1 NaOH.

From these experiments it seems clear that the same final alkaline haematin colour is developed equally well either by treating the blood directly with soda and heating or allowing to stand at room temperature for many hours, or by an initial treatment to convert the haemoglobin into acid haematin followed by the addition of soda to render it alkaline.

To study the effect of inactive haemoglobin it is necessary to subject the sample to considerable manipulation with increased opportunity for introducing sampling errors. To reduce these as far as possible normal blood was lysed with water and filtered, the resulting solutions being much easier to handle than whole blood. Table IV indicates the steps taken to convert the haemoglobin into inactive forms, and also shows that they are quantitatively converted to alkaline haematin by heating for 5 minutes in the water-bath. This experiment confirms the finding of Wu, that the different forms of haemoglobin are quantitatively determined when estimated by the alkaline haematin method.

TABLE IV.—*Colour Produced by Different Forms of Haemoglobin when Estimated by the Alkaline Haematin Method*

Solution	Untreated	As COHb (gassed for 30 min.)	As Sulph-Hb (H_2S passed for 10 min)	As Met-Hb (Treated with Pot. Ferricyanide)
1	0·168	0·162	0·171	0·162
2	0·199	0·204	0 205	0·199
3	0·544	0·548	0·536	0·536
4	0·376	0·376	0·374	0 388
5	0·346	0·336	0·347	0·339

(Figures represent extinctions E, photo-electric colorimeter, Chance green light filter.)

Likewise, the addition of plasma either to the haemin standard or to tests prepared from blood had little or no effect. Plasma added in amount equal to the volume of blood taken—i.e., 0.05 c.cm. in 5 c.cm. of soda—caused no measurable change in many cases, and in others the change was of the order of 1% increase. The most pronounced effect observed was a 2% increase in optical density due to adding a turbid specimen of plasma.

Relation of Colours Produced from Haemin and from Haemoglobin in Sodium Hydroxide

From theoretical considerations it now seemed possible to equate solutions of alkaline haematin derived from haemin and from blood on the assumption that one milligramme of iron in the haemin standard would be equivalent to one milligramme of iron in the haemoglobin test. Attempts to apply this assumption to the clinical estimation of haemoglobin showed that bloods examined in this way yielded results by the alkaline haematin method which were higher than could be justified either by the clinical condition of the patient or by examination of the stained blood film. In a small series of hospital cases venous blood samples were analysed for haemoglobin by the alkaline haematin procedure and for oxygen capacity with the van Slyke manometric apparatus by Dr. J. McMichael. The results obtained by the haematin method were uniformly about 30% higher than the oxygen capacity—a far greater difference than could be accounted for by the presence of small amounts of inactive haemoglobin in the normal blood samples investigated.

TABLE V.—*Haemin Iron Equivalent of Oxygen Capacity*

Subject	Oxygen Capacity (c.cm./100 c.cm. Blood)	Fe eqv. (mg)	Fe found by Comparison with Haemin (mg.)	Found Fe as % of O_2 eqv. Fe
S (human) ..	11·94	29·8	39·5	132
N " ..	19·75	49·4	65·1	132
B " ..	18·27	45·7	55·6	122
N " ..	19 45	48 6	63 6	131
M " ..	19·8	49·5	63·6	128
T " ..	20·3	50·7	61·7	122
R " ..	19·9	49·7	63·6	128
D " ..	23·0	57·5	69·5	122
F " ..	22·2	55·5	68·5	123
Horse ..	20·1	50·2	63·5	127
				Average = 127

$$1 \text{ atom Fe } (56 \text{ g.}) \equiv 1 \text{ mol } O_2 \ (22{\cdot}4 \text{ L.})$$
$$1 \text{ mg. Fe} \equiv 0{\cdot}4 \text{ c.cm. } O_2$$

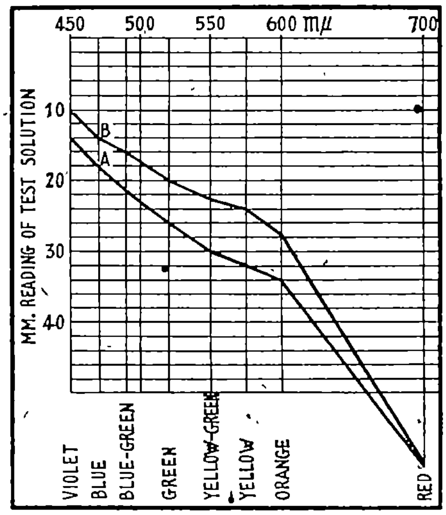

FIG. 2.—Light-absorption curves of haemin in sodium hydroxide (A) and of haemoglobin heated in sodium hydroxide (B); Ilford spectral filters, neutral grey screen, Duboscq colorimeter.

The colour of alkaline haematin derived from blood had been assumed to be identical with that derived from haemin, but these results suggested that this was not the case. Although the colours were similar to the unaided eye, and had the same broad band at 606 to 608 mμ when viewed in the Hartridge reversion spectroscope, they showed a slight dissimilarity in absorption in the red. Solutions derived from each source were examined in a colorimeter against a neutral grey screen, using a range of light filters covering the visual spectrum. The absorption curves are plotted from these data in Fig. 2, which indicates that the colours differ slightly in the red portion of the visual spectrum.

Several samples of human haemoglobin were then prepared by precipitation with alcohol as described by Delory (1942). By this method large yields of dried human haemoglobin were readily obtained in a semi-pure state. An iron analysis of quantities of about 1 g. was performed in duplicate on each sample. As in the case of haemin, solutions of alkaline haematin were prepared by dissolving the haemoglobin in N/10 soda. The extinction coefficient was measured and the absorption curve studied. This was found to agree with that derived from blood and to differ in the same way from that of haemin. The solutions were compared with solutions of haemin in N/10 soda and the ratio of colour intensity per mg. of iron in each solution calculated. In each case this ratio was found to be close to the mean of 1.32 for the five samples (Table VI).

TABLE VI.—*Colour of Various Haemoglobin Preparations*

Haemoglobin Preparation No.	% of Iron	Es*	Hb/Haemin Colour Ratio†
1 (human)	0·262	1·03	1 29
2 „	0·284	1 00	1·32
3 „	0·278	0·97	1·33
4 „	0·284	0·98	1·32
5 (ox)	0·249	1 00	1·33

* Es = specific extinction coefficients for 1 mg. haemoglobin Fe/100 c.cm. Photo-electric colorimeter, Chance green filter.

† Colour of haemoglobin solutions against a single haemin standard.

It appears, therefore, that although the brown colours produced in sodium hydroxide from blood and from crystalline haemin are seemingly the same on visual inspection and are similar over most of the visual spectrum, they are not in fact identical. There is a quantitative discrepancy of approximately 30% and a slight qualitative difference. The chemical reasons for the discrepancy are beyond the scope of this paper; suffice it to say that it can be adequately explained by the fact that the alkaline haematin solutions derived from haemoglobin and blood contain both haematin and globin, whereas that prepared from haemin contains only haematin and no globin. Haemin, then, cannot be used as a theoretical standard in the sense that four molecules of haemin should give the same colour as one molecule of haemoglobin. But it can be employed perfectly satisfactorily as an artificial standard. The colours produced by haemin and haemoglobin in soda are similar to the eye in any light,* and in green light they are easily and accurately matched and there is a constant ratio of colour intensity by whatever means the reading is made.

Methods for the Determination of Haemoglobin by the Alkaline Haematin Procedure

The brown colour of blood in sodium hydroxide solution is compared with that of a solution of crystalline haemin of known iron content.

Method 1.—0.05 c.cm. of blood is diluted to 5 c.cm. with N/10 NaOH, heated in a boiling-water bath for 4 to 5 minutes, cooled, and read against the haemin standard in a suitable colorimeter (Duboscq, photo-electric, etc.), using a green light filter.

Method 2 (Method of Wu; cf. Peters and van Slyke, 1932).—0.05 c.cm. of blood is treated with 4 c.cm. of N/10 HCl, left at room temperature for 40 minutes, and then diluted to 5 c.cm. with N/1 NaOH.

Standard.—The haemin-iron equivalents of the "100% normal" standards are shown in Table VII. An amount of haemin of known iron content, which is the equivalent of the desired standard, is accurately weighed and dissolved in 1 litre of N/10 NaOH. This solution should be preserved in a glass-stoppered bottle in a cool dark place. Kept under these conditions our standards have remained unaltered for 9 months.

Authorities differ as to the percentage of haemoglobin in blood which they regard as a normal figure. The three most commonly used are given in Table VII. There is an increasing body of evidence to show that Haldane's (1900) figure of 13.8 g. of haemoglobin is too low and that the Haden (1922) value of 15.6 g. per 100 c.cm. (20.9 c.cm. O_2) is a more normal figure (cf. Peters and van Slyke, 1932; Wardlaw, 1941). This is the figure we have used and which has seemed adequately to represent our normal healthy cases; it has given colour indices averaging unity for healthy persons and treated anaemias.

TABLE VII.—*Concentrations of "Normal" Blood Standards*

	Haldane	Haden	Sahli
g. haemoglobin/100 c.cm.	13·8	15·6	17·2
O_2 capacity (c.cm./100 c cm.)	18 5	20·9	23 0
mg. Fe/100 c.cm.	46 2	52 2	57 6
Alkaline haematin equivalents. mg. Fe/100 c cm * (i.e., haemoglobin Fe × $\frac{1.3}{100}$)	0·60	0·68	0·75
Pure haemin, 8·57% Fe (mg per litre)*	70·0	79·4	87·5

* Which give the same colour as blood diluted 1 in 100 in N/10 NaOH.

The alkaline haematin standard we use for routine is weaker than the "100%" standards. It contains an amount of haemin representing 0.45 mg. of iron. This solution matches any haemoglobin solution or blood containing 10.3 g. of haemoglobin per 100 c.cm. when treated with sodium hydroxide to give a dilution of 1 in 100. This standard was chosen because it is close to the average of the concentrations most often encountered in hospital practice. Its relation to the "normal blood" standards is shown in Table VIII. Haemin standards of "100% normal" may of course be used. The figures for these are given in Table VII. The method has now been in use for several months and has proved most satisfactory. Where many determinations are undertaken it is more rapid and more accurate than other methods we have used.

TABLE VIII—*Alkaline Haematin Standard for Routine Use with Duboscq and Photo-electric Colorimeters*

52.5 mg. of pure haemin (or an equivalent amount of other haemin of known Fe content) is dissolved in 1 litre of N/10 NaOH. This solution contains 0 45 mg. Fe/100 c.cm. and is equal in colour to:

75% of Haldane normal
66% of Haden „
60% of Sahli „

when blood is diluted 1 in 100 in NaOH

Approximate Methods

With the Lovibond Comparator.—Through the co-operation of Mr. G. S. Fawcett a Lovibond disk has been prepared to match the alkaline haematin colours. The values are spaced at 10% of the Haden normal—i.e., at differences of 1.56 g. haemoglobin per 100 c.cm. The blood is treated by either of the above procedures, the test-tube is placed in the Lovibond comparator, and the disk is rotated until a colour match is obtained. By careful comparison it is possible to gauge colours intermediate between those in the disk and hence to read the haemoglobin to within about 5%.

With the Hawksley Dilution Colorimeter.—The small dilution haemoglobinometer supplied by Messrs. Hawksley for the Sahli method is easily adapted by the substitution of the coloured glass standard by a tube of alkaline haematin solution (equal to 100% of normal—e.g., Haden). 0.02 c.cm. of blood is added to a little N/10 soda in a calibrated dilution-tube; the mixture is warmed until it is of a clear light-brown colour, and is then diluted by the dropwise addition of N/10 NaOH, with mixing, until a colour match is obtained. The percentage is read from the scale on the test-tube. If this method is employed care should be taken to ensure that the tubes used are properly calibrated and of the same diameter.

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* The slight qualitative difference in the colours may be apparent if they are viewed through too great a depth of solution Thus a "100%" blood and the standard will appear identical in 1/4-inch dilution-tubes, but the colours will appear slightly different in wide test-tubes. On the other hand more dilute solutions of haemin and haemoglobin appear identical even when viewed through wide tubes.

Summary and Conclusions

The haem-pigments circulating in the blood may be divided into an active fraction, reduced and oxyhaemoglobin, and an inactive fraction chiefly carboxyhaemoglobin and methaemoglobin. A satisfactory method for estimating haemoglobin should measure both fractions.

The Haldane and acid haematin methods may not measure total pigment with the degree of accuracy desirable. Commercial standards are often unreliable and may fade. The pyridine haemochromagen method is rejected because of the objectionable nature of the reagents employed.

Criteria of a satisfactory method are described. These include the measurement of total pigment, reasonable accuracy, simplicity, the use of non-toxic reagents, and some permanent easily reproducible standard.

The alkaline haematin method of Wu eliminates errors which arise in the acid haematin procedure due to lipids, the colloidal nature of acid haematin, and the presence of inactive haemoglobin. Alkaline haematin has the advantage of being a true solution and is easily prepared both from haemoglobin and from crystalline haemin. Haemin is easy to prepare in a pure state from haemoglobin, and its iron content may be estimated with accuracy. Thus it appeared to satisfy our criteria for a suitable standard, and was investigated for this purpose.

Sixteen samples of crystalline haemin were prepared from ox and human bloods and the iron content of each determined. Solutions of alkaline haematin were prepared from each sample. The specific extinction coefficients were found to agree closely. The intensity of colour was proportional to the concentration of haemin iron, and impurities failed to influence the colour.

Several forms of haemoglobin occur in normal blood, some of which are resistant to alkali denaturation. Whatever the proportion of alkali-resistant haemoglobin in a blood sample, if a 1 in 100 dilution in decinormal soda is prepared and placed in a boiling-water bath for five minutes all the haemoglobin is converted into alkaline haematin.

Similar treatment converts all inactive forms of haemoglobin into alkaline haematin. The colour developed is not significantly influenced by the amount of lipoid or plasma in the sample.

Determinations of haemoglobin in blood samples based on the assumption that 1 mg. haemin iron in the standard was equivalent to 1 mg. haemoglobin iron in the test yielded results uniformly about 30% higher than determinations based on the oxygen-carrying power of the same sample. It was then found that solutions prepared from haemin and blood gave colours whose absorption curves differed slightly in the red portion of the spectrum.

Samples of human and ox haemoglobin were prepared and their iron content determined. Solutions of alkaline haematin were prepared from each sample and their specific extinction coefficients and absorption curves determined. The curves derived from the haemoglobin solutions were identical with that from blood, and the colour produced was 30% higher than would be anticipated from the iron content, when compared with haemin standards.

Thus haemin is not a theoretical standard in the sense that four molecules of haemin should give the same colour as one molecule of haemoglobin; but it can be employed satisfactorily as an artificial standard. The colours of the solutions are almost identical in the concentrations used for the test, and are matched with ease and accuracy. The standard appears to be unchanged during several months.

Details of methods for the estimation of total haemoglobin using haemin as a standard are given, together with instructions for the preparation of standard solutions equivalent to 100% of the Haldane, Sahli, and Haden scales.

We have employed this method for many months and have found it to give excellent results. Where many determinations are made daily it is quicker and more reliable than other methods we have used.

Our thanks are due to Dr. R. G. Macfarlane of Oxford and Dr. J. M. Peterson of Cardiff, who have carried out independent investigations of the alkaline haematin method, for helpful discussions and advice; to Mr. G. E. Delory for his invaluable assistance with the iron analyses; to Dr. J. McMichael for the estimations of O_2 capacity; to Mr. G. L. Widd for his assistance in comparing the alkaline and acid haematin methods; and to Dr. G. A. D. Haslewood for valuable advice.

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LOUSE-BORNE TYPHUS FEVER

BY

Capt. C. DONALD, R.A.M.C.

AND

Capt. P. B. BARKER, R.A.M.C.

(*From a Prison Camp in Germany*)

The articles on this subject that appeared in the *British Medical Journal* of Dec. 6 and 20, 1941, have induced us to record our observations on a series of 21 cases occurring in a prison camp in Germany, of which 3 (14.28%) were fatal; 16 (76.18%) arose in men employed in handling clothing at the camp disinfector. In only 2 cases was it possible to determine the incubation period, and this was in accordance with the usual period of 12 to 14 days.

Onset

The illness was in some cases ushered in by severe frontal headaches, shivering, occasionally epistaxis, soreness of the throat, and thirst, followed by a general feverish feeling, like influenza. In milder cases, on the other hand, the patients felt quite well during the first 3 or 4 days in spite of their temperature being in the region of 102° F.

One patient gave a history of an attack of influenza for one day. He felt better the next day, but was cold and shivery; on the fourth day he suddenly developed acute abdominal pain, vomited twice, and was admitted to hospital as a case of acute appendicitis. His temperature was 102.2°, and his pulse 100; his urine contained nothing abnormal. A laparotomy was performed and the next morning his temperature and pulse fell to normal, but the same evening they rose to 102.9° and 112 per minute respectively, and remained about this level. On the third day after his operation the rash appeared—i.e., 6 days after his initial attack of influenza.

General Appearance immediately before Occurrence of Rash.—The conjunctival vessels were injected and the eyes assumed a heavy appearance reminiscent of measles without photophobia and lacrimation. The face was flushed and a dusky tinge or distinct cyanosis was present in the skin. The tongue was dry and thickly coated with white or brownish-white fur. Sordes of the mouth was very marked until frequent cleansing was adopted. The facial expression was worried, with a continual frown which was aggravated by questioning or outside interference. Speech was sluggish, and the patients appeared to have difficulty in expressing themselves. In some cases there was delirium immediately before the appearance of the rash, and all became increasingly drowsy. Acute dyspnoea usually occurred towards the end of this phase, and was suggestive of bronchopneumonia with only a few crepitations in the lungs.

The Rash: Character and Distribution

The rash appeared on the average on the sixth day; the shortest period was 5 days and the longest 10. It consisted of pink papulo-macules which later became bluish-red and slaty-blue in colour. It first appeared on the shoulder areas, back and front, especially in the neighbourhood of the axillary folds, on the upper abdomen, and on the flanks, and later it showed on the rest of the trunk and the limbs. It was especially prominent on the forearms, the backs of the hands, and the dorsal surfaces of the feet, and was to be clearly seen on the thenar eminences of the hands and on the medial aspects of the soles of the feet. In 4 (19%) cases the rash appeared on the frontal and temporal aspects of the face. As the macules started to fade subcuticular mottling made its appearance and persisted for about 4 weeks. In 9 (42.8%) cases the rash became petechial 2 or 3 days after the appearance of the macules, and involved the same areas. In one case the petechiae were extremely profuse and generalized; the mucous membrane of the mouth was involved and there was a large subconjunctival haemorrhage. In some cases the petechiae became confluent, over the pressure areas of the shoulders, heels, and sacrum, to form areas of ecchymosis. Later, in spite of precautions, some of these areas formed deep-seated gangrenous bed-sores which healed very slowly (one remained incompletely healed after 6 months). In cases in which the petechial rash appeared it was noticed that the illness was much more severe but not appreciably altered in duration.

Fine branny desquamation started towards the end of the third week from all areas in which the rash appeared, and included the face only in cases with a facial rash. Coarse desquamation occurred from the soles of the feet at this time. The desquamation lasted for about 2 weeks. In 5 (23.8%) cases there was no rash, and in those cases the illness was much milder.

The Fever

The fever proper lasted on an average 17 days. It was of a continuous type, between 100.4° and 103.2° F. (axillary). The maximum temperature recorded was 104.7°. The pulse rate was proportionate to the temperature on the whole, but at times it was disproportionately high. The pulse was easily compressible throughout. The respiration rate was markedly increased, and generally fell a day or two before lysis occurred. The fever tended to end by lysis over 3 to 4 days.

In 4 cases a sudden crisis followed by a rise of temperature in 24 hours, which was sustained over 3 to 4 days, did not prove fatal.

Observation of Patients during Febrile Stage.—During the first week of the fever the drowsy-stuporous condition increased daily. It became more difficult to rouse the patients; they were very restless, slept little, and their resentment of interference of any kind became more marked. Speech became more hesitant and incoherent; low muttering delirious bouts were frequent, and towards the end of the week the patients were semi-comatose. The duskiness and cyanosis of the skin increased in intensity and the respiration became more laboured. The tongue remained dry and furred, and it was difficult to get patients to drink although they complained of thirst. In the second week they passed into a state of coma vigil, in which they lay with open eyes, taking no notice of their surroundings although they still resented interference. At this phase the lips and the tongue were very tremulous, and the latter was difficult to protrude, this being done in a very slow jerky manner. In some cases the tongue appeared to be diminished in size and in 2 cases it was definitely shrivelled and almost black. The patients were becoming progressively more prostrate and their mental state was seldom lucid. Towards the end of the second week they seemed brighter, the tongue became moist, began to clean from the tip and edges, and was protruded more easily and less jerkily. The cyanotic tinge started to disappear and the respiration rate began to fall. The patients then had short periods of mental clarity during which they would ask to micturate, whereas they had previously been incontinent. During the first half of the third week the temperature and pulse rate fell by lysis and there was a marked day-to-day improvement in their condition. There was no abrupt passage from the stage of nervous excitement to that of defervescence. After the defervescence the patients were very emotional; they continued to have bouts of delirium and transient delusions, and were disinterested in and unnoticing of their surroundings and fellow patients until convalescence was well established.

Systemic Manifestations

Alimentary System.—Only in one case was the rash seen on the buccal mucous membrane, and there were no cases of parotitis. The fauces were slightly injected at the onset of the illness. Nausea was frequently complained of early, and vomiting was met with occasionally. Constipation was the general rule, but in 3 cases diarrhoea occurred at the end of the first week. Faecal incontinence was not uncommon during the second week. Abdominal pain occurred, and was so severe in one case that a laparotomy was performed (see above).

In 4 other cases suprapubic pain was associated with difficulty and pain on passing urine.

Respiratory System.—Marked dyspnoea with stertorous breathing and employment of the alae nasi occurred in all cases, and there was a short period of Cheyne-Stokes respiration just before the defervescence. There were 2 cases very suggestive of bronchopneumonia, but the only signs elicited in the others were a few isolated crepitations.

Cardiovascular System.—The pulse was easily compressible throughout the febrile stage, and one case exhibited pulsus paradoxus. The heart sounds became weaker as prostration became more marked, but there was no cardiac enlargement, no murmurs were detected, and no oedema occurred. The blood pressure was not influenced except in one patient, who developed a hypertension of between 180/90 and 190/110 during early convalescence; this still persisted after 6 months with clear urine, but is now resolving.

Eyes.—All cases showed the marked injection of the conjunctival vessels and the heavy appearance already described. Subconjunctival haemorrhages were seen in 2 cases, and one of them showed a small superficial retinal haemorrhage. During convalescence one patient complained of "spots in front of his eyes," and examination revealed recent translucent opacities of the vitreous. These were still present after 6 months. One patient complained of blurring of vision, and definite swelling of the disk was found on both sides. He subsequently made a complete recovery. Prior to defervescence in some cases, the pupils became constricted, but not to pin-point proportions, and showed sluggish reaction to light and accommodation. Several of the patients complained of diplopia, and transient squinting was noticed.

Ears.—Transient deafness was often experienced. In one case severe tinnitus and deafness persisted until 2 weeks after defervescence and then gradually cleared up. In another case severe vertigo, with the patient falling to the left, occurred, and still persists after 6 months.

Central Nervous System.—The mental condition has already been described, but again it must be stressed that the improvement with defervescence was not so dramatic as one would expect from the textbook descriptions. Cerebral irritation was indicated by muscular twitching of varying degree in 16 cases (76%). This variation extended from fine fibrillary tremor of the facial muscles to gross twitching of phalanges, wrist, and ankle-joints, and groups of muscles were observed to contract. It was noticed that the more extensive the petechial change the more marked was the state of nervous excitement.

One patient on the sixth day of illness began to twitch in the muscles of the face and hands and to complain of double vision; by the tenth day he had a mask-like facies, and movement of all muscles was slow, death occurring on the fifteenth day. Another patient developed facial tremor during the second week of the fever; and 3 days before defervescence, which occurred on the twenty-first day, he developed the torpid facies and gross twitching of phalanges, wrist, and ankles; this was almost choreic in type, and was not a peripheral tetany. Prowazeki's and Chvostek's tests were negative, and venous congestion had no effect. There was a pseudo-spasticity of the limbs, the deep reflexes were never more than brisk, the plantars were flexor, and there was no Kernig's sign. The nervous manifestations reached their maximum just before defervescence and passed off during early convalescence, when the patient complained of blurring of vision and was found to have bilateral disk swelling. In his case ulnar neuritis occurred early in the febrile stage. He complained of severe pain in the little and ring fingers of the right hand, and this settled down to a dull ache and numb feeling; there was no muscle-wasting, and only the loss of the sense of light touch over the little finger, the ulnar half of the ring finger, and the adjacent part of the palm. This still persists after 6 months.

Fine tremor of the fingers was present in all cases during the febrile stage and passed off during early convalescence, when severe neuralgic pains in the feet and legs were complained of.

C.S.F.—Lumbar puncture was not done as a routine but only in those cases with marked cerebral irritation: in all except one case the findings were normal. In the case already described with torpor, Parkinsonism, and disk swelling, the day before defervescence the fluid was clear, and under pressure of 100 c.mm. There were 261 cells per c.mm.—lymphocytes 74%, polymorphs 25%, endothelial cells 1%—and an abnormal increase in globulin.

Genito-urinary System.—All cases had an initial oliguria followed by incontinence. Four patients at the end of the first week, and the others after the defervescence, complained of pain on micturition, having to strain, and a constant desire to micturate without being able to do so. All cases showed albuminuria, red blood cells, epithelial cells, and cellular casts in the urine, which cleared during convalescence; and during the periods of dysuria Gram-negative motile bacilli were found in non-catheter specimens.

Blood Examination.—There was an initial polycythaemia, which may be attributed to the early low fluid intake, to the fluid lost through forceful respiration, and to that lost secondarily by sweating. The haemoglobin percentage and red blood cells fell by from 20 to 30% and from 1½ to 2 millions respectively after the appearance of the petechial rash. In cases with no petechial rash there was not this proportionate fall. The Hb and red cells were quickly made up during convalescence. The white cells varied considerably; the maximum count was 30,200, two were in the region of 18,000, and of the others the highest was 13,000 and the lowest 4,400. Neutrophils constituted 60 to 83% of the count. The granules in the polymorphs appeared to be coarser and more highly stained than the normal. In the 2 fatal cases the counts were R.B.C. 4,600,000, Hb 72%, W.B.C. 4,400; and R.B.C. 4,860,000, Hb 78%, W.B.C. 6,400—taken on the fifth and seventh days respectively. Small extracellular coccal and cocco-bacillary bodies, occurring in pairs and in clusters, violet in Giemsa-stained specimens, were found in a number of the films. These were presumed to be Rickettsia bodies, and were found in one case 6 months after the onset of the illness.

Blood Sedimentation Rate (200-mm. tube Westergren, one hour).—In one case the B.S.R. readings were: 35 two days before rash, 129 three days before defervescence, 83 twelve days after defervescence, 51 nineteen days after defervescence, and 7 three weeks later. In a case with persistent tachycardia the figures were: 2½ months 91, 3 months 94, 3½ months 20, 4 months 38, and 4½ months 22. In the other cases the B.S.R. was not done frequently, but was in single figures in the second week of convalescence.

Laboratory Findings.—The Weil-Felix reaction was positive in all cases tested after the seventh day of fever; in those done on or before the fifth day a negative return was obtained. It was noticed that in the cases in which no rash appeared the titre was lower (1:80 to 1:800) than in petechial cases (1:200 to 1:6400). Successive titre readings could not be made a basis for estimating the severity of the illness, but a rising titre in one case indicated more severe prostration. The Wassermann reaction was frequently positive, but not invariably so, and this test could not be done often enough to be of value. It always became negative after the defervescence. Blood, stool, and urine culture results were negative, but as the specimens were dispatched a considerable distance they were of no value for culturing.

Post-mortem Findings.—In one case ending fatally on the fifteenth day necropsy revealed the cause of death as haemorrhagic bronchopneumonia. The only other significant findings were a marked diminution in body and mesenteric fat, the occurrence of numerous subpleural haemorrhages, and a vivid scarlet coloration in the left lung. The pons and medulla were sent for section, and the translated German report read:

Pieces of Brain Stem.—There are numerous perivascular nodules of polymorphous glial cells in all parts of the brain stem and in the cerebellar cortex. There are changes in the ganglion cells (chromatolysis) and exuberant growth of red cells. Isolated annular perivascular infiltration of lymphocytes and very small haemorrhages. The meninges are infiltrated with lymphocytes, plasma cells, and macrophages. Signs of brain oedema. *Diagnosis*: Typhus meningo-encephalitis.

The histological report suggests a close association with encephalitis.

Treatment Given

Sulphonamides, sulphapyridine, and the ordinary antipyretics were useless. Neither atebrin nor hexamine had any effect on the course of the disease.

The main part of the treatment consisted in giving fluids with glucose *ad lib.*, and when the patient would not, or could not, take them by mouth they were supplemented by the rectal or intravenous route. By this method up to 5 or 6 litres could be given in 24 hours. When prostration was most severe a glucose-saline with 0.00025 g. of strophanthin intravenously resulted in marked improvement. When there was severe cerebral irritation lumbar puncture resulted in an amelioration of symptoms. In one case 50 c.cm. of serum from a convalescent case was injected intramuscularly. The patient improved considerably, but as he had had an intravenous saline and also a lumbar puncture the same day the improvement could not be attributed to any one factor. Cardiac stimulants were given by mouth during the febrile and early convalescent stages. Luminal and scopolamine–eucodal–ephetonine (omnopon–scopolamine) were effective in controlling the acute delirium and insomnia. Tepid sponging was most effective in relieving mental and physical distress. Oral hygiene and care of the skin were insisted on.

As can be seen, the essential part of the treatment consisted of good nursing.

The complications arising consisted of bed-sores, disk swelling (transient), lung abscess (fatal), partial atelectasis, persistent vertigo, persistent ulnar neuritis, and persistent hypertension.

Diagnosis

The problem of diagnosis is an urgent one during the initial phase and in the milder type of case in which there may be no rash. The differential diagnosis has to be made from, for example, influenza, bronchopneumonia, tonsillitis, acute nephritis, enteric fever, meningitis, acute abdomen, acute encephalitis.

Aids to diagnosis are: (1) Occupation. (2) Presence of lice. (3) Severe frontal headache and fever, with failure to respond to ordinary antipyretics. (4) Typical facies with heavy injected eyes. (5) Acute dyspnoea with disproportionate signs. (6) Absence of neck rigidity. (7) Blood picture: polycythaemia with leucocytosis in which the granules are coarser than normal (in enteric there is usually a relative lymphocytosis). (8) The rash, when and if it does appear, is more profuse than in enteric fever. (9) The Weil-Felix test is the deciding factor, and is seldom positive before the appearance of the rash.

Summary

The principal points of interest in this series of 21 cases are:

The occupational association of the "epidemic."

The occurrence of the rash on the face in 19% of cases.

The blood picture: the main features being: (*a*) the initial polycythaemia,[*] (*b*) the fall in haemoglobin and red cells after the appearance of the petechial rash, (*c*) the occurrence of ? Rickettsia bodies, (*d*) the coarseness of the granules in the polymorphs.

The close similarity between typhus fever and epidemic encephalitis both clinically and pathologically.

The urinary symptoms and findings.

We owe our thanks to Major D. L. Charters, R.A.M.C., ophthalmologist and senior British medical officer, and to Major W. M. Macleod, R.A.M.C., medical specialist, for their helpful advice.

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MANAGEMENT OF RHEUMATIC DISEASE IN THE FORCES

BY

OSWALD SAVAGE, M.R.C.P.
Acting Lieut.-Colonel, R.A.M.C.

That the problem of rheumatic disease in the Forces is a considerable one is shown by the fact that out of 2,727 cases seen as out-patients at two military hospitals during the year ended May 1, 1942, 307 were referred because of rheumatism. That is, 1 case out of every 9 was sent up for advice on this account. Just as in peacetime this group of diseases causes great loss of industrial working hours, so, in wartime, rheumatism, though often not severe, interrupts training and disorganizes routine.

It may be of interest to analyse the various groups of cases seen and give a brief account of the treatment adopted and the method of disposal followed. This last is of importance to Service medical officers. Table I summarizes the numbers of each group of rheumatic disease and the percentages admitted to hospital either for further investigation or for treatment.

TABLE I.—*Summary of Cases of Rheumatic Disease in 12 Months at a Military Hospital*

Disease	No.	% of Total Rheumatic Cases	No. Admitted	% of Disease Admitted
Fibrositis	141	52·22	19	13 47
Lumbar	40	14·80	14	35
Trapezial	30	11·10	4	13
Gluteal	26	9 62	—	—
Generalized	18	6 66	—	—
Shoulder girdle	14	5·18	—	—
Intercostal	13	4 81	1	7
Postural backache	40	14 80	12	30
Sciatica	24	8·88	24	100
Osteo-arthritis	24	8 88	7	29
Ankylosing spondylitis ..	14	5·18	12	85
Rheumatoid arthritis ..	5	1·85	3	60
Osteochondritis dissecans ..	5	1·85	1	20
Rheumatic fever	4	1·48	4	100
Infective arthritis	4	1·48	3	75
Gonococcal arthritis	3	1·11	3	100
Sacro-iliac strain	3	1·11	3	100
Spondylolisthesis	1	0·37	1	100
Myositis ossificans	1	0·37	1	100
Gout	1	0 37	1	100
Total	270	100	94	

In 37 cases it was found on examination that there was no evidence of any rheumatic condition. These men were complaining of muscular stiffness after exercise and had labelled themselves "rheumatic" or "arthritic" quite unjustifiably; this diagnosis had been accepted by the unit M.O. Actually the pains were due to the normal physiological response to unaccustomed use of particular muscles. Such men were at an early stage of their training, and it was advised that they should be returned to duty and to normal P.T.

Of the remaining 270 cases 94 were admitted to hospital. The grounds for admission to hospital of men in the Forces suffering from rheumatic disease while they are undergoing training differ widely from the management of civilians in peacetime. Civilians should be treated as out-patients whenever possible so that they can continue to earn a living and avoid the economic anxiety which accompanies hospitalization. With patients in the Services, however, the main purpose must be to render them fit for full duty in as short a period as possible. A soldier with rheumatic disease is of no use in his unit and will usually be stationed too far from a physiotherapy department to be able to attend for daily treatment. In many cases the most rapid way to return the man to full duties is to admit him to hospital, where intensive treatment can be given. Often after a short period in hospital these men are transferred to a convalescent depot where they can continue treatment under P.T. instructors, with the supervision of the Command specialist in physical medicine.

Owing to the type of rheumatic disease encountered in the Services a large proportion can be completely cured, while in the more chronic cases treatment will yield sufficient improvement for the man to be capable of a high degree of efficiency, though in a lower medical category.

Table II summarizes the cases admitted to hospital, their numbers, age, duration in hospital, and disposal.

TABLE II.—*In-patients with Rheumatic Disease during 12 Months*

Disease	No.	Average Age	Average No. of Days in Hospital	Category E
Sciatica	24	29	21	1
Lumbar fibrositis	14	31	16	—
Ankylosing spondylitis ..	12	28	25	*
Postural backache	12	28	16	—
Osteo-arthritis	7	40	11	7
Trapezial fibrositis	4	36	15	—
Rheumatic fever	4	25	63	—
Sacro-iliac strain	3	39	7	—
Gonococcal arthritis	3	33	18	*
Rheumatoid arthritis ..	3	36	38	*
Infective arthritis	3	23	29	—
Intercostal fibrositis	1	37	17	—
Osteochondritis dissecans ..	1	27	10	*
Spondylolisthesis	1	24	19	*
Myositis ossificans	1	37	30	1
Gout	1	26	31	*
Total	94			

* Transferred to special E.M.S. unit.

Fibrositis

This formed by far the largest group, being over 52% of the total number of rheumatic cases. The term "fibrositis" as it is usually employed means a non-articular involvement of the soft tissues, most commonly the sheaths of the muscles, the fascial layers, and other fibrous supporting tissues of the locomotor system. No direct evidence of pathology was obtained, but the changes were considered similar to those described by Stockman (1940)—that is, swelling and oedema of the affected areas with proliferation of fibroblasts and formation of new blood vessels. Later the connective-tissue cells proliferate and the area becomes more fibrous and tougher. The aetiology in nearly all the cases was thought to be traumatic, due to small muscle tears taking place during the course of training. In some cases previous industrial fibrositis had been exacerbated by training. Nearly all these men were ex-miners and were recommended for discharge on account of the strong probability of multiple recurrences. Any evidence of local sepsis was rare. In only 7 cases out of the 141, or 5%, was a focus found which might conceivably have played a part in the aetiology. Cases of fibrositis should not as a rule be admitted to hospital unless they require manipulation or intensive treatment. They should be capable of being rendered symptom-free by short periods of physiotherapy, and Army life with its regulated activities and adequate food is often good treatment for them. Lowering the man's medical category was delayed until treatment had been tried. In the majority of cases it was found to be unnecessary.

Lumbar Fibrositis (40 cases).—Fourteen of these had acute lumbago and were admitted to hospital. They were treated by strapping the back muscles longitudinally and by heat. Within a few days spinal movement was encouraged by the masseuse, and they were allowed up. At the end of a week they attended the exercise class and were given work to do in the hospital. In all cases they were returned to their units for full duty (average time 16 days). Of the men treated as out-patients the majority had minor recurrences of fibrositis which had started in civilian life. These men complained of backache intensified by exercise. On examination there was restriction of full spinal movement, with often a localized area of tenderness in the lower erector spinae muscles. Initial treatment in many cases was by local infiltration of 2% procaine. This was followed by daily heat and exercises. As soon as possible these men were put in an exercise class.

Trapezial Fibrositis (30 cases).—These men complained either of post-occipital pain and headache or of stiffness across the shoulders accentuated by wearing equipment and by drill. In 4 cases admitted for treatment the condition was of long standing and there was muscle-wasting. A localized area of tenderness could usually be palpated on the muscle sheath and the pains thus reproduced. This area was infiltrated with 2%

procaine, followed in some cases with proctocaine. Daily exercises were given afterwards.

Gluteal Fibrositis (26 cases).—It is difficult to differentiate these cases from the sciatic group as they both form part of the sciatic syndrome. They were none of them severe, and were all treated as out-patients. The complaint was of pain radiating from the buttock. On examination this could be reproduced by palpation of a localized or diffuse area, most frequently in the origin of the gluteus maximus or medius. Where localized, such an area was infiltrated with an anaesthetic. All cases were treated with heat and exercises, active and passive.

Shoulder-girdle Fibrositis (14 cases).—The symptom here was of pain radiating from the shoulder down the outer side of the arm, often to the fingers, with some pain on full movement of the joint. Deltoid wasting was present in a few. It was considered that the lesion in these cases was in the region of the subacromial bursa: either that the walls of the bursa itself had become adherent or that the bursa was stuck to the overlying deltoid or supraspinatus muscle. Joint change or calcification of the supraspinatus tendon was excluded in each case by radiography. These men were treated by local anaesthetic injected into the region of the bursa. This was followed by active exercises. In the majority one injection was sufficient.

Postural Backache; Sciatica; Osteo-arthritis

Postural Backache (40 cases).—This is a relatively common condition. During the early weeks of training the men report sick with backache. They have usually taken no exercise for some years, have been in light occupations, and are of poor physique. The types of posture have been recently described by Howitt and Wesson (1942): (1) forward slump with down-tilted pelvis, lordosis, kyphosis, and the head carried forwards; (2) sway back with the weight carried on the heels, pelvis horizontal, and a long lumbo-thoracic kyphosis. Spinal movement may be restricted by pain and muscle spasm. These men were all treated by remedial exercises. Those not admitted were recommended to be sent to the Army physical development centre. In 12 cases the overlying muscle spasm was so severe that the men were unable to work and were admitted to hospital. Spinal manipulation under anaesthesia was carried out and they were given remedial exercises. As soon as possible they were transferred to a convalescent depot under the Command specialist in physical medicine. These cases are in the main capable of much improvement, and if seen at an early stage can be cured. Howitt and Wesson (1942) report that 65% can be upgraded and that 50% reach category A1. If these men remain untreated they will become chronic attenders at sick parade, and it is important that this condition should be recognized as a clinical entity occurring not uncommonly in the Army to-day.

Sciatica (24 cases, all admitted to hospital).—Cases of sciatica occurring in units should be admitted to hospital as soon as possible. They need full neurological investigation and often the opinion of an orthopaedic surgeon is called for. Even where the condition runs a short course with steady improvement, full bed rest, trained nursing, and splinting are required. Physiotherapy may be necessary in the later stages. C.S.F. examination was carried out in every case where improvement was not rapid. In 5 cases it was considered that there was an intervertebral disk lesion. They were transferred to an E.M.S. neurological unit for further examination; in 3 a disk lesion was thought unlikely, and in the other 2 manipulation was performed with relief of symptoms, though the possibility of a prolapsed disk remained. In 6 cases the sciatic syndrome was regarded as due to a severe gluteal fibrositis. After a period of rest, infiltration with local anaesthetic was carried out and followed by physiotherapy. In 3 cases sciatica of long standing had proved resistant to physiotherapy elsewhere. Manipulation was followed by restoration of full function. The remaining 10 cases made slow but steady progress. They were treated by rest, splinting, and physiotherapy. When fit they were transferred to a convalescent depot for further exercises.

Osteo-arthritis (24 cases).—The localities affected were: spine 9, hips 8, knees 3, ankle 2, shoulder 1, wrist 1. In all these there was radiological evidence of joint disorganization with osteophyte formation. The average age was 40, which may be considered low, but the younger patients had a history of either previous joint diseases—e.g., Perthes's disease—a single severe injury, or multiple microtraumata due to industrial conditions. Most of the spinal cases were in ex-miners, who were all discharged from the Service.

Other Conditions

Ankylosing Spondylitis (*Marie-Strümpell Disease*): 14 cases. —This is a large proportion for a disease which is counted a rarity. It occurs almost exclusively in young men, and therefore in the age group which was being examined; but, even so, it would appear from this small series that it may be a more common cause of backache than is generally recognized. Twelve of the cases were at an early stage with symptoms of under two years' duration—bilateral sacro-iliac changes in the radiograph, with no calcification of the spinal ligaments. They all had raised sedimentation rates, indicating activity. For example, a private aged 21 had played Rugby football the previous winter. For the past 6 months he had had increasing attacks of backache accentuated by long standing. He had been awakened at night by the pain. In the early stages massage gave relief. Examination produced the following information: height 6 ft. 5 in., back held rigid, lumbar curve flattened, all spinal movement restricted by pain, chest expansion only 1½ in., pain on flexion of right hip; otherwise a healthy man. Radiographs revealed bilateral erosion of the sacro-iliac joints. B.S.R. 30 mm. (Westergren). These men were transferred either to orthopaedic units in the E.M.S. or to spa hospitals. The two cases not admitted were of long standing. Radiographs showed a "bamboo spine," with calcification of the spinal ligaments and ankylosis of the sacro-iliac joints in each case. They were recommended for discharge from the Army.

Rheumatoid Arthritis (5 cases).—This is an uncommon disease in the Army. Three of the cases were in an active phase and were sent on to a spa for further treatment. The other two were inactive and had residual deformity of the hands and wrists; these men were retained in a lower category.

Osteochondritis Dissecans of the Spine (*Scheuermann's Disease*): 5 cases.—These men complained of backache. There was limitation of spinal movement in each case, and radiography showed typical areas of decalcification of the vertebral bodies (Schmorl's nodes). They were referred to an orthopaedic surgeon.

Rheumatic Fever (4 cases).—The average age, 25 years, of this small group is high and in each instance the attack was a primary one. All were seen at an early stage and had migratory pains, swelling and redness of the joints, with fever, tachycardia, and a high sedimentation rate. They were treated with complete bed rest until the B.S.R. returned to normal (average 63 days). When convalescent they were sent to auxiliary hospitals, being returned for check-up before going on to convalescent depots. No demonstrable cardiac complications occurred in any case.

Non-specific Infective Arthritis (4 cases).—In these men joint pain and moderate effusion were associated with a focus of infection. In 3 this was septic tonsils and in the other a dental abscess. The sedimentation rate in each case was normal. The joints subsided rapidly with rest, and the focus was removed surgically later. In one case there was a short relapse after tonsillectomy.

Gonococcal Arthritis (3 cases).—Two of these cases were early, with urethral discharge, and were transferred. The third had a history of recurrent arthritis of the ankles for over 14 years. The first attack was concurrent with gonorrhoea and there had been two reinfections since. A prostatic smear was negative. Treatment was by fever therapy, with three bouts up to 105° F. at 48-hour intervals, produced by intravenous T.A.B. The clinical result was excellent and the man was returned to duty.

Sacro-iliac Strain (3 cases).—All were traumatic in origin. The strain in each case resulted from a sudden effort to recover balance. For example, Pte. B., 5 days previously, had jumped on to a piece of wood which skidded. He made a great effort to regain his balance, and "felt something go" in the right sacro-iliac region. The pain forced him to his knees, and after walking for 10 minutes he had to go to bed. Examination revealed pain on coughing and turning, spinal flexion limited by pain, and pelvis tilted up on the right side with scoliosis above. Lasègue's sign was present on the right side at 60 degrees, with pain in the right sacro-iliac region, and there was tenderness over the sacro-iliac joint. Radiographs disclosed no bony change. Treatment: manipulation under anaesthesia, and exercises started at once; two days later freedom from pain with full movement. All the cases were treated similarly, and each patient was returned to duty within 10 days.

Summary

All cases of rheumatism sent up to a military hospital during a year are analysed.

A brief account of their treatment and disposal is given.

The great majority of soldiers with rheumatic disease can be returned to duty as useful men.

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PSYCHOGENIC ILLNESS IN REGIMENTAL PRACTICE

BY

WILFRID L. JONES, M.B., B.S.
Captain, R.A.M.C.

This account is based on 42 cases seen during a period of twelve months. The small number does not admit of any far-reaching conclusions being drawn, but it is hoped that the observations may be of interest in providing another view of psychogenic illness in the Army. The series differs from those described by Sutherland (1941) and Hadfield (1942) in that not all the cases were admitted to hospital or seen by the psychiatrist, and consequently the investigations were not so complete as theirs.

Owing to the small numbers a broad classification has been followed and percentages are not given. The series consisted of:

Psychoneuroses	Anxiety state	19
	Hysteria	21
Psychosis		1
Psychopathic personality		1

Seven cases of anxiety state and 9 of hysteria were considered to be mild reactions. The psychotic patient had endogenous depression, and the patient of psychopathic personality showed temperamental instability of the cycloid type.

Clinical Material

The cases were seen at a medical inspection room serving a large R.A.S.C. unit, one of Royal Engineers, and a detachment of the Pioneer Corps. Thus none were front-line troops. As the units varied in size, composition, and periods of attendance during the twelve months no estimate can be made of the frequency of psychogenic cases. However, it may be mentioned that in a draft of unselected recruits direct from civilian life, consisting of 19 of the 1921 class and 3 of the 1908 class, there were 2 cases of anxiety state, 1 in each age group. In a draft of 50 men of medical category below A2 there were 1 psychosis, 1 anxiety state, and 1 hysteria. Another man, not included in this series, was a stable mental defective. Most of these had had one or more transfers between arms of the Service, and they were not a normal group, being of low medical category. Also the figures are too small to be statistically valid.

The station was a market town in the South of England. No enemy action was experienced in the area during the period under review and the rest of the country was comparatively raid-free. The R.E. unit had been on bomb-disposal work during the winter of 1940-1, but had had no casualties. In no unit was the work exceptionally arduous or highly technical. The billets were satisfactory; leave was taken regularly; and the sick rate, a good index of conditions, was always low, being frequently under 1%.

Age.—The distribution of cases according to age groups is as follows:

Age Group.	20–30	30–40	40–50	50+	Total
Anxiety state	12	5	—	2	19
Hysteria	16	4	1	—	21
Psychosis	—	—	1	—	1
Psychopathic personality	—	1	—	—	1
Total	28	10	2	2	42
Normal	81	18	1	—	100

The "normal" group are the first 100 on the nominal roll of the largest unit attending. The 2 patients over 50 years of age belonged to the Pioneer Corps.

Rank.—Among those with anxiety states were 2 corporals, 1 of whom reverted to private on account of his symptoms, and 2 lance-corporals. In the group of hysterias 1 patient had held a lance stripe for several months before losing it. Only in the one case were the responsibilities of non-commissioned rank considered to play a part in the illness. The other N.C.O. patients were reported to be satisfactory in carrying out their duties.

Previous Service.—The 2 patients over 50 had served in the war of 1914-18. Neither admitted to having then had "shell shock" or D.A.H. or other psychogenic illness. Four had had previous Army service in peacetime. One with an anxiety state was invalided in 1927 with D.A.H. He said that he recovered 6 months afterwards. The precipitating factor in this war was his being torpedoed when crossing from Eire to enlist. Of 3 patients with hysteria 1 was invalided in 1936 with what now appears to have been a hysterical pain in a hernia operation scar. Specific military conditions in the present war were a factor in 2 other cases of anxiety state. One was precipitated by bombing and the other started acutely while digging for an unexploded bomb. One man with hysteria advanced "shell shock" in the evacuation from Dunkirk as the cause of his trouble, and 1 case of anxiety state began after the patient had endured several heavy air raids in London as a first-aid worker. The average length of service was 13 months before the patients reported sick with recognized psychogenic symptoms varying from 2 days to 2 years.

Symptomatology

Only the most frequently recurring symptoms are described here.

Headache.—This was the commonest symptom. It occurred in 16 cases, 15 of which were hysteria, and was the presenting symptom in 13. It was often described as "pains in the head." The headache was aching or throbbing, stabbing or constricting, or was indescribable. The character and site varied with the individual patient, but one feature was constant: it was always related to the wearing of the steel helmet, being either induced or exacerbated by this. Three patients had a possible organic basis for the headache in previous head injury. Another had mixed astigmatism, and 4 others had defective vision corrected by spectacles. In these cases the diagnosis was based on other features in addition.

Defective Vision.—This was a prominent symptom in 6 cases, including the 4 mentioned above. The characteristic feature was that the spectacles provided by the Army, re-checked by the ophthalmologist, did not improve the condition or relieve the headache and that print became blurred after a few minutes' reading. This occurred with any subject-matter, and is akin to the inability of the patients of 1914-18 to read the war news in the newspapers. In this group 4 also had night-blindness, 2 of whom claimed to have strained their eyes with night driving. (In the same period one patient with night-blindness of organic origin was seen.)

Effort Syndrome.—This symptom-complex occurred in 7 cases of anxiety state and 1 of hysteria. In 2 patients it was induced by wearing the respirator at the alert.

Dissociation Phenomena

This term is used to describe the grosser manifestations of hysteria which occurred in 5 cases.

Case 1: Loss of Consciousness with Convulsions.—This occurred in a man who had been out for the evening with some of his comrades. It was the first occasion since his return from leave a few days previously. He was not on good terms with his wife, whom he had married "on the rebound" when he returned from the B.E.F. to find his fiancée engaged to another man. While on leave he had had several quarrels with her because he preferred the company of his male friends to hers. The connexion was pointed out to him, and no further manifestations were seen.

Case 2.—The symptoms were similar to those of Case 1. The patient had reported sick once or twice with headache suspected to be of hysterical nature. He said he had had "shell shock" but had not been under medical care for it owing to the confusion at Dunkirk. He was not aware that arrangements had been made for his further examination in hospital, so presumably this condition occurred in order to impress the medical officer with the gravity of his symptoms. He returned to duty later.

Case 3.—After 3 years' service in peacetime this man was invalided with a painful operation scar in which he was convinced a nerve was caught up. When called up for service with his Army class he was examined by a surgeon, who concluded that the pain was hysterical. He complained of headache that felt as if there was a tight band round the head, defective vision uncorrected by spectacles, and night-blindness caused by the strain of driving at night. He was nervous in air raids. Two relatives had been killed in London, and his child had recently died. He had been deprived of a lance stripe for disciplinary offences. The psychiatrist reported: "This man is of very poor moral type and is a constitutional hysteric. His general intelligence is well below average, his mental age being 11 years. He is a person unfitted for the ordinary duties of a combatant soldier, and under active service conditions in such a unit (R.A.S.C.) could only be a continual source of liability." He was recommended for transfer to the Pioneer Corps. Before the transfer became effective he was admitted to the camp reception station for a minor ailment. There he showed erratic behaviour of a hysterical nature, including pseudo-epileptic attacks. He was admitted to a neurosis centre and then invalided from the Service.

Case 4.—A recruit aged 19 complained of symptoms on exertion typical of the effort syndrome. No psychopathic family history was elicited. Since he had had rheumatic fever 3 years before being called up he had been careful not to exert himself; he had a light job and played no games. There were no clinical signs of a cardiac lesion. Explanation, encouragement, and light exercise produced no improvement, and his admission to an effort syndrome clinic was arranged. The day before he was due to go it was found impossible to wake him at réveillé. He was left alone and came round after 3 or 4 hours. This was thought to be a sign that he did not wish to lose his symptoms, for which he was excused from doing drill, route marches, and guard duty. It transpired, however, that all arrangements had been made for his wedding 3 days hence. He had made no attempt to get leave for it (he knew he was unlikely to get leave, as his admission to hospital had been arranged), and had not tried to postpone the wedding. Thus he endeavoured to shut out the world and his difficulties.

Case 5.—This man of 42 presented the "syndrome of approximate answers." He was seen when charged with absence without leave. His documents showed five similar offences previously. He was very vague in manner, and said he was worried and depressed and wanted to see his wife and children. A medical report revealed a complaint of impotence some months previously. This had not improved, he said. His intelligence seemed below normal, and his commanding officer had gained the impression that he was trying to appear less intelligent than he really was. He had served 7 years in the Regular Army in the early twenties. The psychiatrist reported: "The first impression is one of malingering, and undoubtedly there is considerable conscious exaggeration of the complaint; e.g., he first denied being able to read, but read quite well when encouraged. He exhibits the syndrome of approximate answers: pen–pencil; ink bottle–glass; pin–needle; figures–all one or two numerals out; brown–green; dark blue–pink; red–white. There is mental depression in a person of below average intelligence with a hysterical state. The phenomena are on the borderline between conscious and unconscious." He was admitted to a neurosis centre.

Case-taking

Any soldier appearing on sick parade with a complaint suggestive of psychogenic illness was told to remain until the others had been dealt with. He was then seen alone, and there was ample time to hear his story. The first interview usually lasted half an hour. A full history of the complaint was taken and questions were directed to a brief personal history from childhood, school work, civilian occupation, hobbies, attitude towards service, and family history.

Intelligence was not formally tested, but a rough assessment was made from memory and comprehension of details in the history, school-leaving age, and class attained, and the type and frequency of change of employment. It was found useful to ask the weekly wage, and then, "How much is that per year?" Officers and N.C.O.s could provide evidence of the patient's general attitude and response to training. Fourteen men with hysteria, 1 with an anxiety state, were considered to be mentally backward. This was confirmed by the psychiatrist in 8 cases.

The patient was examined as fully as facilities allowed, and was referred to the appropriate specialist for an opinion on any physical disability claimed. It was found in 15 cases that a sympathetic hearing and a full examination, and reassurance and perhaps a change of conditions and mild sedation, sufficed to keep the patient at duty. The psychotherapy was not carried out in more than three or four interviews, and was on the lines described by Ross (1937). If this failed or was obviously likely to be insufficient the patient was sent to the area psychiatrist for advice as to disposal.

Disposal

Twenty-two patients remained at duty. Of these, 2 with chronic anxiety states were placed in Category C (home service only) and were posted to other units, as were 5 others; the 15 remaining under observation—8 who had an anxiety state and 7 who had hysteria—have not made further complaint. Five soldiers were invalided from the Service while with their units. They were a man of 52 with an acute anxiety state, 3 chronic hysterics, and the patient of unstable temperament. One man with a chronic anxiety state and 2 men with hysteria based on mental defect were transferred to the Pioneer Corps. Of 9 patients admitted to E.M.S. neurosis centres, 1 with effort syndrome returned to his unit improved, and it is known that 1 patient with hysteria and 2 with anxiety state were invalided. One of 2 patients originally admitted to non-psychiatric hospitals returned to duty. The fate of the other 6 patients is not known, as no reply was obtained to requests for information. The results are tabled below.

Condition	Disposal	Cases
Anxiety state ..	At duty	8
	Transferred to P.C.	1
	Invalided	3
	Unknown	7
Hysteria	At duty	9
	Transferred to P.C.	2
	Invalided	3
	Unknown	7
Psychosis	To military mental hospital	1
Psychopathic personality ..	Invalided	1

Discussion

The "anxiety" of the anxiety state is derived from the German *Angst*, which is usually rendered as "morbid fear." In the cases of anxiety state this was the chief feature, and the symptoms could be regarded as the physical concomitants of fear, in whole or in part, misinterpreted or unrecognized by the patient. In hysteria the clinical features are: (1) a physical manifestation without structural lesion; (2) a calm mental attitude—the *belle indifférence* of Janet; (3) episodic mental states indicative of dissociation (Henderson and Gillespie, 1936). In the cases seen the physical manifestation was the presenting complaint, and the degree of dissociation varied from simple non-recognition of the cause to complete dissociation as shown by the hysterical fit and loss of consciousness. It could not be said, however, that *belle indifférence* was a feature. The patients showed true anxiety, an emotion compounded of desire and fear, which caused them to report sick. There was always the desire, more or less unconscious, to escape from military service or an unpleasant duty, such as guard duty. The steel helmet, worn on guard or in active operations, caused abnormally severe headache; spectacles failed to correct defective vision; night-blindness was discovered; epigastric pain and vomiting persisted in spite of negative physical findings and repeated reassurance. These disabilities offered them an honourable escape from military service, but, unlike the patients of 1914-18 with such obvious physical signs as paralysis or contracture, they could not be calm and confident. There was fear, also unconscious, that they would not attain their desire.

Hysteria was the reaction of the man of subnormal intelligence when conditions became too unpleasant or difficult to cope with. In several the reaction was only episodic, and if they could be helped through the crisis by a change of conditions, or advice on their worries, or encouragement, they would settle down again. It is debatable whether this is a sound policy, as there is no sure means of gauging if the soldier will remain stable in the stress of battle. The medical officer must weigh the patient's present against his potential value as a soldier, and must also consider the effect on morale. Few can watch an unemotional hysteric return to civilian life without questioning the genuineness of his disability, whereas the man with an acute anxiety state is obviously ill. Transfer to the Pioneer Corps and recategorization to C are a partial solution, but there are still some men who, though physically sound, are psychologically unfit for military service.

Capt. G. R. Peberdy, R.A.M.C., deserves my thanks for much help and encouragement in dealing with these patients and for permission to quote from his reports in Cases 3 and 5.

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Medical Memoranda

Exfoliative Dermatitis in the Newborn

As exfoliative dermatitis in newborn children (Ritter's disease) is generally mentioned in textbooks as a fatal disease, the following cases, which responded to treatment with proseptasine in large doses and 1% aqueous gentian violet, are worth recording.

CASE REPORTS

Case 1.—I was called in by the district nurse to see a male baby 10 days old. She told me that at 7 days it had developed jaundice and that on the morning of the tenth day "it was a curious colour and its skin was coming off." On examination I found a well-developed baby, but with a curious bright pink colour reminiscent of CO_2 poisoning. The epidermis was so loosely adherent to the underlying tissue that in handling it this was removed, leaving exposed a red raw corium, most marked on the back and buttocks. There were no bullae—a feature in pemphigus neonatorum. Knowing that this was generally a form of impetigo and was apt to develop into a staphylococcal septicaemia, and being aware that babies stand the sulphonamides well, I gave 1.5 g. of proseptasine in milk at once and ordered 0.5 g. to be given 4-hourly, and had the body dabbed with 1% aqueous solution of gentian violet wherever the skin was broken. The temperature was normal, as is usual, and fortunately the baby was breast-fed and sucked well. The next day the condition was subsiding, though fresh places were breaking out and the lips and the mucous membrane of the mouth were infected. The child had not been sick, took its food well, and was comfortable—in contrast with the previous evening, when it had screamed most of the time. I continued the proseptasine for 5 days, reducing the dose from 0.5 g. every 4 hours to three times a day after the second day, and allowed a bath with a weak solution of potassium permanganate on the fourth day of infection. After 3 weeks the child was putting on weight, the skin was returning to normal, and I could foresee no further trouble.

Case 2.—This child was attended by the same district nurse and was 13 days old. I saw it the day after I had seen Case I. The condition was not so pronounced, the skin coming off mostly on the flexors and face. The eyelids were affected and the eyes were gummed up. I gave similar treatment, and also anointed round the eyes with yellow oxide of mercury. This child had also nearly returned to normal 3 weeks later.

The second patient was perhaps infected by the nurse before the extreme infectiousness of the condition was realized, and the infection lessened in transit. Both cases recovered after large doses of proseptasine and a 1% solution of gentian violet.

Southwaite, Carlisle. ALEX G. MACGILLIVRAY, M.D.

Reviews

THE MEDICAL ANNUAL

The Medical Annual, 1942 A Year Book of Treatment and Practitioner's Index. Sixtieth Year. Editors: H Letheby Tidy. M D., F.R.C.P., and A. Rendle Short, M.D, F R C S (Pp 396; illustrated. 25s.) Bristol: John Wright and Sons; London: Simpkin Marshall, Ltd

Once more in the familiar green cover the *Medical Annual* makes its yearly appearance, suffering, as so many of us have done during this war, from a slight loss of weight due to rationing. Nevertheless all the familiar features are preserved. The customary "Introduction by the Editors" puts into focus the medical events of the past year, and at the same time gives the reader valuable guidance to the detailed contents, which are arranged, as usual, alphabetically. Subjects which have come to the fore during the war, such as mass radiography and dyspepsia in the Forces, the application of psychology to the selection of personnel, the treatment of burns, and blood transfusion, are all naturally given prominent place. An article on shelter health by Lord Horder reminds us of the turmoil of about two years ago, and the Editors take the opportunity to commend the part played by the Horder Committee in the solution of shelter difficulties. We note one small point, and that is the editorial use of the word "oestrin" as if it were an accepted physiological term, whereas it is in fact a proprietary term.

It is, as the publishers remark, now no secret that their works at Bristol, together with valuable plant and a large quantity of stock, were destroyed by enemy action, and the present volume has been produced at Weston-super-Mare. The medical profession will wish them well in the valuable part they continue to play in medical publishing.

NON-PULMONARY TUBERCULOSIS

Non-pulmonary Tuberculosis. By Michael C. Wilkinson, M B, B.S. (Pp. 174; 12 figures. 12s 6d.) London. Hamish Hamilton Medical Books. 1942.

This book embodies the experience gained by the author in the observation and treatment of cases of non-pulmonary tuberculosis in a sanatorium over a period of seven years, and a follow-up survey of 593 cases treated in this institution. The whole field of non-pulmonary tuberculosis is covered, including glandular, abdominal, genito-urinary, and parietal thoracic tuberculosis, as well as tuberculosis of bone and joints. Treatment of the last-mentioned conditions is therefore not dealt with in anything like so much detail as it is, for example, in Mr. Girdlestone's book on tuberculosis of bone and joints, published in 1938, the author concerning himself with general principles of treatment and the indication for and timing of operative intervention rather than with details of operative technique, which are, however, not entirely omitted. Stress is rightly laid on the paramount importance of prolonged and adequate constitutional treatment before surgical intervention is undertaken. The latter is necessary in most cases, but should be considered only as an adjuvant measure to be used at the right time in each individual case.

The author regards the lymphatic glands as a defence mechanism, and notes that children who develop tuberculous adenitis do not, as a rule, subsequently get haematogenous infections, though he admits that the defence may break down in debilitated patients or those exposed to massive infection. This is somewhat at variance with Mr. Girdlestone's contention that heavily infected tuberculous glands cease to be protective and become themselves a source of bacillaemic showers and haematogenous infections. Tables of end-results are given for each class of case and these are interesting and valuable, but their value would be greater if brief details were given of the clinical, *x*-ray, or laboratory findings on which the diagnosis was made rather than a general statement that it was made on good evidence, especially in cases where good movement of a tuberculous joint is claimed. Diagnosis by excision of a regional gland is mentioned in the case of the knee, but not of the hip-joint, though excision of iliac glands has already given a number of positive results in the latter cases.

The book, though it contains nothing actually new, is of undoubted value as a first-hand record of practical experience and shrewd observation in this field, and, as such, can be read with advantage by all those concerned with the treatment of tuberculosis from whatever point of view they may approach the problem.

CONTEMPORARY PHYSIOLOGY

Annual Review of Physiology. James Murray Luck, Editor; Victor E. Hall, Associate Editor. Vol 4. (Published by the American Physiological Society and Annual Reviews, Inc.) (Pp. 709. $5.00.) Stanford University, California: Annual Reviews Inc. 1942.

This volume contains references to nearly four thousand original papers, and to about the same number of authors' names: the task of selecting these from the enormous bulk of contemporary literature must have been enormous, though, of course, there is great variability in the available numbers of papers relating to the different reviews. The largest number no doubt are those that refer to the physiology of reproduction, and this review lists 486 references; in a relatively restricted field such as in the review on the physiological effects of neutron rays only 31 references are given. It is probable that reviews covering more restricted fields, such as the latter one, are able to quote a larger fraction of the published work than are the ones dealing with richer bibliographical resources. Further, the treatment in such reviews has the opportunity to cover its ground in a more leisurely and thorough manner, and so to be more generally instructive than that of the overcrowded branches of the subject.

It would be difficult to pick out any of the reviews for detailed comment, since each is itself a condensation of so much. The following is a list of the reviews. Permeability, by L. R. Blinks; the physiological effects of neutron rays, by P. C. Aebersold and J. H. Lawrence; physiological aspects of genetics, by H. H. Strandskov; developmental physiology, by H. L. Hamilton and B. H. Willier; water metabolism, by J. P. Peters; growth, by G. S. Avery; energy metabolism, by W. H. Chambers, E. Shorr, and S. B. Barker; the physiology of the skin, by P. C. Baird, jun., W. F. Lever, and T. D. Spies; the peripheral circulation, by A. B. Hertzman; the heart, by M. B. Visscher; the blood, by H. P. Smith; the digestive system, by E. J. Van Liere; the kidney, by J. A. Shannon; electrophysiology, by R. W. Gerard; the spinal cord and reflex action, by T. C. Ruch; the central nervous system, by M. Hines; the autonomic nervous system, by K. Hare and J. C. Hinsey; sense organs, by H. K. Hartline; metabolic functions of the endocrine glands, by C. N. H. Long; the physiology of reproduction, by F. L. Hisaw and E. B. Astwood; physiological psychology, by C. P. Richter; applied physiology, by A. R. Behnke and C. S. Stephenson; and the pharmacology of drug addiction, by M. I. Smith.

TREATMENT OF VENEREAL DISEASE

The Modern Treatment of Venereal Diseases. By E. T. Burke, D.S.O., M.B., Ch.B. (Pp. 105. 12s 6d.) London: John Bale Medical Publications, Ltd. 1942.

Burke's *Modern Treatment of Venereal Diseases* contains essentially the same subject-matter as the treatment section of his larger book, *Venereal Diseases*, published in 1940. Most syphilologists will remember that Burke was a strong advocate of the alternating–continuous method of treating syphilis and of the use of oil-soluble bismuth to the almost complete exclusion of all other preparations of this metal, and that his plan of treatment is worked out according to his "efficiency index." A discussion of this last is not possible within the scope of a short review, but while the theory is ingenious in conception it has not been adopted by any considerable number of syphilologists. Mercury is recommended only in the form of collosol mercury sulphide, and "mercury pills, mixtures, and inunctions constitute, at the present day, a reprehensible trifling with the future well-being of the patient"; on the other hand, great faith is placed in iodine, especially in late syphilis. The account given of the reactions produced by antisyphilitic agents is good, but more might have been said with advantage about post-arsphenamine jaundice and its treatment.

Nearly three-quarters of this little book are devoted to syphilis, only some 28 pages being allotted to gonorrhoea, chancroid, and other forms of venereal disease. The optimum dosage of sulphonamides in gonorrhoea is not yet settled, but few will agree with a comparatively low one extending over 14 days; a fuller account of the toxic effects of these drugs and their treatment would have added much to the value of this book, as would a section on non-gonococcal urethritis, which appears to be very much on the increase. Many people regarded Burke as a crank, but he was a crank of very wide experience, and a study of this his last publication is recommended to all venereologists, who will be able to sift the grain from the chaff; repeated references in this book to the large volume are not very helpful, since the possessor of the latter will hardly need to read the former. The price appears to be disproportionate to the size, even in these wartime days.

Notes on Books

The fourth edition of Prof. F. J. BROWNE's now famous textbook, *Antenatal and Postnatal Care,* is no "austerity" volume. It has been completely revised and drastic pruning has improved the final product. Pages have been saved by transferring the bibliography to the end of each chapter, and although much new material has been added the edition is a little smaller than its predecessor. As the field it covers becomes ever wider this book will soon be outgrowing its title, indeed there is some evidence to suggest that it has done so already; but whatever its name should be the seven-year-old will be welcomed and generally acclaimed as the best edition yet printed. It is published by J. and A. Churchill at 24s.

The first edition of HOLMES and RUGGLES's *Roentgen Interpretation* was published in 1919, and it is an index of the popularity of this excellent little handbook that it has now reached its sixth edition (Henry Kimpton; 24s.). The standard has been well maintained in this, and there are few criticisms to offer. Some of the illustrations, in the section on the urinary tract particularly, might with advantage be replaced by more modern ones. Many radiologists will regret to see that the authors recommend the practice of setting fractures and removing foreign bodies under the fluorescent screen. The book makes no pretence of being a complete account of diagnostic radiology, but aims rather to give a condensed survey for students seeking an outline of the subject. In this the authors succeed very well, and the volume is to be recommended for this purpose.

Preparations and Appliances

GONADOTROPHIC HORMONE FROM PREGNANT MARES' SERUM

Messrs. Boots manufacture a gonadotrophic hormone from the serum of pregnant mares called "antostab," which is supplied as a dry powder together with a solvent of saline and 0.3% tricresol. It is standardized in international units, 1 I.U. being the activity of 0.25 mg. of the hormone; usually a course of six injections of 200 I.U. given intramuscularly twice a week is suitable for most cases, though the dose must be adjusted individually. It is recommended for trial in cases of amenorrhoea, sterility of ovarian origin, and selected types of irregular bleeding, but should never be used until a thorough examination has excluded general and pelvic disease. While there is as yet insufficient clinical evidence to evaluate the hormonal treatment of disturbances of menstruation, there is no doubt that the gonadotrophic hormone from the serum of pregnant mares should theoretically be of considerable value, and on the basis of animal experiments it is more potent than the hormone of pregnancy urine.

VITAMIN K ANALOGUES

Menaphthone-Boots and acetomenaphthone-Boots are synthetic vitamin K analogues which have the same physiological properties and are more potent than natural vitamin K. Menaphthone is the approved name for 2-methyl-1 : 4-naphthaquinone and acetomenaphthone is 1 : 4-diacetoxy-2-methylnaphthalene. Menaphthone and acetomenaphthone are indicated in the treatment of neonatal haemorrhage and in conditions where digestion of fats is disturbed or inhibited or absorption deranged—e.g., obstructive jaundice, biliary fistula, idiopathic steatorrhoea, and coeliac disease. Menaphthone is supplied in ampoules as an oily solution for intramuscular injection, and acetomenaphthone in tablets for oral administration. Literature and samples will be sent on request to the Medical Department, Boots Pure Drug Co., Ltd., Station Street, Nottingham.

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THE ANATOMY OF CUTANEOUS SENSIBILITY

The increase of peripheral nerve injuries related to war conditions, and, more particularly, their segregation in special centres for treatment, have again focused attention on the anatomy of cutaneous sensibility. Von Frey is often credited with having established the relation between specific nerve-endings and specific modalities of sensation. Dallenbach[1] has pointed out, however, that in reality von Frey was more cautious in his statements. Recently, Gilmer and Haythorn[2] have attempted to identify skin-pressure vibration spots with nerve-endings beneath them. Using a variety of staining methods and thin serial sections of biopsy material they were unable to find endings of one particular type beneath the spots. They stated, however, that all the staining methods employed were unsatisfactory in that no single stain demonstrated all the nerve elements they wished to study, and it was thus necessary to treat a number of the sections by different methods. They tentatively concluded that richly innervated arteriovenous anastomoses might be in some way related to the sensory interpretations, for in several biopsy specimens such bodies were present just beneath the sensitive spots. Woollard *et al.*,[3] on the other hand, brought forward very good evidence that specific endings at different depths beneath the skin subserve specific modalities of sensation, and they also showed that cutaneous pain is subserved by a morphologically specific type of nerve termination. Weddell,[4] proceeding on the lines indicated by Woollard, has insisted on the need for examining large whole preparations of skin, including the underlying tissues, to get a true picture of the relation of a sensory "spot" to its subjacent nerves and endings. For this purpose he uses vital staining with methylene blue to demonstrate both the nerve fibres and their endings. By such methods it has been shown that sensory "spots" in the skin overlie more than one individual nerve-ending (or group of endings) of the same type, and that the nerve fibres subserving the endings (or groups of endings) are not a series of collaterals derived from one nerve fibre, but (as far as they can be traced) are separate fibres which approach the "spot" from different directions. For example, it was found in one case that situated beneath a cold "spot" were two groups of Krause's end-bulbs lying at a depth of 1 mm. beneath the skin surface and separated from each other by 3 mm. It has also been demonstrated (Weddell[5]) that in a human finger pad, an area of acute tactile sensibility, large Meissner's corpuscles are situated in groups of two or three, each ending connected with a single unbranched nerve fibre. In addition, it has been shown that, while in the finger pad certain nerve fibres are surmounted by single Meissner's corpuscles, in the forearm a single nerve fibre may give rise to a number of separate Krause's end-bulbs; and, furthermore, cutaneous pain is shown to be subserved by terminal networks which spread over still larger areas. For example, a single nerve fibre in the dorsum of the hand has been found to give rise to a terminal network of fine-beaded fibres covering an approximately circular area of maximum diameter 0.75 cm. In confirmation of such histological findings, Tower[6] has been able to show by electrophysiological methods that the terminal ramifications of a single afferent fibre from the rabbit's cornea comprise a unit area of from 50 to 200 sq. mm., the area having sharply defined limits. She has suggested the term "sensory unit" for such terminations, on the analogy of the "motor unit."

Thus, it becomes clear that a sensory "spot" is not synonymous with a single nerve-ending at the end of a single nerve fibre. "Spots" overlie groups of specific endings which lie at some depth from the surface and are borne upon separate nerve fibres. It also appears that a "spot" need not immediately overlie one particular ending or group of endings, but is so situated that the application of the stimulus affects the maximum number of subjacent specific terminals. The failure of Gilmer and Haythorn to find specific nerve-endings beneath skin-pressure vibration spots is thus hardly surprising, but, as explained above, their failure is not an argument in favour of the non-specificity of cutaneous nerve terminals.

It has been suspected for some time that the innervation of sensory "spots" is not simple; in fact Head[7] found it necessary to postulate two collateral systems of nerve fibres (protopathic and epicritic) to account for his observations on the return of cutaneous sensibility after division of a cutaneous nerve. Boring,[8] on the other hand, was led to infer a multiple innervation of sensory "spots" by fibres of one type to explain his own observations after division of a cutaneous nerve. In a recent critical review on the anatomy and physiology of cutaneous sensibility Walshe[9] has shown that the histological findings of Woollard and Weddell form a concordant anatomical basis for the careful clinical observations of Trotter and Davies,[10][11] who repeated and elaborated the work of Head from a quantitative rather than a qualitative point of view. As Walshe points out, the work of Trotter and Davies has not received the attention and credit which are due to it from neurologists. To quote a passage from his review: "In view of the richly suggestive character of Trotter's writings upon cutaneous sensibility it is striking how little influence they have exerted, and the cynic might submit that this is because he coined no new words to adorn his exposition. The sway exercised upon the imagination of neurologists and physiologists by the words 'epicritic' and 'protopathic' may have had not a little to do with the continued currency of the hypothesis which was their setting."

THE DEMAND ON THE BLOOD DONOR

The general acceptance of blood transfusion as a practicable form of treatment can be dated at 1922, when there were 13 calls on the British Red Cross Society Blood Transfusion Service. In 1930 the number had risen to 1,627. The service was still confined to London, and, though the curve continued to rise, the rate of acceleration slowed down for the next five years.[12] At that time a transfusion was synonymous with the administration of a pint of fresh blood, but the work of Marriott and Kekwick[13] on massive drip transfusion in 1935 led to a considerable increase in the size of individual transfusions and in the indications for the operation. Further increases have come with developments in the use of stored blood, serum, plasma, and concentrated red cells, and the provision of blood banks and depots for the emergencies of war. It needs to be emphasized in looking to the future that while the war has accelerated the provision of facilities the increase in blood transfusions is not due to war needs but to technical advances in blood storage, and that an even sharper rise occurred in America at a time when there was no thought of preparation for hostilities.[14] A modern general hospital in this country can already be expected to be using at least 1,000 pints of blood and plasma a year on purely civilian needs—in particular, medical ailments, diseases of women, and accidents of childbirth—and our planners who think in terms of a 1,000-bed hospital for a town with a population of 100,000 must remember to include in their health centre a blood transfusion service capable of collecting not less than 3,000 pints of blood per annum.

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[1] *Amer. J. Psychol.*, 1927, **39**, 402.
[2] *Arch. Neurol. Psychiat.*, Chicago, 1941, **46**, 621.
[3] *J. Anat.*, Lond., 1940, **74**, 413.
[4] Ibid., 1941, **75**, 346.
[5] Ibid., 441.
[6] *J. Neurophysiol.*, 1940, **3**, 486.
[7] *Studies in Neurology*, 2 vols., London, 1930.
[8] *Quart. J. exp. Physiol.*, 1916, **10**, 1.
[9] *Brain*, 1942, **65**, 48.
[10] *J. Physiol.*, 1909, **38**, 134.
[11] *J. Psychol. u. Neurol.*, 1913, **20**, Ergnzngshft, 102.
[12] *Times*, April 27, 1931.
[13] *Lancet*, 1935, **1**, 977.

As early as 1931[15] it had been learnt that individuals might donate a very large amount of blood over a short period of time with surprisingly little effect on the blood count, though it was felt that the ideal amount was 400 c.cm. for males and 300 c.cm. for females, and the interval not less than three months. By the summer of 1934 the silver bar which is awarded for giving 50 transfusions had been conferred twice by the British Red Cross Society[16]; and in 1936 a Paris letter[17] mentioned a donor who had given a total of 257 litres of blood, including 98 transfusions of approximately 300 c.cm. each in the year 1935. This implies the regeneration of about 2% of haemoglobin a day and the assimilation of 300 mg. of iron a week, which would not be within the compass of the marrow unless extra iron was supplied. Exceptional feats must not blind us to the fact that repeated blood-letting is a stringent test of the efficiency of the haemopoietic system and the adequacy, or rather supereminence, of the diet. A strong note of caution was sounded by Snapper and co-workers in 1939.[18] In a study of 101 professional donors in China they found 76 with subnormal blood counts. The frequency and extent of anaemia increased with the total amount of blood withdrawn or the duration of service. Poor diet was considered to be an important factor in the sluggish haemopoietic activity. Treatment with large doses of iron resulted in prompt improvement in the anaemia in most of the cases, while cessation of blood donation alone was uncertain and less effective.

These observations indicate the need for careful supervision of British donors after three years of wartime restrictions on diet, the enlistment by the fighting Services of many of the robust young adult males, and the greater use of females and less fit age groups. Surveys, published[19] and unpublished, show that at the present time many women in the reproductive age group are anaemic, and suggest, though with less assurance, that the incidence of anaemia is increasing. Transfusion officers are beginning to realize the need for checking the haemoglobin level before bleeding and for prescribing iron for the prevention and treatment of anaemia in blood donors. A good deal of work remains to be done in determining the optimum dosage of iron and the necessary duration of treatment. Santy[20] worked with a small group of professional male donors who gave blood at an average rate of 132 c.cm. a week over a period of 12 weeks. The number of donations per donor averaged 4. Using exsiccated ferrous sulphate in a dosage equivalent to 250 mg. Fe$^{\cdot\cdot}$ a day, he found that the haemoglobin was regenerated eight times as quickly when the donors were receiving iron, and that the recovery period was shortened to ten days. He suggested that professional male donors receiving iron could be expected to give 500 c.cm. of blood at fortnightly intervals without lowering the haemoglobin level. His results cannot be transferred directly to the non-professional female donor, but they confirm the efficacy of iron. Fowler and Barer[21] found that a donation of 300 c.cm. of blood reduced the haemoglobin on the average by 10%, and 550 c.cm. reduced it by 18%. Without iron, regeneration took 50 days, but with iron and ammonium citrate equivalent to 200 mg. Fe$^{\cdot\cdot\cdot}$ a day it was reduced to 35 days. The administration of iron had progressively less effect after successive bleedings. The scale preparation of iron seems therefore to have been a good deal less effective than the ferrous salt.

From this and other evidence we may conclude that, provided the diet is supplemented with adequate amounts of medicinal iron, men and women can give blood with safety, and without deterioration of haemoglobin levels, far more often than is ever likely to be asked of them as voluntary transfusion donors. Nevertheless the range of human variation in erythropoiesis is likely to be wide, and supervision should be careful. It seems unwise to bleed a donor whose haemoglobin is below 11.7 g. per 100 c.cm., or 85% on the Haldane scale. Such volunteers should be advised to take iron and be seen again after an interval. For administrative reasons it may be simpler to prescribe iron for all donors after bleeding. Treatment will probably be most successful and acceptable if it is relatively intensive and of short duration; but this is a matter for further study.

THE PERSONAL FACTOR IN ACCIDENTS

The Medical Research Council has recently reconstituted the Industrial Health Research Board on a wider basis, which includes, to a greater extent than before, the prevention and relief of sickness resulting from the particular health hazards to which industrial workers are exposed. Among these hazards accidents loom large, and there has been a considerable increase of them during the war, chiefly owing to the employment of greater numbers of people, many of them inexperienced. In Emergency Report No. 3 the personal factor in accident causation is discussed.[22] The report is based largely on studies made by investigators on the staff of the Health Board, and it is suggested that these studies ought to prove an effective ancillary to the preventive and protective regulations of the Ministry of Labour and to the propaganda of the Royal Society for the Prevention of Accidents. The first part of the report briefly summarizes the influence of environmental factors, such as hours of work, heating and ventilation, lighting, age and experience, on accident liability, while the second and main part is almost entirely concerned with the subject of accident-proneness. It is pointed out that the gravity of an accident depends largely on chance circumstances, and as it has been found that accident-proneness is a relatively stable factor, it follows that persons who are found to be liable to incur minor accidents more frequently than the average are likewise more liable to incur major accidents. In order to identify these accident-prone persons, various psychological tests have been applied to large groups of comparable subjects, working under similar conditions, and it has been found that tests involving rapid and accurate hand and eye co-ordination serve to differentiate them in some degree. Thus the worst 25% of the groups tested had, on an average, twice as great an accident rate as that of the best 25%. In assigning fresh workers to relatively dangerous occupations, such as those requiring the use of presses, it would therefore be distinctly advantageous to choose them from those who did best at the tests rather than from the general average. The results so far obtained show that the tests are valid for prediction among skilled workers only.

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[14] Parkhurst, L. W., and Bauer, J. T. (1941). *Bull. Ayer clin. Lab.*, **3**, 413.

[15] Jones, H. W., Widing, H., and Nelson, L. (1931). *J. Amer. med. Ass.*, **96**, 1297.

[16] *Times*, Aug. 30, 1934.

[17] *J. Amer. med. Ass.*, 1936, **106**, 1507.

[18] *Chin. med. J.*, 1939, **56**, 403.

[19] Mackay, H. M., *et al.* (1942). *Lancet*, **2**, 32.

[20] *Amer. J. med. Sci.*, 1941, **201**, 790.

[21] *J. Amer. med. Ass*, 1942, **118**, 421.

[22] *The Personal Factor in Accidents.* Industrial Health Research Board. Emergency Report, No. 3. H.M. Stationery Office. (4d.)

In most factories psychological tests are seldom used as a routine method, so the accident-prone have to be identified on the basis of their previous accident records. This method does not detect the accident-prone so well as the psychological tests, and if the workers happen to have been assigned to rather dangerous occupations their susceptibility may prove disastrous to them before its existence has been realized. It is therefore desirable that workers who are to be put on somewhat dangerous machines should be chosen only from those who have previously been tested psychologically, or who have shown, by their record in other and comparatively safe occupations, that they are not to be classed with the accident-prone. Best of all would it be to employ workers who have demonstrated their quality by both the methods mentioned. In some occupations, such as the driving of motor vehicles, it may be difficult or impossible to apply the double test from the start, but if a group of would-be drivers are first selected by means of the psychological tests, and then are selected afterwards on the basis of their accident records, there can be no doubt that the successful survivors of the tests will have a lower accident rate than unselected groups. It is not to be imagined that accident-prone persons are to be deprived of all employment, for there are many occupations in which accidents are infrequent and in which those that do occur are trivial. It is only from the more dangerous occupations that they ought to be warned off.

If proper use is to be made of our knowledge of accident causation, it is most important that adequate accident records be kept. In many factories the records give merely the total number of accidents attended to, or only those of sufficient gravity to earn compensation. Each worker, whether he has sustained an accident or not, should therefore have a card made out for him when he is first employed, on which should be recorded all accidents, trivial and serious. Records of minor ailments treated at the ambulance room may with advantage be kept on the back of the same card.

THE EPIGLOTTIS IN ANAESTHETIC DEATHS

Healthy scepticism regarding alleged new observations in medicine is always advisable, but if carried too far it may lead to the neglect of important new facts. In an article in the current issue of the *Journal of Laryngology* (May, 1942) Mr. G. H. Caiger suggests that this has happened in regard to impaction of the epiglottis during anaesthesia. It is interesting to review the course of events. Careful comparison of the independent clinical observations published by four separate observers shows agreement on all chief points; when pieced together they present an interesting and instructive sequence. About 1908 Col. F. J. Palmer of the I.M.S. observed that the epiglottis was capable of causing respiratory obstruction under anaesthesia. Later experience confirmed this observation. More than one patient apparently moribund was resuscitated by a finger in the pharynx restoring the epiglottis to its normal position. As years went by and case after case repeated similar experience, Col. Palmer became convinced of the value of his discovery. His colleagues, however, remained sceptical. The anaesthetist concerned in one such case of dramatic recovery declined to believe that the manipulation of the epiglottis into position, so freeing the airway, had been the cause of it, but suggested that there had been a rallying of the heart, or some other such cause, to explain the revival. Met with such scepticism, Palmer did not publish his observations for some fifteen years. Then in this *Journal* on Aug. 25, 1923, H. Mortimer Wharry described in a letter a case in which a membranous epiglottis had caused serious respiratory trouble during a tonsil operation; displaced backwards over the larynx, and adherent to the pharyngeal wall by sticky mucus, it was acting as a valve, permitting air to escape from the windpipe but preventing its entry. When the epiglottis was replaced by the finger, the airway being thus restored, breathing began again and the operation could be completed. Arguing from this experience Wharry recommended that in every case in which unexplained dyspnoea occurred under anaesthesia the larynx should be examined digitally. Apparently encouraged by Wharry's letter, Palmer on Dec. 1, 1923, recorded his observations before a Division meeting of the B.M.A. in Assam, and on Feb. 23, 1924, described them in a letter in these columns. G. H. Caiger, then house-surgeon at Bart's, read this letter with special interest, having lately had an apparently unexplained death of a patient under anaesthesia during operation for hernia. Shortly after, at a tonsil operation where he was present, the respiration failed and he was allowed to make a digital examination of the larynx, found the epiglottis impacted in the larynx, and was able to release it "with an audible click." Respiration became normal and the operation was completed. On May 21, 1927, H. M. Wharry, in a three-page article in the *Journal*, said that since 1923 he had seen "three cases of complete obstruction . . . and many cases of partial obstruction due to this cause"—impaction of the epiglottis. He refers to its "pernicious valve-like action," and points out that in these cases artificial respiration is of no avail until the epiglottis has been raised by the finger and pressed against the back of the tongue, where it should be held till danger is past. Following on this article by Wharry, G. H. Caiger (*Journal*, Aug. 6, 1927) recorded that during 3 years he had seen no fewer than 8 cases of epiglottic impaction. The suggestion was further made that displacement of the epiglottis might be a factor in causing asphyxia neonatorum. (Col. Palmer's paper, read in December, 1923, was first published in the *Indian Medical Gazette* in April, 1928.) Further independent confirmation was forthcoming in 1931-2, in a short article published in *Schmerz-Narkose-Anaesthesie* by Robert Saniter. He notes the absence of any adequate reference to the matter in any of the current textbooks. He finds two fingers of the left hand, introduced well to the back of the throat, gripping the epiglottis, and lifting it up, with the base of the tongue, to be "incomparably more effective" than the usual methods of drawing the tongue forward or pushing the lower jaw forward. It often obviates the need for artificial respiration. He considers its immediate adoption as the method of choice, advisable in all cases of respiratory obstruction. In this present article G. H. Caiger deals in detail with the anatomy and physiology of the epiglottis and the mechanism of impaction. He concludes as follows: (1) The danger of epiglottic impaction during anaesthesia is not sufficiently recognized. (2) A considerable proportion of unexplained deaths under anaesthesia may be due to this unsuspected cause. (3) There are good and sufficient reasons for the lack of post-mortem evidence. (4) Digital examination of the larynx and release of the epiglottis has repeatedly saved patients apparently moribund; this should always be borne in mind in respiratory failure. The article deserves to be widely read.

SHORTAGE OF PRACTISING MIDWIVES

The number of midwives on the roll in England and Wales is just over 65,000, and is increasing, but the number actually in practice as such is only some 15,600, or about 24%. The Central Midwives Board in its annual report speaks gravely of the shortage of practising midwives, stating that there are not enough of these women to staff properly the maternity institutions of the country, and many more are required for attendance on women confined in their own homes. That up to now there has been no serious deterioration in the standard of attention provided for the woman in childbirth is due to the devoted and self-sacrificing work of the midwives who are practising, but the decrease in their number, in the view of the Board, is now reaching such an acute stage that if adequate remedial action is not taken without delay there might be a breakdown in the maternity services. The position has been aggravated by the number of practising midwives who have been called away from maternity institutions for general nursing service with the armed Forces, though as some offset to this about 200 midwives have returned to practice after having retired on receiving compensation under the Midwives Act, 1936. But greater calls are being made on the midwifery service owing to the calling up of doctors and, in recent months, the rise in the birth rate. Not that there is any lack of pupil-midwives coming forward for training. The numbers who come forward would suffice for the proper staffing of the maternity service if all who completed the course practised as midwives afterwards, but only 58% of the women who enrolled as midwives in 1940 were practising as such in 1941. The others presumably found some other branch of nursing more attractive, though they considered it useful to hold the midwife's certificate. It is therefore not a question of lowering the educational or examinational standard, even if that were justifiable in any event. The C.M.B. is forced to the conclusion that a permanent solution to this problem can be achieved only by a substantial improvement in the general level of pay, in the conditions of service, and in the public regard for midwives. The appointment by the Minister of Health of the committee under the chairmanship of Lord Rushcliffe to review the salaries and conditions of service of practising midwives and pupil-midwives is welcomed whole-heartedly by the Board in the hope that some practical result may come about quickly.

LONELINESS IN INFANCY

While plans are being rapidly advanced for the accommodation of a quarter of a million little children in war nurseries it may be as well to take note of the observation that in infancy the loneliness involved in separation from home may be not only undesirable but lethal. In old age it is not uncommonly observed that when one of a happily married couple dies the other does not long survive. Dr. H. Bakwin (*Amer. J. Dis. Child.*, 1942, **63**, 30) suggests that the partnership of mother and infant may be no less vital, basing his conclusions upon observations made over a long period in the Bellevue Hospital, New York, and in other institutions. Twenty-five years ago the infant mortality rate in American foundling institutions was nearly 100%, and in the Bellevue Hospital about 40%. While an improved foster-home system lowered mortality, the failure of children to do well in hospital remained a problem. The "hospitalized" infant described by Dr. Bakwin sleeps less, passes more frequent stools, and is more subject to infections of the respiratory tract than his brethren at home. There is a marked dulling of reactivity to emotional stimuli: whereas babies of three months old, for example, normally smile in response to a friendly gesture, those in hospital fail to do so; they are listless and apathetic. There is a general lowering of resistance and delay or distortion in development. These symptoms cannot be accounted for by the illness which resulted in hospital admission, as the improvement on returning home is striking. At first the unsatisfactory progress of children in American hospitals was attributed to malnutrition; later, as nutritional standards improved, to cross-infection, nasopharyngitis succeeding malnutrition as the most frequent diagnosis. To lessen the danger of infections, the open ward was replaced by small cubicled rooms in which masked nurses and doctors moved cautiously lest they should stir up bacteria. Visiting parents were strictly excluded, and there was even devised a box in which a baby could be taken care of almost untouched by human hands. In spite of all these precautions the obstinate infants wilted in their cubicles and throve with humiliating promptitude when returned to their less hygienic homes. In desperation the paediatric policy was changed and mothering came to be regarded as essential in treatment. Interns and nurses were encouraged to pick up, cuddle, and play with their small patients, and parents' visits were welcomed. At the same time the infant mortality rate, which should logically have risen, fell sharply.

Although Dr. Bakwin refers especially to infants in hospital, he also stresses the unsatisfactory personality development in other institutions of children up to 4 years of age, his notes corresponding disturbingly with those of some observers in our wartime nurseries. Such children, especially if admitted before 2 years of age, find it hard to give or receive affection comfortably; enuresis or loss of bowel control is frequent, as are excessive egotism, aggressive behaviour or shyness, tempers, demanding of attention, finger sucking, and retarded speech. Obviously there are some admirable institutions in which these distress signals are comparatively rare, but it is no less obviously difficult to establish the perfect nursery in wartime, when the ideal staff is more than ever hard to find, and the demand enormously greater. The elderly hospital nurse who is too often in charge, with 15- to 18-year-old assistants as the bulk of her staff, is apt to look on the emotional needs of the small child as luxuries. Even those nurses and teachers who recognize the need for individual attention and tenderness are commonly too busy to supply the need. In day nurseries it is true that a child returns home each evening, but he is likely to find a mother too tired by long hours of war work to be loving and patient if the daily change from one environment to another makes him hard to handle, as well it may. Dr. Bakwin quotes a hospital case in which a child went steadily downhill until, "so weak that it seemed he might stop breathing at any minute," he returned the child to his mother, with the result of rapid and complete recovery. Such dramatic cases are presumably rare, but if, as seems established, the biologic unity of mother and little child cannot be disregarded with impunity, it is well to hesitate before supporting a policy that separates so many young children from their homes. It might even be better for the national effort to divert into the factories most of the large army of labour required to equip and maintain war nurseries and to leave the mothers to do the mothering of the "under fives." If this is not practicable, can we not have at least fewer and more motherly nursery homes?

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

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DYSENTERY AND DIARRHOEA IN WARTIME

BY

Sir P. H. MANSON-BAHR, C.M.G., D.S.O., M.D., F.R.C.P.

To parody Napoleon's famous dictum, "An army does not march, but may crawl, on its stomach." According to the Medical History of the war of 1914-18, bacillary dysentery took second place in importance among war diseases, and therefore it is up to us not to neglect the lessons taught. In this respect I think there is no need for us to repeat many of the mistakes that were made, some of which I will mention. Among those who directed the medical laboratory effort in that war were some who had had no previous experience of this problem, its many difficulties and pitfalls, so that we were fortunate to come out as well as we did on that occasion.

Classification of the Dysenteries

There is no such disease as "dysentery," and it no longer appears as such in Army and other returns. Dysentery connotes blood and mucus in the stools, diarrhoea, and abdominal colic. These appearances are produced by many different causes of ulceration or inflammation of the large intestine. One wonders sometimes why the Almighty in His wisdom created maladies so similar in their external and so dissimilar in their internal aspects as this group of "dysenteries."

We can classify it as follows: The first, the most important in wartime, is acute epidemic bacillary dysentery. It was of serious importance in operations in the Near and Far East; it was the main cause of the Gallipoli failure. No fewer than 120,000 casualties were evacuated from the Peninsula from July to November, 1915, and they were mostly due to bacillary dysentery, although other views commonly prevailed at that time.

It has been known as a very important war condition since Napoleon's retreat from Moscow; it was a factor, too, in 1870, in the South African War, and in many others.

The second group is the protozoal. This form, amoebic dysentery, on account of its more or less tropical distribution, appears to have attracted more attention than is its due. It is not the fatal disease that opinion supposes it to be. Amoebiasis is infection with *Entamoeba histolytica*; it is usually a chronic endemic disease. The complications are many because of the metastatic phenomena of this organism in its passage through the human body. Intestinal amoebiasis is originally the cause of hepatic or liver abscess; but *E. histolytica* is really a friend of man, endeavouring to live on the best of terms with him, and it is possible to harbour this parasite for the greater part of one's life without dire results.

Then there is a curiosity—*Balantidium coli*. This has been only once described in Great Britain, and that was in a mental patient, but it is said to occur among those who associate with pigs. Another form of dysentery is giardiasis (produced by *Giardia intestinalis*), a sort of spasmodic diarrhoea. It is extremely common in school children in this country, but has no real bearing upon the dysentery problem.

The next group is "helminthic dysentery," which is due to the Bilharzia genus of flukes. There is only one that is of vital importance—*Bilharzia mansoni*, named after Patrick Manson, who discovered it in 1903, and a common parasite of the Egyptian fellaheen. Since that time our knowledge of the life history of this parasite has become so complete and our methods of prevention so reliable that I do not think it is likely to figure in any future war. *Bilharzia haematobia*, in Upper Egypt and the Congo, may occasionally be the cause of dysentery; and in the Far East there is *Bilharzia japonica*, which, however, is much more a Chinese than a Japanese infection.

The differential diagnosis is very important, because in a country where we may encounter the whole gamut of dysenteries it is very necessary to distinguish one from the other. There are all these enigmatical forms of colitis which, when they occur in the tropics, are continually being ascribed to one or other of the better-known dysentery germs. I should put mucous colitis down as "sinner No. 1." It is common among business and intellectual people in this country, and very common in tropical countries as a manifestation secondary to bacillary dysentery.

Again, there is "ulcerative colitis," which is so common in this country at the present moment and is found also in most tropical countries. I do not think that this is a result of war, except that people who are being incessantly worried and bombed are more apt to reproduce this enigmatical disease, which is commonly associated with mental disturbances. In the last war I saw a number of people who suffered from symptoms of ulcerative colitis which lasted for some time, until the nervous shock passed off. It is extraordinarily like bacillary dysentery in its course and in the appearance of the mucous membrane when viewed through the sigmoidoscope. But it is really quite distinct from bacillary dysentery.

Next we have the great bogy of malignant disease. Carcinoma of the sigmoid flexure or rectum may give rise to blood and mucus in the stools, and because the patient is in the tropics or subtropics and passes blood and mucus in the stool his doctor very likely jumps to the conclusion that he has amoebic dysentery, especially if the stools contain Charcot-Leyden crystals, which tend to suggest amoebic origin. Malignant disease may give rise to this phenomenon and may simulate amoebic dysentery, but may also be a sequel to it.

Another condition to be considered is tuberculosis of the large intestine. This happens to be much more common in the tropics than in this country, and insemination of the tubercle bacilli in the mucous membrane, secondary to some other form of dysentery, takes place and is extremely difficult to differentiate except by sigmoidoscopic examination. Polyposis also produces blood and mucus in the stools; it has a Mendelian incidence, and nearly always terminates in malignant changes. The intestinal mucous membrane is studded with polypi, which resemble bunches of grapes. Simple polypus in children, especially in India and other endemic areas, is apt to be mistaken for one of the dysenteries. Digital or proctoscopic examination will often settle this point immediately.

Another condition which often produces blood and mucus in the stools in older men is diverticulitis: in those who complain of alternating diarrhoea and constipation and other uncomfortable phenomena it is advisable to keep this in mind.

Mercurial poisoning has also to be considered. Page and Wilson (*Lancet*, 1940, **1**, 640) recorded the occurrence of acute ulcerative colitis after cystoscopic examination of the bladder, the instruments having been washed in mercury oxycyanide. This has now been definitely proved to be due to mercurial poisoning; so that ulcerative colitis, which resembles that condition, may in reality represent an effort of the body to get rid of some toxin—not, of course, a metallic toxin—through the walls of the gut.

In the last war we had a lot of trouble, in differential diagnosis, with paratyphoid B, which is the cause of ulceration of the large intestine and blood and mucus in the stools. Subtertian malaria may produce an acute enteritis with intestinal haemorrhage and may be mistaken for amoebic dysentery. Another cause may be foreign bodies in the rectum or internal haemorrhoids, which may give rise to blood and mucus in the stools and be confounded with dysentery.

The Bacillary Dysenteries

Bacillary dysentery is a very large subject. Rather it should be called the "bacillary dysenteries." These occur in large epidemics; they have a seasonal distribution, and spread like wildfire. Epidemics of considerable magnitude often occur at the present day in Malaya, the Pacific islands, India, and Brazil. Nearly every new-comer to the tropics contracts bacillary dysentery at some time or other, children being especially susceptible. Bacillary dysentery is endemic in nearly every mental hospital, and thousands are spent year after year in order to prevent it.

Most bacilli of dysentery have now been found in this country. I myself have isolated Shiga's bacillus in London. This organism was discovered in 1898. It produces definite biochemical and serological reactions, it is a most important organism in war, and it is the one against which we require the most potent anti-Shiga serum—which has now been prepared. Next comes Flexner's bacillus, discovered in 1900. Since that time, however, it has been found not to be one organism, but many. Bacteriologists had been devoting some of their energies to splitting up this bacillus until, at the end of the last war, they had found a great many varieties. That, of course, is *reductio ad absurdum*; and since then much good work has been done on reclassification. Flexner's bacillus is now considered to consist of six antigenic varieties, all having a connecting link. The anti-Flexner serum on the market is prepared from these six varieties.

The last-comer in this series is Sonne's bacillus, discovered in 1915, and which until recently had been rather neglected. Sonne's bacillus ferments lactose slowly and is a common organism in this country. It sweeps the community in epidemic form, producing diarrhoea with blood and mucus in the stools or a syndrome resembling food-poisoning. It is now known to be the organism concerned in infantile diarrhoea and in many endemic fluxes in all tropical countries, but occasionally it may reproduce the dysenteric syndrome as severe as in Shiga infections.

The Shiga bacillus produces acid out of glucose; the Flexner group, acid out of mannite. They all give rise to specific agglutinins in the blood of injected animals. There are difficulties in serological diagnosis. Thus it is of no use in the acute stage of Shiga infections; one does sometimes get a high agglutinin content from about the third week of the disease onwards in titres of from 800 to 1,000. The Flexner group is not nearly such a good "performer"; and here the results are aways somewhat problematical, so that the only real value of serological diagnosis is in the chronic form of infection, in which the organism has produced chronic ulceration of the large intestine. In Sonne dysentery agglutination tests are usually more reliable. The stools are at first diarrhoeic and then mucus mingled with blood, resembling redcurrant jelly. The organisms are not always easy to isolate from the stools; they produce a sort of blue-grey colony, quite different from many other organisms on the plate that give rise to red colonies. Microscopical examination of the cellular exudate in the stools affords a rapid and ready means of diagnosis. The preponderating form of cell is the polymorphonuclear, but there are also large macrophage cells which closely resemble amoebae and cause considerable confusion. In acute bacillary dysentery with death within thirty-six hours of onset the mucous membrane is cherry-red and friable, and one can almost rend it in pieces like damp blotting-paper. The last four feet of the ileum and the whole of the large intestine from the ileocaecal valve down to the anal margin are in this condition. The next stage of coagulative necrosis is often very puzzling. These cases are known clinically as fulminating. Sometimes the necrosis is patchy and the appearance of the intestinal canal is that of islands of mucous membrane in a necrotic sea, and it is from these that regeneration eventually takes place. In the next stage the necrotic mucosa peels off like diphtheritic membrane. It is dead, and beneath it lies granulation tissue.

Difficulties in Diagnosis

The fact that dysentery bacilli disappear so quickly from the stools gives rise to difficulties in diagnosis. It enforces the plea that to work satisfactorily on these problems and to obtain rapid results and equally rapid cures we must place laboratories as near to the front as is possible, because when these cases arrive in a casualty clearing station or in a stationary hospital diagnosis can be rapidly made and measures be administered at the first possible moment so as to save the patient's life. An identity disk should be tied to the patient, stating that he has bacillary dysentery, and describing the treatment that has been given.

In microscopical sections a regular array of dysentery bacilli can be detected along the muscularis mucosae, and especially in the solitary follicles. Others taken later in the disease may show cystic degeneration of the mucous membrane, which is often a sequel to bacillary dysentery. An interesting point is the explanation of what is known as the "carrier state," in bacillary dysentery. Out of every hundred people affected about twenty become "carriers" for several months and the starting-point of fresh epidemics—for instance, they are considered to be the central point of every new outbreak of bacillary dysentery in India, and the bacilli persist in the mucous secretion of retention cysts in the bowel wall.

The appearance of the intestine in chronic bacillary dysentery is significant, reminding one of the cobblestones of some old French country town. It looks very much like chronic ulcerative colitis as encountered in this country, and has given rise to confusion between these two diseases. On taking cultures from these ulcers in the submucous sinuses the dysentery bacillus is usually found to be Flexner's. At one time thought to be a separate disease, chronic bacillary dysentery is one of the common causes of chronic diarrhoea in the tropics. It has been very difficult to know what to do in the way of effective treatment in such cases. In the last war the best results were forthcoming from surgical measures—appendicostomy or valvular caecostomy—but now sulphaguanidine is under trial.

Bacillary dysentery starts suddenly. It is an acute and toxic disease. Shiga's bacillus produces a virulent endotoxin, and the bacilli occur commonly only in the large intestine, but not in the blood stream, urine, or gall-bladder. Occasionally they have been isolated from the blood, but this is something of a fluke. They have also been found in the synovial exudate in dysenteric arthritis. A patient with acute bacillary dysentery usually has pyrexia. Therefore a dysentery with fever which commences suddenly is probably bacillary dysentery, and not amoebic, which is usually afebrile, as *E. histolytica* produces a cytolysin, but not a toxin. A patient with bacillary dysentery often vomits, but this does not take place in amoebic dysentery because it is not sufficiently acute. If the patient is a child, convulsions usher in the disease. These come first; later, blood and mucus appear in the stools.

After the initial diarrhoea blood-stained mucus is passed in quantities; generally the patient loses sphincteric control. Rectal tenesmus is very urgent, as is also dysuria, or painful micturition, due possibly to the spread of inflammation to the urinary bladder. The pulse is rapid and the tongue furred. Weight is lost at a tremendous rate, owing to dehydration. When the hand is placed on the abdomen the patient winces with pain: this degree of abdominal tenderness is never seen in amoebic dysentery. In bacillary dysentery one can palpate the spastic and contracted large intestine, which feels like a rubber band or tube: especially is this the case in the sigmoid colon, and it is acutely tender. In the more chronic forms of dysentery, particularly amoebic dysentery, there may be isolated tender areas, but there is not the generalized tenderness which is so characteristic of acute bacillary dysentery. The stools may vary from twelve to twenty-four in the day, or they may be uncountable. It is not correct to call them stools, but exudates, and often serum leaks out of the anus. What we should do then is to discard the bedpan and pack with tow; in that way many lives have been saved.

Forms of Bacillary Dysentery

Bacillary dysentery may be divided into mild, acute, toxic or fulminating, and chronic forms. In the mild one gets diarrhoea, which lasts for forty-eight hours, with blood and mucus; and Flexner's or Sonne's bacillus can usually be isolated. Shiga infections are as a rule much more severe; but I do not believe that even in Gallipoli the death rate was ever more than 10% of those attacked. In the Fiji Islands and the Solomons in former days death rates of 40 or 50% were recorded among the natives, who blame the Europeans for its introduction. The fulminating form is so acute that the patient may die within forty-eight to fifty-six hours from the commencement. The stools contain dark clotted blood possessing a peculiar musty odour, but when green sloughs are visible prognosis is serious. One of the fatal signs in bacillary dysentery is hiccup. I personally have never seen recovery in such a case. In children bacillary dysentery is an especially fatal disease, producing epileptiform convulsions, coma, and death.

Statistics regarding the geographical distribution of bacillary dysentery are often unreliable. For example, in one district of Central Africa statistics may record nothing but bacillary dysentery, and just a few miles away amoebic infections are said to predominate. Good and accurate statistics are returned by the British fighting Services, and there the two forms of dysentery are properly differentiated.

The great feature about bacillary dysentery is that it occurs in epidemics, which have a definite seasonal incidence. In North Africa, the Near East, and Iraq there are usually two epidemics during the year—one in the spring, and one, the more important, in the autumn, from August to November. There is also a good deal of evidence to show that bacillary dysentery is spread by house flies, and in their intestinal tract bacilli can be found; but there is no real evidence that it is carried by water, which appears to be the main vehicle of amoebic infection. There are milk-borne epidemics of Sonne infection in this country, but the starting-point in native communities is the carrier, and the passage of infection from one person to another by contact.

Complications of Bacillary Dysentery

The complications of bacillary dysentery are very characteristic. First of all conjunctivitis occurs about the tenth day, and iritis about the second week. There is also a dysenteric arthritis, which may be a poly- or a mono-arthritis. There may be synovial effusions, which begin suddenly, and all the joints of the body may be affected. The arthritis is often associated with pyrexia and rigors. It is curious that when the patient appears to be getting better and you think he is out of danger, then this sequel may make its appearance. Some observers say that they have seen hundreds of cases of bacillary dysentery and have never observed this; but it does not occur in every epidemic: in some the incidence is 25%. Sometimes dysenteric arthritis is confused with the gonorrhoeal form, which it somewhat resembles; but as a rule dysenteric cases clear up quickly and do not leave much disability behind. Then there is a dysenteric neuritis, and in the last war there was trouble with paroxysmal tachycardia, which occurred in convalescents and was probably due to the action of dysenteric toxins on the heart muscle.

(*The concluding part will appear in our next issue*)

RESEARCH IN THE U.S.S.R.

When the Germans attacked the Russians, the personnel of the U.S.S.R. Institute of Experimental Medicine gave up their long-term theoretical researches in favour of practical scientific problems. Last month they held a meeting, and Prof. Grashchenkov of the Moscow Neurological Clinic has cabled a brief report of the proceedings to this country. The main subjects discussed were the treatment of injuries of the nervous system and the control of certain epidemic diseases.

Treatment of Cerebral Lesions

Prof. Grashchenkov reported that in the last six months the neurosurgical clinic of the U.S.S.R. Institute of Experimental Medicine had treated 600 compound wounds of the head, in close collaboration with a mobile field hospital specially staffed and equipped, both surgically and radiologically, for neurosurgical work. As a result of this experience, Prof. Grashchenkov is strongly in favour of the use of sulphonamides. He recommends sulphanilamide, sulphapyridine, and sulphathiazole in varying mixtures and proportions depending on the variety of organisms disclosed on routine culture of the wounds. Brain abscess may supervene without at first giving rise to symptoms.

The treatment of aphasia and other focal brain lesions is carried out at a branch clinic of the Institute under Prof. Luria. Methods have been worked out for the restoration of normal functions. Prof. Kupalov, a pupil of Pavlov, considers that damage at the highest level interferes with the synthetic action of large areas of the cortex, with the production of torpor and neurotic complexes. Prof. Rosenthal, another pupil of Pavlov, has reported on the elaboration of temporary conditioned reflexes in a person with brain injuries. By means of this method he is trying to determine the degree of disturbance of the cortical processes and to estimate by the speed with which the temporary conditioned reflex develops the degree of recovery of function which may be expected. Other members of Pavlov's laboratory have employed prolonged sleep therapy by means of drugs, and have found this method particularly effective in cases of cerebral contusion. Details of the methods employed are not given in Prof. Grashchenkov's report.

Peripheral Nerve Lesions

Prof. Lavrentjev has studied various aspects of the regeneration of peripheral nerves and claims to have found evidence for the "chemico-motor role" of the peripheral segment in attracting nerve fibres to itself. Investigating the value of fixed pieces of spinal cord as transplants for bridging gaps after nerve lesions, he finds that the best results are obtained by using formalinized nerve, since this "quickly vascularizes itself and delays the proliferation of the connective fibrous elements of the scar." No details are given of functional recovery in animals or men after this procedure. The only means found for accelerating nervous regeneration was heat. For preventing the outgrowth of nerve fibres and the formation of neuromas Lavrentjev suggests ligation of the vessels of the nerve. Prof. Magnitsky presents a study of the chronaxie of peripheral nerve after full and partial disturbance of its functions. Prof. Orekhovich has studied the metabolism of degenerating and regenerating nerves and finds special histolytic enzymes at work during regeneration.

Louse-borne Typhus

Reports on investigations in infective diseases are of equal interest. Levkovich reported on the work, carried out at the laboratory of Prof. Smorodintsev, on the specific prevention and early diagnosis of typhus of the classical louse-borne type. For the first time it has been possible to carry out, in an epidemic area, a large-scale investigation of the effectiveness of a vaccine prepared according to a modification of the Weigl technique at the All-Union Institute of Experimental Medicine (it will be remembered that the original Weigl vaccine was prepared from the intestines of infected lice). At the same time the Cox vaccine, prepared from growths of *Rickettsia prowazeki* in the yolk sacs of developing fowl embryos, and treated with phenol and formalin, was tested under epidemic conditions. This vaccine had been supplied by the representatives of the American Red Cross. In animal experiments these vaccines were compared with the Durand-Sparrow vaccine made from the lungs of infected laboratory animals; it was established that the Cox vaccine is the most effective and the simplest to prepare.

In the same laboratory, work was carried out on the early diagnosis of typhus by means of a complement-fixation test performed at low temperature. This reaction is stated to be very sensitive and strictly specific, giving positive results as early as the first or second day of illness. The importance of such a result can hardly be over-estimated. Bengtson[1] in America has obtained positive results in endemic (flea-borne) typhus with a complement-fixation test in which she used as antigen a suspension of Rickettsiae; the reaction was positive as early as the sixth or seventh day of onset, and followed a course similar to that of the Weil-Felix reaction. A somewhat similar result was obtained in Q fever,[2] but these reactions were performed at 37° C. The earlier results in the Russian work are presumably due to the low temperature employed. These findings recall the work of Kahn,[3] who has found that the reaction which goes by his name is intensified if carried out at 1° C. In this case, however, Kahn considers that the strong reactions at low temperatures are of "general biologic type" rather than "syphilitic type." A fuller account of the Russian work will be awaited with interest.

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[1] *Publ. Hlth. Rep.* Wash., 1941, **56**, 649.

[2] Ibid., 1941, **56**, 327.

[3] *Arch. Derm Syph*, 1940, **41**, 817.

Insecticides

Prof. Petrishcheva has investigated the possibility of using "local insecticide material" to be found in waste and cheap semi-processed products of the chemical industry and also in wild plants. Thus, for example, in one of the Siberian regions nearly 150 types of moss were found to have varying insecticidal powers, 50 of them in a high degree.

A number of insecticidal substances were tested against lice, and certain preparations were found to be highly effective when applied to clothing, or for the disinfestation of transport vehicles, including railway carriages. Details are not given in this communication, but Rossiysky[4] has previously written of the use of "nassecamoyad," a 10% solution of kerosene-carbolic soap, and of "solvent," a product of benzol and toluol, derived by fractional distillation and retaining their highest homologues. He states that the former destroys lice quickly and does not irritate the skin; its protective action lasts 2 to 4 days. The fumes of "solvent" destroy lice in 9 to 12 minutes; this substance causes, apparently, no harm to human skin. Russian workers have not recently made much reference to the heat treatment of clothing, but no doubt this is carried out, the latest researches having been directed towards the preparation of efficient insecticides. Chasovnikov[5] has written of the use of "solvent" in the field.

Treatment of Dysentery

Prof. Yermoleva reported on the use of lytic agents in intestinal disease. Bacteriophage has, of course, been used in bacillary dysentery for many years, notably by Compton[6] in Alexandria. The Russian contribution is the use of small amounts of sulphapyridine during phage treatment, and from this combination they report good results. Sulphapyridine treatment was described by Bobrovolskaia,[7] who gave it first to children suffering from dysentery in whom pneumonia was a complication. Its results were beneficial not only for the pneumonia but also for the dysenteric condition, and this finding led her to use it in uncomplicated cases, with excellent results. The dosage employed was small, not more than 0.7 g. being given in any one day, and the average total dosage being no more than 1.1 g. In other countries sulphapyridine, sulphathiazole, and especially sulphaguanidine are used in bacillary dysentery with striking success, but in larger doses than those quoted for sulphapyridine.

Other Researches

Prof. Khatanevel reported on a new method of rapid diagnosis in human tularaemia, which can be employed at an early stage of the disease and which can be used under field conditions. This author has written previously on the use of "tularin"[8] in early diagnosis; the test presumably depends upon a cutaneous reaction.

Prof. Tokin made an interesting report on a bactericide of plant origin. As a result of ten years' research with the help of a group of assistants he was able to establish that many plants have substantial bactericidal qualities, and that strong bactericidal principles are found in the ordinary turnip-like onion, garlic, radish, and probably in citrus plants. These bactericidal qualities are discernible in a vaporized state. Five, and in some cases three, minutes of the vapour of these plants is enough to inhibit and sometimes to kill certain organisms, such as streptococci and staphylococci and intestinal bacilli.

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[4] *Soviet Med.*, 1940, No. 3.
[5] Ibid., 1940, No. 9.
[6] *British Medical Journal*, 1942, 1, 719.
[7] *Soviet Vrachebni J.*, 1941, April, p. 277.
[8] *Arkh. biol. Nauk.*, 1941, 61, No. 2, p. 3.

The Ministry of Health announces that, in view of the extreme shortage of rubber and the urgent need for conserving supplies for essential war requirements, it has been found necessary to restrict the sale of household rubber gloves to persons who are certified by a duly qualified medical practitioner to be suffering from (*a*) long and intractable eczema, or (*b*) cheiropompholyx, or (*c*) intractable dermatitis. Any person wishing to buy rubber gloves for such duties can do so only if her doctor certifies that she is suffering from one of these three conditions, and that the use of *household* rubber gloves is necessary for the performance of her household duties.

INDUSTRIAL HEALTH RESEARCH BOARD

The Medical Research Council has appointed the following to be the members of their Industrial Health Research Board during the period 1942-5: Earl De La Warr (*Chairman*), Prof. F. C. Bartlett, Brig.-Gen. A. C. Baylay, Dr. J. C. Bridge, Dr. A. N. Drury, Dr. T. Ferguson, Dr. M. W. Goldblatt, Dr. A. Bradford Hill, Dr. Donald Hunter, Prof. Esther Killick, Air Vice-Marshal Sir David Munro, and Mr. J. L. Smyth. Prof. A. W. M. Ellis, director of research in industrial medicine under the Council, will also attend all meetings. Dr. R. S. F. Schilling, one of H.M. Medical Inspectors of Factories, has been seconded to the service of the Council by the Ministry of Labour to act as secretary of the Board. The terms of reference of the Board have recently been revised and are now as follows:

> "To advise and assist the Medical Research Council in promoting scientific investigations into problems of health among workers, including occupational and environmental factors in the causation of ill-health and disease, and the relation of methods and conditions of work to the functions and efficiency of body and mind; and in making known such results of these researches as are capable of useful application to practical needs."

AWARD FOR GALLANTRY

Dr. ERNEST VICTOR NEWLING, medical officer in charge of a mobile unit, Civil Defence Casualty Service, Westminster, has been appointed an M.B.E. (Civil Division). The citation in a *Supplement* to the *London Gazette* dated Aug. 28 reads: "During air raids Dr. Newling has led his unit with gallantry and calm efficiency. On many occasions he has carried out the treatment of trapped casualties in most difficult conditions with complete disregard of danger from the possible further collapse of demolished buildings. By his prompt actions and skill Dr. Newling has saved many lives."

Correspondence

Lister Technique in Emergency Surgery

SIR,—There can be no doubt—as Prof. R. J. Willan wisely pleads (Sept. 5, p. 291)—that the young generation of surgeons should master the Lister technique. It would enable them to deal successfully with emergency surgery. Also there can be no doubt that many loopholes of infection can be blocked by the addition of the Lister technique to the highly skilled surgical technique in the strict aseptic surroundings in present usage. For example, a spray containing an antiseptic directed upon a plaster-of-Paris cast during its removal would stop dust and inhibit the growth of micro-organisms it might contain. The only reason for a separate room for this process would be the possible disagreeable smell of a carbolic spray in a general ward. Prof. Willan rightly scoffs at the absurd notion that antiseptics so damage tissues as to prevent healing and their ability to deal with infection. Those who correctly make so great a point of excising all dead and injured tissues do not seem to estimate the actual damage done to healthy tissues by the passage through them of the sharpest scalpel.

Many misconceptions exist at the present time about Lister's technique. He excised all dead tissues from the burns and compound fractures he had to treat. Many of us who assisted Lister in public and private (in fact, he left me in charge of his patients when he retired) are alive, and can testify that his wounds healed by first intention with the greatest regularity.—I am, etc.,

London, S.W.1 G. LENTHAL CHEATLE.

A Classification of Nerve Injuries

SIR,—I hope I shall not be thought critical of the excellent work which Prof. H. J. Seddon and his unit are doing on peripheral nerve injuries if I protest at the new terminology of which he is the foster-parent (Aug. 29, p. 237). He seeks to distinguish three states of a nerve: complete division, division of axis-cylinders without division of the nerve-sheath, and transient block. He proposes to call these "neurotmesis," "axonotmesis" (what a word! as Mr. Herbert would say), and "neurapraxia."

Our profession has suffered much at the hands of neologists, but even a helminth will turn. A new medical term should fulfil four requirements: it should be necessary, accurate, self-explanatory, and if possible euphonious. The most that can be said for these three is that the first two are accurate. "Neurapraxia" is the most objectionable, being actually misleading, since "apraxia" has for many years been the name of a psycho-physiological disturbance at the highest level. But why should we have to learn new words at all, when we can speak, in English, of "nerve-division," "nerve-contusion," and "nerve-concussion"?—I am, etc.,

London. W 1 W. RUSSELL BRAIN.

Prognostic Value of Blood Sedimentation Rate in Phthisis

SIR,—The paper by Drs. E. Lewis-Faning and M. Myers (Aug. 1, p. 125) on the prognostic value of the blood sedimentation rate (B.S.R.) in pulmonary tuberculosis is surely unreasonable in denying the value of serial tests in assessing the progress of the disease, while drawing important prognostic conclusions from a single test. A considerable volume of unpublished work at the Cheshire Joint Sanatorium points to the greater accuracy of conclusions drawn from serial results compared with those from a single test. Lynn, in an unpublished thesis, showed that the prognosis in patients with a fluctuating B.S.R. was almost as bad as in those with a rapid B.S.R., even though the final rate might be within normal limits. This work was carried further by Brooks, who showed that the prognosis was exceptionally good in patients discharged from the sanatorium with series of consecutive monthly B.S.R. readings within normal limits. The period of follow-up was six years.

I agree with the writers of the paper that B.S.R. estimation is not 100% accurate, but any case whose B.S.R. is not in keeping with the clinical and radiological condition is worth further investigation, as the following cases show:

1. A man with moderately advanced disease, in fairly good general condition, afebrile, and with a partially effective artificial pneumothorax, had a persistently very rapid B.S.R. (118–136 mm./2nd hour). On further investigation he was found to have a positive Wassermann reaction.
2. A girl was admitted with minimal tuberculosis. Her B.S.R. rose from 10 mm./2nd hour to 78 mm./2nd hour in three months. She was found to be pregnant, a fact she had succeeded in hiding until then.

A cold or a boil is commoner, but the increase in B.S.R. is less.

The cases with anomalously slow B.S.R. are rare, though there is a case in our recent records with radiological spread of disease accompanied by normal B.S.R. (including a normal sedimentin index). The few cases with positive sputum and normal B.S.R. seem to do well.—I am, etc.,

Cheshire Joint Sanatorium, Salop. A. CLARK PENMAN.

Megaloblastic Anaemia of Pregnancy and the Puerperium

SIR,—I wish to thank Prof. L. S. P. Davidson and Drs. L. J. Davis and J. Innes for their reply (Aug. 29, p. 256) to my comments (Aug. 15, p. 198) and for their elaboration of the grounds on which they base a diagnosis of a megaloblastic marrow reaction. If, as I understand from their letter, they include as megaloblasts not only the proerythroblast but also the megaloblast A of Israels, then I agree that where these latter cells were present in the cases quoted the diagnosis is justified. In my experience such marrows will also show megaloblasts B and C. I regret that my letter created the impression that I confine the term "megaloblast" to the haemoglobinated cell of Ehrlich. For the sake of brevity I included megaloblasts A, B, and C under the term "megaloblast series" in my diagram. All classifications of the erythroblasts must to some extent be arbitrary, for when does a boy become a man or, to use your correspondent's terminology, a megaloblast become a normoblast?

In fairness to Dr. Israels I must make it clear that he and I work at different centres, though in adjacent towns, and I deplore the exigencies of recent years which have prevented me from benefiting from direct personal tuition. I have adopted Dr. Israels's classification because I find it most useful in my own work and the least equivocal means of describing erythroblasts. In addition, it offers an explanation of the Ehrlich megaloblast and eliminates the description as "megaloblasts" of primitive red cells which may occur in significant numbers in normoblastic hyperplasias where deficiency of the liver factor plays no apparent part. On these grounds I regard the classification as both logical and practical and I should be glad to see it adopted as the standard terminology. In the meantime I feel that writers should "state their conventions" so that misunderstandings may be avoided.

I have no quarrel with the title "megaloblastic anaemia of pregnancy and the puerperium," which is obviously preferable to "pernicious anaemia of pregnancy." My doubts arise regarding the evidence on which certain of the cases are included as megaloblastic anaemias. If one could invariably infer the marrow reaction from the colour index, haematology would be much simpler but very much less interesting.

I have not studied the sternal marrow pictures of the few cases which have come my way where this type of anaemia was suspected. As treatment had already been instituted with both liver and iron, and recovery or partial recovery had taken place, sternal puncture seemed unlikely to be helpful. I have, however, seen one case following pregnancy with an initial high colour index progress to a normal blood picture on iron alone, after a brief course of liver in the early stages. I sincerely trust that no comment of mine will deter energetic treatment or cause any relaxation of vigilance until a normal blood count is restored and maintained.

Knowledge of these interesting and rare cases will be best forwarded if those in charge of obstetrical cases will, where possible, have a full haematological investigation carried out prior to commencing liver therapy if a megaloblastic anaemia is suspected.

In conclusion, I hope that no heat has been engendered by this exchange of correspondence. The doubts I have expressed arise from my interest in marrow interpretation and your correspondent's paper, and comments will be a stimulus to me in any future contact I may make with cases of this nature.—I am, etc.,

Manchester M. L. THOMSON.

Counter-measures in Prolonged Hypoglycaemia

SIR,—An outline of the counter-measures worked out by psychiatrists who daily, in the active treatment of mental illness, purposely induce insulin coma may be of practical value to the profession—see Dr. E. H. Roche's report on two fatal cases of hypoglycaemia (July 11, p. 35), and the recent correspondence on increase of hypoglycaemia (June 13, p. 739; June 27, p. 802; July 18, p. 80). In insulin coma therapy, failure to wake after administration of glucose occasionally happens, and the counter-measures equally apply to "ordinary" accidental hypoglycaemia, with the difference that while in coma therapy everything is at hand to meet the emergency, arrangements may have to be improvised in general practice.

1. Failure to wake after ingestion of glucose is not alarming when caused by deficient absorption from the intestinal tract; the condition immediately responds to intravenous glucose.
2. Failure to wake after intravenous glucose is not always alarming, since this may be due to inadequate quantities of intravenous glucose—i.e., due to hypoglycaemia proper. Large quantities, up to 250 c.cm. of the 33% solution, may be required, and hypoglycaemia may reappear unless a sugar depot has been made available by intestinal administration.
3. Failure to wake after adequate intravenous glucose is alarming, and here the term "hypoglycaemia" is a misnomer, since coma has passed from the hypoglycaemic stage to the post-hypoglycaemic stage—i.e., unconsciousness persists despite normal or increased blood-sugar levels. For example, Dr. Roche's first patient showed hyperglycaemia from 5 hours after the onset of coma until his death 7 days later; his second patient had hypoglycaemia proper during the 8 hours of his life after the onset of coma.

Abnormal persistence of cellular changes brought about during hypoglycaemia is the cause, and the treatment is to combat cardiovascular collapse and to facilitate the entrance of sugar into the brain cells. Further administration of glucose is contraindicated, and blood-sugar tests help to distinguish this condition from hypoglycaemia proper. Where these tests cannot be done, or be done in time, the response or partial response to, or the failure of, previous intravenous glucose points the way. The states of hypoglycaemia proper and of post-hypoglycaemia are not necessarily as clear-cut as outlined here, and no harm is done to refractory cases of hypoglycaemia proper by applying to them the first stages of the treatment for post-hypoglycaemia, which is as follows: (1) Continuous inhalation of 5% oxygen—CO_2, since the brain cells may not be able to utilize sugar unless provided with an excess of oxygen. (2) Injection of vitamin B seems to act in a similar way, and massive doses up to 25 mg.—e.g., one ampoule benerva forte—are given both intravenously and intramuscularly. Massive doses of adrenal cortical hormone (cortin, percorten, etc.), up to 10 c.cm., are also given both intravenously and intramuscularly, and intravenous injection of 10 c.cm. to 30 c.cm. calcium chloride is recommended. (3) To combat dehydration and haemoconcentration, 500 to 1,000 c.cm. physiological saline is given by intravenous injection. The stomach is washed out and saline left *in situ*; in the absence of saline tepid water may be used. (4) Lumbar puncture and the withdrawal of as much C.S.F. as will flow is the next step, the rationale being to reduce increased pressure and to draw off the sugar accumulated in the fluid—i.e., following the same reasoning as in narcotic poisoning. (5) If the foregoing measures fail, blood transfusion may still save the patient.—I am, etc.,

Mawnan Smith, Falmouth. H. PULLAR-STRECKER.

An Alphabet of Breast-feeding

SIR,—In his excellent article Prof. Charles McNeil draws attention to the waste of food involved by the substitution of artificial feeding for breast-feeding. But is the logic of this quite sound? A nursing mother will require more food on account of her lactation. I believe she is actually entitled to an additional pint of milk on the priority system. It is perhaps as well that a good cause should not be supported by an unreliable argument. Probably most of us will agree that far too many babies are weaned at an early age, and Prof. McNeil's article will be a great help to many of us.—I am, etc.,

Pleasington, near Blackburn. P. K. MUSPRATT.

Anaesthetic Death in the Surgery

SIR,—I appreciate very much indeed the comments and advice of Drs. P. E. Woodroofe and A. D. H. Simpson (Aug. 29, pp. 263 and 264) relating to my article "Anaesthetic Death in the Surgery." There are occasions, however, when the type of apparatus or anaesthetic as mentioned by Dr. Woodroofe is not available, or it is impossible to find even a colleague to attend, much less a qualified anaesthetist; this happens frequently in a country practice such as mine is. Moreover, most G.P.s only keep chloroform and ether for general anaesthesia, as a rule for maternity cases only. Had such a fatality occurred, a coroner's inquest, with a possible prosecution, would have been the only result possible, and most of us know the pitfalls that face an unfortunate member of the profession involved in such procedures.

Though we are given the licence to practise medicine, surgery, and midwifery, it seems that such responsibilities should not be undertaken, and the role of the G.P. must give way to specialization. Must initiative and enthusiasm be sacrificed on the altar of timidity? For there is not the slightest doubt that as the years roll by the responsibilities for surgical practice are lifted from the G.P., not by reason of his inability to cope with such conditions but by reasons created in prosecutions which (when voiced in the Press) naturally intimidate other G.P.s from accepting such responsibilities, capable as they are of attending to whatever the condition may be. This throws a great deal of work on the hospital staff, on whom such responsibilities seem to rest, and this situation is accepted by the public whatever the outcome. Instead of a capable, enthusiastic, and keen young doctor gaining experience if he sets his mind on general practice, he grows to fear any condition that might involve him in the courts. The form G.P.45 (Rev.) condemns him, and gives him an inferiority complex, even if he could perform the service necessary without having to produce such evidence as is required.

More encouragement and more adequate protection are necessary to produce, or rather bring out, the best in G.P.s, who, after all, are the backbone of the profession.

In conclusion, I should like to mention a paper that was brought to my notice since publishing my case, "The Role of the Epiglottis in Anaesthetic Deaths," by Mr. G. H. Caiger, F.R.C.S. This factor is not mentioned in any of the textbooks so far as I can gather, and is undoubtedly a very important one to be remembered. It was published in the *Journal of Laryngology and Otology* of May, 1942.—I am, etc.,

Maltby. A. H. BARTLEY.

"Removal for Mental Observation"

SIR,—While appreciating the motives which inspired Dr. Arthur Harris's article on the above subject (Aug. 1, p. 136), one feels that any deficiency in dealing with the type of case described lies not in the method adopted by the practitioner but in the facilities offered by the general hospitals for their reception. When mental symptoms are present relations are only too pleased to have the patient removed, whether it be "for mental observation" or otherwise. Not only is nursing at home impossible, but examination of the patient often equally so. Two cases seen recently exemplify these points.

Case 1. Male, *aet.* 26, ex all-in wrestler, with history of fractured skull 12 months before, locked his bedroom door and entrance could be obtained only by forcing the lock. He was lying on the floor, refused to answer any questions, and resisted vigorously any attempt to examine him. In the struggle I was fortunate to note one unequal pupil. Removal was imperative—but to a mental observation ward or to a general hospital? The latter was chosen, but after doing a lumbar puncture under light anaesthesia, no other examination being possible, he was removed "for mental observation" and subsequently diagnosed as G.P.I.; *but* he was removed before any diagnosis could be confirmed. His retention in a general ward was obviously out of the question.

Case 2. Female, *aet.* 44: restless, talkative, obstreperous. Examination quite impossible. History negative. Diagnosis, ? hypomania. Paraldehyde in the doses suggested by Dr. Harris was given with the greatest of difficulty. After being quiet for about 2 hours she was discovered fully clothed having a bath at 2 a.m. Nursing at home was out of the question and she was removed 'for mental observation" since no general hospital would have her.

The only way out of the difficulties enumerated by Dr. Harris would seem to be the provision of a mental observation ward in the general hospitals, staffed by nurses who are not afraid of mental cases as are the nursing staffs of most general hospitals, and where, given time and the facilities, organic nervous disease can be diagnosed when present.—I am, etc.,

London, N.6. W. LEES TEMPLETON.

Desert Sores

SIR,—Is it not possible that desert sores may be identical with the "boils and blains" inflicted upon the Egyptians in Biblical history, and that the condition may have been endemic in the Egyptian desert for thousands of years? It probably did not escape the observation of many doctors in general practice that a modified form of the same condition was prevalent in this country during last winter and spring. In my own practice the increase in cases of what may generally be described as "furunculosis" was very marked, and it seems that in some industrial towns in the Midlands it was also very prevalent. As a victim myself of successive crops (two or three lesions being present at a time) of a very unusual dermatosis, I may perhaps be allowed to attempt a description of it.

Usually starting as a small white-topped papule surrounded with a bright red areola and marked from the outset by its extreme painfulness, it gradually increased in diameter to the size of a halfpenny or even a penny. Nothing appeared to arrest its progress. Sometimes the skin was thinned out over it and almost transparent, while underneath was a purplish-blue exudate, due, presumably, to extravasated blood.

The ingestion of 50-mg. tablets of vitamin C made no impression, and when it was at its worst the advice of someone to try an injection of SUP 36 saved the situation so far as I was concerned; for I was at the time crawling round my practice with one of these lesions on each buttock. SUP 36, in fact, appeared to be a specific among a variety of other remedies tried. With the arrival of summer and an abundance of natural vitamin C in the form of tomatoes and black-currants further outbreaks ceased.

The condition described would appear, then, to be due to a lack of natural vitamin C, synthetic vitamin C having very little therapeutic effect. An increased permeability of the capillaries appears to be the result of this lack of natural vitamin C, and it seems to show that the vitamin alone is not the whole story in such conditions. It is possible, perhaps, that natural vitamin C has some principle loosely combined with it and acting as a sort of catalyst which has not yet been identified by chemists. The lack of citrus fruits during the last 1½ years has probably led to a gradually increased deficiency of natural vitamin C in the blood and brought about an increased proneness to such skin lesions. People of fair complexion, as noted in myself and a few others, appear, as Capt. H. M. Rapport notes (July 25, p. 96), to be more susceptible. Several months after the initial lesion a purplish-blue stain remains under the skin, the lesion itself receding only very slowly. The skin was never actually broken.—I am, etc.,

Hove G. L. DAVIES.

Tietze's Disease a Nutritional Deficiency?

SIR,—Among the many manifestations of subnutrition recently seen by us have been two cases of swelling of the costal cartilages, associated with weakness and lethargy, which conform to the description of Tietze's disease. Both cases have been investigated on the lines of Gill, Jones, and Pollak (*Journal*, Aug. 8, p. 155), with the same negative results. Estimations of the urinary excretion of vitamins have, however, given striking figures which support our view that this syndrome is not a disease *sui generis* but a local manifestation of malnutrition recognizable by deficiencies in vitamins C and B.

Case 1 was admitted to hospital, and the daily treatment in both cases was 700 mg. ascorbic acid and 2 drachms of baker's yeast incubated in a pint of peptolac. Daily estimations of urinary vitamin excretion serve to assess the degree of avitaminosis.

CASE 1 MRS. A, AGED 36

Leading Symptoms	Ascorbic Acid per 100 c.c. Urine*	Pyruvic Acid	B$_1$ Direct Estimation	B$_2$
Painful lump under right breast (6th, 7th, 8th costal cartilages). Lethargy, duration 1 year	mg. 0 0 10 20	mg. 4·75 2·7 3·0 2·0	 30γ 30γ 50γ 25γ	mg 0·25 0·2 0·2 0·2
CASE 2: MISS B., AGED 16				
Loss of weight Lassitude. Anorexia 3 months Swelling of 4th and 5th R. costal cartilages	0 (1st day) 2·5 (after 700 mg ascorbic acid)	4·8 5·0	0 0	0·05 0·05
Normal standards	2·5	0·8	100γ	0·30

* Estimations were made on successive days.

One general practice cannot provide sufficient material to support a theory of this kind, but other workers more fortunately placed may be persuaded to follow the clue.—We are, etc.,

GRIFFITH EVANS, F.R.C.S.
Caernarvon. ROBERT O. EAMES, F.I.C.

Renal Infarction and the Goldblatt Kidney

SIR,—The annotation on hypertension and unilateral kidney disease (July 18, p. 75) has stimulated interest in a disease syndrome which increasingly takes its toll as time goes on. The experimental work of Goldblatt has, as has been stated, found its clinical counterpart in a number of reported cases of unilateral kidney disease in which the hypertensive blood pressure has resolved itself following the removal of the injured organ. No reference has been made, however, to the more frequently occurring cases of embolic infarction of the kidney, observations on which might furnish valuable evidence in the investigation of arterial hypertension. A short résumé is given below of such a case seen in conjunction with Mr. Robert Mailer of Glasgow Victoria Infirmary.

The patient, a man aged 39, enjoyed good health until the onset of inguinal hernia. Blood-pressure readings approximated 140/90. During the third week after his operation the patient experienced pain in the left lumbar region, and this was followed by profuse haematuria. The condition was typical of embolic infarction of the kidney. Subjective symptoms included severe discomfort at the back of the head, vertigo, throbbing, precordial pain, and general malaise. Blood-pressure recordings showed readings of 220/140. The lumbar pain persisted for several days, and the haematuria for more than two weeks. Repeated blood-pressure estimations revealed a gradually diminishing tension, reaching its pristine level of 140/90 one month after the onset of the complication.

This case, in its pathology and symptomatology, constitutes the clinical analogue of Goldblatt's experimental clamping of the renal artery. It is here described by the courtesy of Mr. Robert Mailer.—I am, etc.,

Glasgow GEORGE KRASNER.

Bee Stings

SIR,—The article on bee stings by Dr. A. J. Jex-Blake (Aug. 29, p. 241) will interest many. Similar experiences obtain in South Africa. About 1926 a Pretoria tram was invaded by bees with disastrous results. One man was stung to death.

For some years I kept bees in the Free State. My experience and that of others was that many persons soon built up an immunity to stings. It was noted among some that failure to be stung at intervals meant loss of immunity. I have observed severe prostration after a single sting. Yet I have seen persons suffer hundreds of stings with little effect. Years ago I was the victim of such an experience in the Transvaal. Foolhardily I tackled a wild swarm without adequate protection. The invasion was summarily repelled. The drone of enemy planes seems as nought when compared with the hum of thousands of angry bees. A desperate run of nearly a mile ensued before the last attackers were shaken off. On my return journey I had a few more stings for luck. I was 14 years old at the time. My flight included a run down the boulder-strewn side of a steep kopje and at the bottom a clean and nimble leap over a four-foot fence. Years later I viewed the scene of the incident and recollected my accomplishments with astonishment. Well over 200 stings had to be removed from my face, neck, and arms. Despite a great shock of hair there were numerous stings in the scalp. I suffered no ill effect except much oedema of the face and intolerable itching.

Certain strains of South African bees are notoriously vicious, and it is remarkable the way they will wantonly attack persons or animals hundreds of yards away from the hive or nest. In East Africa the natives suspend the hives in trees. In the last war the Germans took advantage of this by shooting at the hives when attackers got within distance.—I am, etc.,

Cardiff. R. DRUMMOND.

Standardized Wassermann Reactions

SIR,—Dr. H. M. Hanschell's letter (Aug. 1, p. 141) makes depressing reading. His knowledge of complement-fixation tests must be scanty if he thinks that either the Ministry of Health or any other laboratory can send out complement standardized for use elsewhere. The value of this reagent depends on its interactions with the other components of the test and must be determined by each pathologist at the time he uses it. What the Ministry do guarantee is that the complement they send out is usable, and this is a most valuable aid to many laboratories.

With regard to dropping the Wassermann test in favour of precipitation tests, I personally do not agree. During the last 12 years I have performed an average of 7,000 Kahn tests a year, before which I had some training with Kahn himself when he was at St. Thomas's Hospital in 1928. In my hands this test is not so reliable as the Wassermann. It has some advantages—e.g., it becomes positive earlier than the Wassermann in primary syphilis—but I get too many false positive reactions, particularly in well-treated cases, for me to adopt it to the exclusion of the Wassermann. Nevertheless, I find it very useful as a confirmatory test. My experience with the Laughlen test was small, but it proved to be not so specific as the Kahn. Of all the precipitation reactions for syphilis (including the Kline reaction), I believe that the sigma test is the most reliable, but unfortunately it is too time-consuming and laborious for routine use. Thus "the tacit approval, by the Ministry, of Wassermann tests as performed by approved laboratories" seems to me to be the correct attitude, but I should like the required standard of work to be higher.

The thought of a medical officer in charge of patients, even if he has had first-hand experience of all laboratory tests, popping in to the laboratory to do a batch of tests if need be fills me with apprehension. Surely the foundation stone of accurate work with serum tests is regularity of performance. But this does not, and should not, exclude the pathologist from doing regular clinical work and thereby keeping in touch with patients. In short, the pathologist of a V.D. clinic should be a clinical pathologist.—I am, etc.,

L C.C. (Whitechapel) Clinic, E.1. I. N. ORPWOOD PRICE.

Lathyrism and Vitamin B$_1$ Deficiency

SIR,—At the close of your interesting annotation on "The Wernicke Syndrome and Vitamin B$_1$ Deficiency" (Aug. 29, p. 249) you suggest that antivitamin factors may prove to be the cause of other obscure nutritional diseases. A number of years ago, in collaboration with Lieut.-Col. L. A. P. Anderson, I.M.S., and Sir Albert Howard (*Ind. J. med. Res.*, 1924, 613), it was shown that lathyrism resulted most probably from the ingestion of foodstuffs prepared from the seeds of *Vicia sativa* var. *angustifolia*, and not, as had been assumed previously, from the seeds of *Lathyrus sativus*. The possibility of vitamin deficiency in the diet of the experimental animals was excluded, and we suggested that the disease was caused by the glucoside, vicine, or its aglucone, divicine, both of which were found experimentally to be toxic. It now seems to me to be more probable that vicine, or possibly some other constituent of the seeds of the vetch, inhibits the activity of aneurin or some other member of the vitamin B complex. It is hoped that someone more favourably placed than I now am may investigate the validity of this suggestion.—I am, etc.,

Bangor, N. Wales. J. L. SIMONSEN.

Draining the Ectopic

SIR,—There have been several accounts in the *Journal* (1942, **1**, 640, 669, 722) during the past few months of the delivery of ectopic pregnancies of viable age. In each case a drainage tube was introduced and in some was followed by a long period of invalidism. I wish therefore to call attention to the fact that, where the placenta cannot be removed entirely (sometimes a simple procedure), the abdominal wall can be sutured completely over the secundines without any fear of after-effects. The power of autolysis of the placenta is so great, and its connexion with the maternal blood supply so intimate, that it disappears after a few months. To introduce infection to it by means of a drainage tube will ensure a prolonged convalescence with fistula and adhesion formation. Pus, not placenta, discharges from the drainage tube. When a lithopaedion is discovered its placenta is non-existent.—I am, etc.,

FRANK STABLER,
Surgeon Commander, R N.V.R.

Self-medication and the Chemist's Shop

SIR,—Dr. E. L. Loewenthal's letter (Aug. 15, p. 199) was one of the most interesting and intelligent that has appeared in the *Journal* for some time. He hits one nail very squarely on the head when he writes, "The more effective the preparation the more dangerous it is . . . without medical supervision." To the examples he gives I would add a well-known cough syrup which will keep the cough under a very fair degree of control until cavities have appeared in the lung. I believe I am right in saying that we are now up against an enormously powerful vested interest, and that something like 90% of the patent medicines sold in this country are controlled from the financial end by one group.

The average chemist probably does not want to prescribe, and it is doubtful if he wants to "muscle in" on the territory of other branches of retail trade. But so long as the dispensing doctor continues to take away his legitimate dispensing trade he is left with but little option if he is to remain in business at all. One point, however, the would-be reformer must keep in mind. There has grown up in some parts of the country a belief or superstition that "doctor's medicine" has a magical superiority over any sold over the counter. Who in the profession that dispenses has not heard, "I thought it was time I had some doctor's medicine"? Again, there is a similar superstition that the chemist who does N.H.I. dispensing keeps only inferior drugs, and one's offer of a prescription may be refused on that ground.

Dr. Hermann Levy's statement (Aug. 29, p. 265) that "the English have a certain proneness" to self-medication is merely a statement of the truism that the English are a very gullible people. Possibly the real essence of democracy is that they should be permitted to continue to allow themselves to be gulled, but the profession in its fight against osteopaths, chiropractors, faith-healers, etc., has never shown any leaning towards that doctrine. One of the advantages of a State Medical Service is that we should be in a very much stronger position *vis-à-vis* those who make large fortunes by peddling to all and sundry drugs the capabilities of which are utterly unknown to them; another is that we should find ourselves freed from the necessity of competing with the chemist as retail tradesmen.

I wonder if Dr. Loewenthal is aware of the difficulty which the B.M.A. experienced in obtaining any newspaper publicity for *Secret Remedies* and its sequel.—I am, etc.,

DONALD M. O'CONNOR.

Hypnosis

SIR,—I thought your leading article on the present position of hypnosis (Sept. 5, p. 283) did not sufficiently stress one important point, in that the hypnotic state is related to the transference situation obtained in the preliminary stages of psycho-analysis. Psycho-analysis proceeds to render this situation conscious to the individual, whereas hypnosis does not generally do so. The point is that transference is proceeded with to obtain the necessary deeper analysis, whereas hypnosis serves to keep transference maintained, and builds up resistance to any deeper analysis. Jones mentions this in his book, *Papers on Psycho-analysis*. No doubt when a skilled psycho-analyst discovers his dream of paradise by securing as a patient a spiritualist medium suffering from hysteria, and endeavours to treat this entrancing combination by hypnosis, some further delectable expressions of opinion may obtain.—I am, etc.,

Tipton, Staffs. L. H. EUNSON.

Hyperostosis Frontalis Interna

SIR,—Dr. J. MacKay Crawford (Aug. 29, p. 261) is, of course, quite right and I apologize for the slip. The tolerance to glucose was reduced, not increased, in my case, as evidenced by the definite rise in blood sugar.—I am, etc.,

Truro. C. T. ANDREWS.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on August 28 the following medical degrees were conferred:

M D.—By proxy: E. W. Hart In person: W. A. Law

M B., B CHIR.—By proxy: P. Hugh-Jones, D. McAnally, G P. Baker, W. E. Church, H G. Danziger, G. E. Ffrench, H D. Juler, J. M. S. Knott, H. E. Lockhart-Mummery, L. H. H. May, J. C Waterlow, P. H. Buxton, P. M. Daniel, G. H. Dhenin, F. S. Glassow, A Hulme, R J Walker, B. G C. Ackner, P. F. Borrie, J. A. B. Gray, E. J. Holborow, H. W. F. Jones, T D. Kellock, D S. Short, J. F P. Skirmshire, J. C. Swanson, J. R. Thompson, T O Candler, A. G. Eddison, E J. Harrison, D. E. R Kelsey, A. Lyell, R. A. Palmer, S H Purser, D. L Sandes, J. F. R. Withycombe, W. B. Alexander, A. O Bech, J A. Black, N. F. Crofts, R. E Danckwerts, J. H L. Ferguson, J. L. Fluker, J. B. Foote, R. A. Holden, E. B. Jarrett, A. G. Leacock, C M. Phillips, P. M. M. Pritchard, J. H. B. M Rowlands, H D. Teare, J B Wyon, R. J. K. Brown, N. D. Compston, P. J. R. Deller, F. M. Lancaster, K. T. Lockhart, R. G Miller, E C. Poulton, E. G Sita, R. U Whitney, D. I Williams, C. D. Calnan, D G. R. Fox, J S. Pippard, J. R K. Preedy, F. S. Carter, G. F. Green, A. W N Oatway, T. O. Scudamore, R H Wheeler, J. Dean, R Dobson, H G McQuade, R. H. Meara, W. E S Bain, T. L. T. Lewis, D Rice, N L. Birkett, B F Brearley, E. G. A Crawshaw, J. A Peters, J. F. P. Quinton, P. K. Renshaw, J K. Wagstaff, R B Welbourn, M. R. Jeffrey, H M. Lawson, C. R Nash, H P Konig, L. R McLaren, J. J. Wild, and H. I. Winner In person: V. R. Arulanandom, N J. Goorney, H. M. J. Rowan, J. A. V. Bates, R. D. Sweet, I Macdonald, J. G. Salter, E.-C. E. Golden, W. S. S. Ladell, R W Danziger, and R. G. Mathers.

During July and August the titles of the degrees of M.B., B.Chir. were conferred on A. Bolton and Mrs. P. Eskell (Newnham College) and F. H Lomax and M. L. Macalister (Girton College), and of M.B on Mrs C. M Hall (Newnham).

UNIVERSITY OF LONDON

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following scholarships have been awarded for 1942-3:

St. Dunstan's Medical Exhibition, Miss W. E. Lewington *St. Dunstan's Medical Exhibition (Supplementary),* Miss S Rollin *A. M Bird Entrance Scholarship,* Miss G Smith. *Mabel Sharman-Crawford Scholarship,* Miss P. J Lockley *Sir Owen Roberts Memorial Scholarship,* Miss E. J Harman. *A. M Bird Scholarship for Clinical Studies,* Miss M. E Townsend *Alfred Langton Scholarship,* Miss C. M. Watt. *Ellen Walker Bursary,* Miss E. T. Brash *Flora Murray Bursary,* Miss D. M Phillips. *Emma Beilby Bursary,* Miss H. B Hill and Miss E E Simpson *John Byron Bursary,* Miss D A Chapman and Miss B M Goetzee. *A M. Bird Postgraduate Scholarship in Pathology,* Miss F. D. Bosanquet, M B., B.S

Obituary

V. WARREN LOW, C.B., M.D., F.R.C.S.

The announcement of the death, which took place on September 2, of Mr. V. Warren Low will be received with regret by a wide circle of friends and colleagues. He was associated with St. Mary's Hospital during almost the whole of his career, first as a student, then as a member of the staff, rising to the position of senior surgeon, and afterwards as consulting surgeon and vice-president of the hospital.

Vincent Warren Low was born in 1867 at Staines and was educated at Cranleigh. After his training at St. Mary's he graduated M.B. at the University of London in 1892, and B.S. with first-class honours in 1893. In that year he became a Fellow of the Royal College of Surgeons, and two years later proceeded M D.Lond. At the outbreak of the Boer War he went out with the South African Field Force as a civil surgeon, served with distinction, and gained the Queen's medal and seven clasps. On returning he became assistant surgeon to the Royal Northern Hospital, and shortly afterwards assistant surgeon to St. Mary's, where in due course he became full surgeon and lecturer on surgery in the medical school. During the last war he was consulting surgeon to H.M. Forces in the Dardanelles and Egypt, with the temporary rank of colonel, A.M.S., and in that capacity again he did distinguished service for his country, was mentioned in dispatches, and was made Commander of the Bath.

The Royal College of Surgeons claimed a great deal of Low's interest for many years. From 1916 onwards he was a member of its Council and from 1928 to 1939 a Vice-President. He served the College as a member of the Court of Examiners, and he was also at various times examiner in surgery to the universities of Cambridge, London, and Liverpool. For some years he was a member of the University of London Senate. He could be described as a great "hospital man"; he was a member of the Council of the King Edward's Hospital Fund for London, and consulting surgeon to several cottage hospitals in the metropolitan area. Another institution in which he was greatly interested was the Royal Seabathing Hospital at Margate, of whose committee of management he was a valued member. An important office he held for many years was that of chief consulting surgeon to the L.M.S. Railway Company.

In medical society life Warren Low was always a popular figure. He was not a brilliant or frequent speaker, but he was a great listener, even after partial deafness had robbed the meetings of some of their interest for him. His countenance continued to radiate cheerfulness, even in his later years of disability, and his humorous turn of speech, often in the vein of happy reminiscence, made his rare interventions either in business or scientific discussion always welcome. He was an old member of the Medical Society of London; his first contribution to its *Transactions* appeared more than forty years ago. Eventually he became one of the trustees of that society and as far back as 1919 its president. He was also prominent in the Royal Society of Medicine and was its president in 1932-4. He had previously been president of the Section of Surgery. His old students have occasion to remember with gratitude the excellence of his teaching, but he attempted no ambitious writing. He was prominent in the Masonic fraternity, a Past Master of the Sancta Maria Lodge attached to St. Mary's Hospital, and a member of the United Grand Lodge of England. He was also president of the Society for the Relief of Widows and Orphans of Medical Men. He was Junior Warden of the Society of Apothecaries, which he joined in 1914 and in which he took great interest, not having missed a single meeting of the Private or Full Court after becoming an Assistant.

DAVID WATERSTON, M.D., F.R.C.S.ED.

We regret to announce the death of Prof. David Waterston, which took place on Sept. 4 in Edinburgh at the age of 70. He had held the Bute Professorship of Anatomy at St. Andrews for 28 years.

Waterston was born in Glasgow, the son of the Rev. Richard Waterston, for many years Free Church minister in Dundee. He studied medicine in Edinburgh and graduated M.A. in 1891, M.B., C.M. with honours in 1895, and M.D. with gold medal in 1900; he took the F.R.C.S.Ed. in 1898 and in later life was elected F.R.S.Ed. For twelve years he was demonstrator of anatomy at Edinburgh University and he held the Crichton Research Fellowship in anatomy for three years. In 1909 he became professor of anatomy at King's College, London, resigning in 1914 on his election to the chair at St. Andrews. He was Arris and Gale lecturer at the Royal College of Surgeons of England in 1914-15 and Struthers Memorial Lecturer at the Royal College of Surgeons of Edinburgh in 1927. He represented St. Andrews University on the General Medical Council for ten years and served also for some time as a member of the Dental Board. He joined the British Medical Association in 1898, and was vice-president of the Section of Anatomy in 1906 and of the Section of Anatomy and Anthropology in 1939. At the Bournemouth Annual Meeting he opened a discussion on the mechanism of pain, and the text of his paper was published in the *British Medical Journal* of December 15, 1934.

Waterston was deeply versed in his own subject, and his reputation as a teacher was high. He was the author of *Anatomy in the Living Model,* which embodied his Arris and Gale lectures, and edited the *Edinburgh Stereoscopic Atlas of Anatomy*; he also contributed papers on anthropology, embryology, and comparative anatomy to scientific journals and the publications of scientific societies. He was one of the pillars of the James Mackenzie Institute for Clinical Research from the time of its foundation at St. Andrews and acted as its honorary consultant; he also served on the local town council, and was a well-known figure on the links of the Royal and Ancient Club. A memorial service was held on Sept. 9 in the University Chapel, St. Andrews.

The Services

The King has approved the following appointments and awards in recognition of gallant and distinguished services in the Middle East during the period Nov., 1941, to April, 1942.—*C.B.E. (Military Division)*.—Acting Brigadier G. F. Allison, M.C., late R.A.M.C.; Temp. Brigadier J. Walker, M.C., late R.A.M.C. *O.B.E. (Military Division)*.—Acting Brigadier R. R. G. Atkins, M.C., R.A.M.C.; Temp. Cols. J. S. K. Boyd, H. V. Leigh, G. S. McConkey, and R. F. Walker, M.C., R.A.M.C.; Major (Temp. Lieut.-Col.) K. Fletcher-Barrett, R.A.M.C. *M.B.E. (Military Division)*.—Capts. (Temp. Majors) P. B. Ascroft, W. A. Oliver, L. S. Rogers, and H. B. Stallard, R.A.M.C. *M.C.* —Capt. (Temp. Major) E. F. S. Morrison, R.A.M.C.; Capts. R. D. D. Birdwood and V. Rangachari, I.M.S.

Mentions in Dispatches.—Capt. (Temp. Major) R. A. Smart, R.A.M.C.; Major (Temp. Lieut.-Col.) H. W. Mulligan, I.M.S.

Temp. Surg. Lieut.-Cmdr. H. G. Rees, R.N.V.R., has been appointed an O.B.E. (Military Division) and Temp. Surg. Lieuts. P. W. Isaac and C. H. F. Wood, R.N.V.R., M.B.E. (Military Division) for endurance and devotion to duty when H.M.S. *Cornwall* and H.M.S. *Dorsetshire* were sunk by Japanese air attacks in the Indian Ocean.

The D.S.C. has been awarded to Surg. Lieut.-Cmdr. B. S. Lewis, R.N., for gallantry in an action which resulted in the safe passage to Malta of an important convoy, and Surg. Lieut. G. N. Reed, R.N., and Temp. Surg. Lieut. R. R. Wethered, R.N.V.R., have been mentioned in dispatches.

The D.S.C. has been awarded to Surg. Cmdr. L. Lockwood, R.A.N., for bravery and endurance when H.M.A.S. *Hobart* was taking convoys across the China and Java Seas in the face of sustained enemy air attacks.

Medical News

At a sessional meeting of the Royal Sanitary Institute to be held at Oldham Town Hall on Sat., Sept. 26, Dr. E. R. Peirce will read a paper on "The Control of Sea- and Air-borne Disease."

The Medical Research Council invites applications from medically qualified women for a studentship for training in methods of experimental psychology; preference will be given to candidates who have had some special training in physiology or neurology, or who have already had some experience in the use of research methods. The studentship will be tenable for six months, during which the holder will receive training under the direction of Prof. F. C. Bartlett at Cambridge. Payment will be at the rate of £350 per annum, and the student will be expected to give her whole time to the work. The award will be made with a view to possible opportunities for research into problems arising during the war, either in the Services or in industry, but no definite promise of employment after the expiry of the studentship can be given. Applications should be lodged with the Secretary, Medical Research Council, c/o London School of Hygiene, Keppel Street, London, W.C.1, by Oct. 5. Forms for the purpose will be supplied on request.

Sir Stanley Woodwark, M.D., F.R.C.P., has been elected Master of the Barbers Company. He has also been re-elected for a further year to be Master of the Society of Apothecaries. The famous Hall of the Barbers Company, which survived the Great Fire of London in 1666, was destroyed by the air raid on London at the end of December, 1940. Mr. John Howell Evans, F.R.C.S., has been elected Renter Warden of the Barbers Company.

Dr. James Aubrey Ireland of Shrewsbury has been elected an Alderman of the Salop County Council

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* a further large rise in the incidence of measles, 924 cases, occurred during the week. A small drop, 23 cases, was recorded for whooping-cough. The notifications of scarlet fever, diphtheria, and dysentery rose by 123, 88, and 32 respectively. In the case of diphtheria this trend was fairly general throughout the country, the only county with an appreciable increase being Lancashire, with 27 cases more than in the preceding week.

The largest rises for scarlet fever were in Lancashire 27, Yorks West Riding 25, Staffordshire 19, and Wales 27.

Of the 18 notified cases of typhoid 9 occurred in Buckinghamshire, Aylesbury R.D.

Whooping-cough showed considerable fluctuations. The largest deviations were a drop of 34 cases in London and a rise of 32 in Lancashire.

The higher incidence of dysentery, 32 cases, was due to small widely dispersed outbreaks. The only local outbreaks of any size were those of Shropshire, Oswestry R.D. 9 cases, and Glamorgan, Pontypridd U.D. 8.

In *Scotland* during the week there were 338 cases of scarlet fever, an increase of 66. The largest of the local rises was in Edinburgh—53 cases, compared with 29 in the preceding week. The increase in the incidence of dysentery, from 69 to 86 cases, was due to outbreaks in the Northern and North-Eastern areas; in the counties of Zetland, Kincardine, and Aberdeen there were 13, 14, and 14 cases respectively.

In *Eire* returns included a case of typhus fever notified in the Rural District of Kanturk, Co. Cork.

Whooping-cough

The possibility of controlling whooping-cough by inoculation is being actively pursued. This disease is the most deadly of infectious diseases among infants. During the five years before the war the numbers of children under 1 year of age dying from the principal infectious diseases of childhood were: whooping-cough 4,196, measles 2,212, diphtheria 380, and scarlet fever 80. It is announced in the September issue of the *Monthly Bulletin* of the Emergency Public Health Laboratory Service that the effectiveness of pertussis vaccine for immunization is to be investigated by a large-scale field experiment. The trial is to be made with children aged 6 months to 3 years, who are to be kept under observation for at least one year. The results obtained will be compared with a control series of similar age and living under the same environmental conditions.

Returns for the Week Ending September 5

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,472, whooping-cough 1,197, diphtheria 787, measles 3,024, acute pneumonia 379, cerebrospinal fever 73, acute poliomyelitis 24, dysentery 112, paratyphoid 13, and typhoid 7.

No. 34

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	66	3	20	2	5	112	10	38	2	8
Deaths		—	1				—	—		
Diphtheria	717	40	173	50	13	746	29	202	17	31
Deaths	16	—	2	2	1	22	2	5	1	5
Dysentery	91	16	86		—	170	25	41		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	—		—	2	—	—		—
Deaths		1	—				—	—		
Enteric (typhoid and paratyphoid) fever						49	1	2	11	5
Deaths						2	—	—	—	—
Erysipelas		—	46	4	3		—	41	10	4
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				161						
Deaths	54	4	19	30	8	32	5	7	22	7
Measles	3,165	273	72	13	18	1,454	62	17	76	6
Deaths	2	1	1	—	—	—	—	1	1	—
Ophthalmia neonatorum	94	1	16	—	—	92	5	19	—	—
Deaths										
Paratyphoid fever	11	1	1	—	—	195	6	9	—	—
Deaths	—	—	—	—		1	—	—	—	—
Pneumonia, influenzal*	352	20	7	—	1	372	14	3	—	2
Deaths (from influenza)	11	1	1	—	—	4	10	—	—	3
Pneumonia, primary			97	10				126	7	
Deaths		15		10	8		—		6	—
Polio-encephalitis, acute	2	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	14	1	—	6	—	24	2	3	4	1
Deaths		—	—				—	—		
Puerperal fever	—	2	11	4	—	—	—	17	2	1
Deaths		—					—			
Puerperal pyrexia	168	13	11		4	118	6	15		—
Deaths										
Relapsing fever	—	—			—	1	1			—
Deaths										
Scarlet fever	1,455	100	338	41	25	811	26	159	23	21
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—	—	—	—	—	—
Typhoid fever	18	1	—	5	—					
Deaths	2	—	—	—	—					
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,212	107	30	82	3	3,144	240	54	38	3
Deaths	9	3	—	1	1	19	3	2	2	—
Deaths (0–1 year)	284	32	62	51	29	241	21	52	31	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,601	522	521	164	119	3,637	462	549	147	126
Annual death rate (per 1,000 persons living)			11·7	10·9	†			12·0	9·8	†
Live births	5,938	691	873	442	267	5,421	459	871	330	210
Annual rate per 1,000 persons living			18·1	29·5	†			17·7	21·9	†
Stillbirths	207	15	26			198	25	29		
Rate per 1,000 total births (including stillborn)			29					32		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh

QUERIES AND ANSWERS

Aspirin for Asthma

A. K (Manchester) writes: I have a lady patient, aged 64 years, with bronchial asthma of many years' standing. She tells me 2½ gr. of aspirin gives her 36 to 48 hours' immunity from wheezing and she sleeps all through the night. Occasionally she takes only 1¼ gr. of aspirin to produce the desired result. Is there any pharmacological explanation in support of her findings? She assures me it has never failed her

Auscultation in Non-penetrating Abdominal Injuries

Dr. F. PIERCE HUDSON (Liverpool) writes: Dr H. P. Tait, who inquires about the value of auscultation as an aid in the diagnosis of non-penetrating abdominal injuries (Sept. 5, p. 300), may be interested in the following case I encountered last week. A girl of 2 years was admitted to hospital 7 hours after falling down some stairs. She was very severely shocked. Her general condition and the difficulty of diagnosis delayed operation for 24 hours. On three occasions before operation I auscultated her abdomen and heard peristaltic movements in all areas. At operation the small bowel was found to be ruptured in two places and there was general peritonitis

Blood Injection in Tuberculosis

Dr. B. JUHN (Kenton) writes in reply to Dr. J. H. Fletcher (Aug. 22, p. 236): Since Wassermann's and Neufeld's papers about immunity in tuberculosis there were not many new discoveries in this very difficult field. Besides the different strains of the tubercle bacillus the tissue allergy and the tissue immunity play a very important role. Although active immunity will be the aim in the prevention and cure of tuberculosis, numerous sera for passive immunization were tried (Maragliano, Marmorek, Koch, Behring) without success. According to C. Spengler the protective bodies against tuberculosis are not present in the serum but in the red blood corpuscles. His preparation "I.K" was obtained from erythrocytes. It was completely ineffective. Although the humoral immunity plays certainly a smaller part in prevention and cure of tuberculosis than the cellular, I tried repeated blood transfusions in cases of exudative tuberculosis, the donors being cases of healed fibroid tuberculosis The number of cases so treated is too small to be conclusive.

LETTERS, NOTES, ETC.

Apple, Pear, and Carrot Treacle

Dr. E. H. STRANGE (Stamford Hill, N.16) writes: May I draw the attention of practitioners in country districts and of those supervising factories with canteens to a very valuable national source of food often allowed to go to waste? Inferior varieties of apples and pears, and those affected by the attack of the codlin moth and the saw-fly, as well as those of poor keeping qualities, are allowed to rot in this country in enormous quantities. These can be converted into "treacle," a superb flavouring and sweetening agent. Before the war "apple treacle" was eagerly bought up by confectioners at about 10s. a gallon. It can be used to sweeten and flavour almost all sweet dishes, and an expert cook with a supply can make a whole series of sweets hitherto unknown to her patrons and of the highest quality. The treacle produced by perry pears is scarcely distinguishable from that obtained from apples, but that from better varieties of pears should be so much the more exquisitely flavoured. The production of treacle from apples and pears is not a job for the housewife or the amateur, but it is done at a very reasonable cost by firms who make a specialty of this sort of work. The yield for average inferior sorts of apples is about 15 gallons a ton of fruit, and the cost of processing is quoted per ton. It ought not to be difficult in country districts to get together such quantities of apples and pears if one bears in mind that fruit for this purpose need not be of high quality or completely sound and whole. Treacle from carrots can be prepared, though the flavour is not nearly so pleasing, and it does not keep so well as that from apples and pears. At one time this spring carrots not of first quality could be bought at 50s. a ton. Such carrots would have paid handsomely for treacling

Bleeding Tooth Sockets

Dr. J. T. MACLACHLAN (Dornoch) writes: During the last 50 years I have been twice called out of bed to stop bleeding tooth sockets. The usual styptics—iron, tannic acid, etc.—have failed in my hands to do so; and I have been obliged to plug the socket of the bleeding tooth with cotton-wool and to insert a horseshoe pad of Gamgee tissue between the teeth and tie the jaws together. This proved successful. The two interesting cases of bleeding after tooth extraction reported by Dr. G. E. H. Le Fanu (Aug. 15, p. 208), which were promptly cured by inserting a pencil of silver nitrate, will be greatly appreciated by practitioners. In a similar manner I have on one occasion stopped a bleeding nose, where the blood was spurting yards from the patient, by touching the bleeding-point on the septum with a caustic—silver nitrate. Recently I saw a man who had been struck on the mouth with the head of a golf club, displacing some teeth and lacerating the lower gum. In this case the few styptics that were available failed to stop the persisting welling-up of blood into the mouth, and I was compelled to use pads of cotton-wool in front, behind, and between the teeth, and to tie the jaws together. Prof. Grey Turner (Aug. 29, p. 258) has drawn attention to the valuable styptic power of turpentine in bleeding tooth sockets. Erichsen, in his classical work on surgery, drew attention to the great value of turpentine as a styptic; and he mentions a case of persistent bleeding from the tonsil that was successfully treated by a gargle of turpentine.

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journal,* September 17, 1842:

"It appears, from the account which the *Times* gives of the accident and inquest, that the bodies of Burke and Carrol [two of four boys who had been exposed for several hours during the night to gases escaping from a lime kiln], being found deprived of circulation and respiration, were looked upon as quite beyond recovery, and no effort whatever was made to restore them to life. Now this was unquestionably a most unfortunate blunder, one which shows clearly, how dangerous it is that a practitioner should take the responsibility of cases, of such rare occurrence in this country, without availing himself of the advice of some gentleman, whose experience and knowledge of medical jurisprudence render it impossible that such an unlucky omission could occur.

"It is well known to persons skilled in legal medicine that, under proper treatment, persons recover from the deleterious effects of carbonic acid after many hours of exposure to the gas, and even after many hours' suspension of the circulation and respiratory movements, and it is laid down as a principle, that we should never despair of restoring animation until cadaveric rigidity is unequivocally established. If the limbs continue flexible, respiration should be imitated unceasingly for several hours (or until the occurrence of rigidity), by pressure made about twenty times in the minute upon the abdomen in the direction of the diaphragm, and simultaneously on the chest in the direction of the spine; these compressions should be assisted by the process called by the French, aspiration, which consists in *drawing air from the lungs* through a nostril-tube, and may be executed by the mouth of an assistant or by Weiss' stomach pump; thus a certain quantity of air will be withdrawn from the cavity of the chest about sixteen times in the minute, and an equal quantity of fresh atmospheric air drawn in when the capacity of the thorax is restored by natural elasticity. At the same time constant efforts should be made to stimulate the respiratory muscles, by galvanism, by the occasional dashing against the body of cold water if its temperature be natural, hot water (at 100° or 102°) if the temperature of the body be reduced, by careful drying and diligent friction after each affusion, and finally by flagellation, which proved so advantageous lately in a case of asphyxia from drowning reported by Dr. Ogier Ward, of Wolverhampton."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 26 1942

THE BRITISH TRADITION AND THE NEW OUTLOOK*

BY

Sir BECKWITH WHITEHOUSE, M.S., F.R.C.S., F.R.C.O.G., F.A.C.S.(Hon.)

President of the British Medical Association

Presidential addresses to the British Medical Association in the past have covered a very wide field. Some have been purely scientific; others have been retrospective; and yet others medico-political. My words to you to-day are not scientific; perhaps they are not progressive. They are rather an appeal to retain, in this uneasy world of change and planning, those traditional elements upon which the sound rock of British medicine has evolved and been built. What is this rock, so stable that it is the envy of other nations? It is, I am sure, that indefinable but intimate relationship which exists between the patient and his doctor. In this island of ours the family doctor has been for years, and still is, the bulwark upon which much of the happiness of the people so largely depends. He is not so much a prescriber of pills and mixtures as a psychotherapist and adviser, a confidant and trusted friend.

You know full well the problems, moral and sometimes spiritual, that come before all of us in our daily work. As a gynaecologist, perhaps I hear an undue proportion of people's worries that cannot in any way be classified as scientific medicine. What I have learnt to appreciate more than anything else during thirty-odd years of practice is the unclassified and officially unrecognized work that every day is performed by the family doctors of the British Isles.

A few weeks ago I was in the consulting-room of a medical man whose practice extends over a large rural area in the West Country. It was not a large consulting-room, but it was well equipped with the modern essentials for accurate diagnosis, and it was situated in a tiny country village overlooking the Wye Valley. My eye caught an illuminated framed address, and I asked the doctor's permission to read to you to-day a few sentences of that address. This is what it said:

> "It is now seven years since you first came among us, and your patients and friends desire to take advantage of the opportunity thus afforded to present you with some tangible proof of their fullest appreciation of your great skill and untiring devotion in the exercise of your profession among all classes of the community in which you practise. To say that the poorer among us are some of your most grateful patients is at once a tribute to your honour and a source of admiration for you on the part of us all. We hope and trust that you will continue your beneficial work among us for very many years to come."

How many consulting-rooms in this country contain such testimonials? Perhaps not many, but well I know that the spirit is there, if not expressed. It is the "aura" that pervades the private sanctum of most family doctors where private and domestic secrets are exposed and discussed, and honest advice is given in the confidence that is enjoyed only by the sister professions of the Church and the Law. It is the essence of our British medical tradition.

My mind goes back to another experience. I was seated a few years ago in the large, perfectly equipped operating theatre of a State hospital in Utrecht. The surgeon, a salaried State professor, was performing an abdominal operation that is almost a daily occurrence in any large gynaecological clinic. The technique of surgeon and assistants was good, and the panoply of surgical ritual evident in all its detail. What impressed me, however, was the extreme length of the incision, which seemed to extend over the whole abdomen. At the close of the operation I sought the reason for this apparent "furor operandi." I was informed that the length of incision was to provide a good view for the audience at the back!

I could add other side-lights on the inner working of various State-controlled European hospitals, where the gods of science and technique, efficiency and statistics, override other considerations; but this incident will suffice to indicate some shortcomings of a system which perhaps some would like to see installed in this country. Social changes may be sudden and catastrophic, but more generally they are insidious in both their onset and their development. Medicine in Britain, so far as its practice is concerned, has been undergoing a slow major revolution during the last quarter of a century. The Ministry of Health, founded soon after the last war, and the legitimate child of the British Medical Association, was the concrete organic expression of those who recognized the importance to the nation of preventive as opposed to curative medicine.

The Traditional Link in British Medicine

While recognizing the necessity for a co-ordinating body, and admitting the immense services which the Ministry has contributed to the nation's health, I have viewed with some apprehension the inroads which have been made in recent years upon the influence of that traditional link of British medicine, the family doctor and his patient, and the swing towards State medicine. The bond between the Ministry of Health and the various health services administered by the local public health authorities is growing, communal services are increasing, and we may awake one day soon to find ourselves members of a co-ordinated State health service. I am convinced that neither the people of this country nor the bulk of the medical profession desire to become the regimented units of a system of bureaucratic control. The average man and woman to-day have very definite views about what they want in matters of health. They naturally desire efficient treatment, and they know what efficient treatment is and what it means. At the same time, the British public at heart dislikes communal methods of treatment, however efficient they are. How often does a patient on return from a visit to a public clinic say, "Well, I think that I will see him privately next time, and then I shall really know something"? This may be wrong in theory, but it is very true in practice.

During the present meeting we have been considering the Interim Report of the Medical Planning Commission. The report has already reached the general public, and it is interesting to note the reactions of the man in the street to the reforms which the Commission suggests. In a well-known women's paper I recently noted the following:

> "'Group Medicine,' as advocated by the Medical Planning Council, means that private practice as we know it to-day will be more or less abolished, and that teams of doctors will be housed in Health Centres—a network of which will cover the country. To those of us who value a personal relationship with a doctor we have known and trusted for years, this scheme may seem disturbing."

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* Presidential Address delivered at the Annual General Meeting, Sept. 9, 1942.

This opinion is not isolated. Indeed, the view is gaining ground, both within and without the profession, that after the war medical practice, as we know it, will be no more. Personally, I do not believe that this will be so. Certain changes there will be—indeed, there must be; but so long as Clauses 24 and 26 in the Planning Commission's Interim Report are accepted as the foundation upon which all reforms are built the British tradition is likely to be maintained and strengthened. It is a healthy sign that criticism from the lay side is mainly concerned with this basic principle.

If, in all future discussion and legislation designed for the betterment of the national health, the sacred bond which exists in Britain between the doctor and his patient is not lost or indeed broken, then, in my opinion, the main suggestions of the Planning Commission can bring nothing but good to the community, and it should be our duty to implement the proposals with a willing acquiescence if and when we are asked to do so. The alternative, as I see it, is a system of salaried State medical service, which I believe to be detrimental to the national health and the personal interests of patient and doctor alike.

The Stimulus of Competition

The idea of working for a fixed salary has always been distasteful to me. It eliminates competition, it stultifies individual effort, and therefore is a bar to progress. Competition there must be; otherwise the stimulus to increased effort is removed, and the spice of life loses something of its piquancy. The active and progressive mind is not content to say, "So far and no farther," and a salaried post, however good, is not satisfying. We see this in all walks of life, and perhaps at no time better than the present. High and, in some cases, grossly exorbitant wages are being paid in industry in a misguided attempt to stimulate production. Fixed hours and high wages have not been followed by increased output. We see reports in certain industries of falling output due to "absenteeism." The well-paid and possibly tired worker, with no other stimulus to increased production than the verbal lash of the Government's or the union's mouthpiece, sits back in his chair and takes a day off. Human nature is the same in all occupations and all grades of society. Remove the stimulus for individual effort by limiting the individual's capacity for personal betterment, and a brake is applied to progress. We see the principle recognized even in Russia to-day, where 25 years after the establishment of the Soviet's "New Order" personal "rewards" in money or goods are awarded for outstanding individual service.

In our work exactly the same arguments apply. The medical profession is not a rich community in terms of the acquisition of this world's goods. It never has been and probably never will be. Nevertheless, the spirit of competition exists among us. It is a thoroughly desirable principle, and one which should not be suppressed. We see its application in several ways. Even among the whole-time Chairs at our universities, both pre-clinical and clinical, competition occurs when a Chair with a higher salary falls vacant. The university with its underpaid Chair may lose its scientific professor to its more opulent sister. Lord Dawson of Penn has recently drawn attention to the same matter in an admirable address on "Medicine and the Public Welfare," published in the *British Medical Journal* on May 9 last. It is a contribution which should be read and re-read by all who have the conservation of the national health and the welfare of the medical profession in their keeping. Lord Dawson refers to the disability which the existing State-aided hospitals in this country are under by reason of the fact that personal advancement of the medical staffs—in other words, a higher salary—can only be achieved by relinquishing clinical medicine for an administrative post. This is why many of the more active clinical minds, who see only the prospects of a dead-end in State-aided hospitals, have preferred, and still prefer, to link their fortunes to the gamble of an unpaid appointment on the honorary staff of a voluntary hospital.

Traditions of the Voluntary Hospital

The lure of the British voluntary hospital to-day is as great as ever it has been, thanks to its traditions, based largely upon the untrammelled conditions under which its staff work and the healthy criticism to which all are subjected. Its strength lies in these traditions and the proved service that it has been able to render to the community.

It is a great day for the young physician or surgeon when he is chosen from his fellows as being worthy of a position on its honorary staff. He may not have a "sou" in his pocket, and he probably knows that years of hard work lie in front of him. At the same time he has the satisfaction of joining an institution where the only criticism he is likely to receive is the friendly judgment of his colleagues and his students. He is answerable only to his patient and to his own conscience. Further, he knows that material prizes are within his grasp should he prove worthy of the trust laid upon him—prizes that, perhaps, are not measured in terms of finance, but which will be more satisfying than worldly wealth when the retiring age is reached and the time comes for him to hand over his charge to another.

The patient admitted within the walls of a British voluntary hospital knows also the human atmosphere, apart entirely from efficient medical service, that is a tradition of the institution He knows that he is not a mere cipher in the medical organization of the State. His case is the personal responsibility of a surgeon or physician, whose services are available to him at any time of day or night, should they be required. There is no question of official hours of duty, just as there is no "clocking in" and "clocking out" for those responsible for his welfare.

Difficult times undoubtedly lie ahead for the voluntary hospitals owing to the economic conditions which are likely to prevail at the conclusion of the present political world upheaval. These difficulties must be faced, but in planning for the future let us not cast aside as worthless those traditional principles which have placed the voluntary hospital in its present honoured position. Rather let us incorporate them in the State hospitals of the future. Part-time as opposed to whole-time service, with a corresponding reduction in fixed salaries, combined with freedom of action in professional matters, would remove many of the disabilities under which the medical officers of public assistance hospitals now work.

On the other hand, State aid may be necessary to supplement the income derived from contributory schemes in the case of existing voluntary hospitals. Donations and legacies are likely to become less and less as the State increases its demands upon the private purse for the development of social and other services. The provision of State aid, however, need not necessarily imply State domination. This important principle receives expression in Clause 72 of the Planning Commission's report, in which it is stated that the Regional Council or authority "would not interfere with the internal organization of individual hospitals." I trust that this very important observation will never be overlooked should the establishment of Regional Hospital Councils become an accomplished fact.

The Rising Generation in Medicine

During the short time that remains may I draw attention to a few matters which concern the rising generation in medicine? The medical student to-day is entering upon his career at a very difficult time, and I am profoundly sorry for him. The young people who one day will be shouldering our responsibilities are trying to assimilate the necessary facts and experience to satisfy the examination boards under conditions which are not conducive to the maintenance of our best traditions. Their interests are divided between professional and national duties. They are under an obligation to qualify in the shortest possible time, and they receive their education at the hands of a depleted staff whose members are often overworked and unable to give of their best. The profession has become purely utilitarian. At no time, therefore, is it more important to instil into the student mind those high principles which for so many years have guided the practice of medicine. There is, I fear, a growing tendency among students to-day to regard medicine purely from a materialistic standpoint. Even before the war many of the newly qualified, anxious to convert their acquired knowledge into terms of solid cash, rushed into contract or panel practice without holding any hospital house appointment whatsoever. Since the war the shortage of medical personnel has led to a greater demand for the newly qualified student, and the high fees now paid to temporary locums and assistants cannot but be harmful in the future when the period of present cheap money is past.

Another present-day aspect of medical student life which personally I much regret is the innovation of political student societies. It is a tradition of British Medicine, as it is of the British Red Cross, that our service is independent of political creed. The doctor should be entirely impervious to political influences. His concern is with the great essentials of birth, life, and death, which transcend all other considerations, and he should resolutely turn his back to the rival claims of political factions both at home and abroad.

Faults in Medical Education

In the present wave of optimistic post-war planning it was not to be expected that the perennial subject of medical training would escape the infection. It is well that this should be so, for it is obvious to most of us who are responsible for the teaching of clinical medicine that our present methods fall short of what is desirable, or in fact necessary, to equip the student for the world in which he will carry on his life's work after he leaves his "Alma Mater." The main object of our medical schools should surely be to produce the finest type of that traditional and honoured symbol of British medicine to which I have already referred—viz., the family practitioner. Are we doing that to-day? It appears to me that the whole system of our medical training requires revision, and therefore I welcome the fact that an Interdepartmental Committee on Medical Schools is already at work on this important matter. A major fault in our present medical education is the lack of cohesion between those responsible for welding the individual parts of the finished machine. Each teacher and each department, influenced no doubt by the advance of knowledge and anxious to communicate that knowledge to their students, overweight their subject with a mass of detail that can only harass the student mind and increase his anxiety as the examination time approaches. The pre-clinical teachers, endeavouring no doubt to establish a sound framework upon which modern clinical medicine can be built, try to crowd more and more into their lectures and classes. The surgeon makes his dressers stand long hours and witness tiring operations which the majority will never be called upon to perform. The clinical physician asks for the attention of his clerks while he discusses the intricate and highly scientific details of some knotty problem which most of his audience may never meet. The result of all this is that the average student finds himself qualified, and launched into a world which offers a strange contrast to the one where he has been educated. Shock No. 1 will be the revelation that concentrated scientific knowledge is not the only, or indeed most important, asset when in contact with his fellow-men and patients. He will find that he must be a human being first, and a doctor after. Shock No. 2 when he enters practice will be the discovery that he may not have available the necessary adjuncts for the application of all that he has learnt. There are other shocks in store for him, but let us hope that they will be fewer when the work of the Planning Commission reaches fruition.

To convert some of my criticism into practical politics, is it not possible for those responsible for the organization of medical training to envisage a more generalized and less comprehensive course of teaching than that now in being? Let there be in medicine a "School-leaving Certificate" at the end of, say, a five-years curriculum, as distinct from a "Higher School Certificate" awarded at the end of a further year's training devoted to some special aspect of medical work. Certificate A would not entitle the holder to the independent practice of his profession, but it would qualify him to become an assistant in family practice or in any of the special aspects of medicine which appeal to him. At the end of a further year's work he would secure Certificate B—i.e., the higher qualification—which would launch him upon his life's work. The concept of attaching a Certificate A student to a doctor engaged in the work of general practice appeals to me as a modern counterpart of the old apprenticeship system. The young man fresh from hospital would gain the experience he now lacks and learn to appreciate the fact that in life it is not so much what one does as how one does it. On the other hand, the older family practitioner would constantly be in touch with the vitalizing stimulus of the young and active scientific mind. Surely nothing but good could evolve from the liaison.

Prospects in Medical Practice

And, finally, what prospects have we to offer to the medical man or woman of the future? If the major proposals of the Planning Commission are accepted in principle and duly implemented I think we may safely say that many of the difficulties under which the profession now works will have been removed. The doctor of the future will have the satisfaction of doing good work with the increased facilities that are available to him; he will be better able to apply to his patients those methods of diagnosis and treatment which he was taught during his student years; and, finally, owing to the co-ordination of all the various health services, he will know that he forms an integral part of a great organization whose sole object is to maintain the health and happiness of the nation it serves.

My theme to some may have appeared retrogressive or irritating. I can only reassert my personal conviction that, whatever "new order" may arise in the conduct of medical practice, the future happiness of our people is intimately bound up with the maintenance of our British tradition in medicine that a patient is a patient and not an impersonal unit in a system.

MALINGERING

BY

RANKINE GOOD, M.B., Ch.B., D.P.M.

Captain, R.A.M.C., Graded Psychiatrist

The brief references to malingering (the conscious adoption and exploitation of symptoms of illness, physical or mental) in standard textbooks of medicine may be regarded as silent testimony to the rarity with which the condition is encountered in civil life. On the other hand, there may be lack of interest in the subject or difficulties in the clinical approach.

I have met with three civilian cases. The first was that of a vagrant to whom the prospect of a sound night's sleep with an assured breakfast to follow was sufficient motive: some months previously he had undergone a three-weeks investigation at the same hospital for his alleged gastric complaint and had been dismissed at the end of that time as a case of functional disorder: he hinted vaguely that identical investigations had been performed at other hospitals in the interval between his two admissions, with similar results. The second case was also that of a vagrant, similarly motivated, who trafficked on his habitual pallor and prematurely senile appearance to secure admission to hospital for investigation as a potential anaemic. In the third case the man, like the schizoid Hamlet, was resolved to "put an antic disposition on" in an endeavour to, in his case, escape from the pressing attention of the police for illegal misappropriation of money. These three were clearly abnormal people. Other cases are occasionally encountered (particularly in connexion with alleged injuries—of which no evidence shows—sustained in motor-car accidents) in which the diagnosis of malingering cannot be applied, solely through the lack of a confession to that effect from the "patient," whose desire for monetary gain overrides his truthfulness; these cases, of course, are altogether distinct from the genuine traumatic neuroses occurring in the same circumstances.

Wartime Cases

In wartime, perhaps because of the importance of morale and discipline, more frequent references to malingering appear in medical literature, although it is generally assumed that, so far as the war of 1914-18 was concerned, it was of rare occurrence (War Office Report, 1922a). Hurst (1940) lays down two criteria for the certain diagnosis of malingering—either detection *in flagrante delicto*, or an unforced confession from the man in accordance with the facts observed. The methods adopted by malingerers vary: a comprehensive account of these is given by Buinewitsch (1941).

In the examination of neurotic patients the physician often adopts a too confiding attitude, or, on the other hand, a too sceptical attitude which confounds the hysteric with the malingerer. In the hysteric, the production of conversion symptoms is motivated and effected without clear recognition by the patient of the processes involved. Similarly, while undoubtedly the hysteric in the Services does tend to exploit his symptoms more than he did in civil life (e.g., reporting sick with his complaint every day since conscription, whereas he attended his civilian medical practitioner once fortnightly or monthly), this exploitation is seldom recognized by the patient, however apparent the underlying motivation may be to the observer. It is well to bear this in mind; for, as a consideration of Case VI will show, malingering may be a mere incident during a schizophrenic episode occurring in a mental defective: further, the symptom produced by the malingering may be followed by the development of hysterical symptoms in the affected part. The explanations of malingering hitherto given disregard such things as the malingerer's choice of symptoms and the basic personality structure and attitude which allows him to malinger.

This communication may be regarded as a contribution to the solution of these problems. To this end, 6 cases will be quoted and points common to all of them discussed. Only the relevant details are given.

Case I (Psychopathic Personality)

At his entrance medical examination this man had turned up with the external auditory meati plugged with face-cream in an endeavour to feign deafness, and he had pretended idiocy when asked to read the Snellen test types. Actually his mental age was 12 5/12 years. An officer of his battery stated: "Sympathy and help did not have the desired effect of improving his work. . . . He became persistently worse . . . started the habit of grumbling and leaving fatigues when not under supervision . . . and has no desire to soldier." The M.O. stated that the patient was always reporting sick, made contradictory statements, was unappreciative of help, and would not co-operate. On admission to hospital the man was quite frank with me when I asked him if he was "swinging the lead." He informed me that he had a horror of bloodshed, and for that reason had by his malingering wished to avoid conscription four months previously. His previous history showed that he was an aggressive individual, had had marked phobias in infancy and childhood, and since leaving school, at which he was backward—most probably through inattention and an absence of any desire to learn—he had, between lengthy spells of unemployment, been in several jobs which he left because the work was "too hard" or "too monotonous." On one occasion he was sacked because he left his work "to go out and have a drink." He attributed all his troubles, past, present, and to come, to his wife, who he said had made a cuckold of him, and to his mother-in-law, who was a devil's dam. He spoke of them with an angry display of emotion which left him incoherent and speechless. He concluded by saying that life was not worth while in the circumstances, and that suicide as a way out was under contemplation. I agreed with him that suicide in his case would offer the best solution to his difficulties, and suggested simple methods whereby he might accomplish this effectively and undisturbed. Much taken aback, he rejected all I had said to him by stating that he had never given the subject a thought. As with his malingering, he was again shamming.

Case II (Psychopathic Personality)

This patient had been in two hospitals for 11 days before his transfer as a case of functional condition. He had had what was apparently a genuine fainting attack, after which he was admitted to hospital in a stuporous condition, with a pulse rate of, on one occasion, 48 a minute. When he came-to 4 days later there was a weakness of his left side. When I first saw him this weakness consisted of what I took to be a hysterical paralysis of his left hand, in no way differing from other similar paralyses I have seen—dusky blue, swollen, cold, and clammy. Circumstances precluded any treatment at the end of his first interview save the reassurance that I was satisfied from my examination that there was no structural disability which would account for the appearance and complete powerlessness of his hand. He had merely lost the idea of how to use it. It was up to him to accustom himself to the idea that his hand was perfectly normal and capable of use and that a decided improvement would be evident on the next occasion I saw him. Such improvement was, however, not forthcoming. I then attempted some very superficial interpretation from the point of view of motivation, reminding him of his statement, "I don't like the Army, and never will," made during t
previous interview, and how he might have had, unawares a
in the depths of his mind, developed the symptom of
paralysed hand as an excuse, as it were, for his discharge.
also pointed out to him how this method of being quit of
Army was probably suggested to him by a similar affection
had had seven years previously (of which he had previou
informed me), when, working as a tea-boy to builders,
right hand had contacted a live wire; and how, following
12-ft. fall when the current was switched off, the left side
his face was temporarily paralysed and he had been award
compensation for 10 or 11 weeks thereafter. At this po
the patient showed an apparent and considerable resistar
to my interpretation, getting up as if making to go out a
bitterly complaining that after three weeks in hospital he h
received no treatment. He asked to be returned to his ur
I then pointed out the ridiculousness of his request with
present disability and how the three weeks in hospital had be
valuable in that it had enabled the medical officers concern
to arrive at a true estimate of his disability—a very big st
forward indeed in treatment and progress. This progress w
now being held up solely because of his own attitude, whi
precluded his acceptance of a psychic origin for the disabili
Further, he would continue to receive treatment and wou
not be permitted to leave hospital until he was entirely cur
At this point, and with rather a strained expression, he cc
fessed he could use his hand perfectly, proceeding to do so
my request. I asked him if he were aware of the fact that
had been malingering and of the possible consequences tl
might follow upon his confession; he said that he was.

His previous history revealed a habitually quiet self-cc
scious personality who had always avoided games and soc
intercourse on account of his shyness and habit of blushi
He had had phobias associated with darkness and heights; a
at school, where he was slightly above the average (his M.
was 13 10/12 years), he had never been in any school figh
He had always sought, and expected, "pity and sympat
from other people."

Case III (Psychopathic Personality)

This man said that he had been very nervous wh
young, and cited as an instance of this, "If someone hit me
wouldn't have the nerve to hit him back." He had pronounc
phobias associated with darkness, deep water, heights, a
dogs. He was very shy, was a lifelong nail-biter, and suffer
from nocturnal enuresis until he was 21 years old. At scho
where he said he was backward (his M.A. was 11 11/12 year
he was never in any school fights, was bullied, and avoid
sports. He first came into contact with the civil police wh
he was 10 years old for stealing: for this he served 15 wee
in a reformatory. Since then he had been seven times charg
and convicted, chiefly for receiving, the last term of impriso
ment being for eight months. After serving this, he felt: "
I didn't join up" (one month before the outbreak of war) '
would be in Dartmoor before long." Since joining he had be
seven times charged with absence without leave.

When he first reported sick he presented what might ha
been taken for symptoms indicative of an anxiety neurosis.
was sceptical about the genuineness of his complaints, partic
larly since he was again awaiting trial for absence witho
leave. An unforced confession was ultimately obtained th
he was malingering with the object of escaping trial or obtai
ing a recommendation for mitigation of sentence on medic
grounds.

Case IV (Mental Defective)

Even before admission this man was suspect, his adm
sion notes stating that "the act may have been committ
to get away from the place." "The place" was a lonely sp
on a loch-side to which four corporals and he had been post
to open up a station. Fed up, he said, with the complete la
of social life, not helped by the four corporals keeping
themselves (from the facts available he did not appear to
paranoid about this), he walked into the loch in a feign
attempt at suicide in order to get away from the pla
Similarly, when shaving, he had made a great display of
razor. His mental age was 10 5/12 years.

Case V (Psychopathic Personality)

Admitted with a history of having given himself
after nine months' absence without leave and pleading lc
of memory for the lapse. He persistently maintained that
loss of memory was genuine or that it was at times parti
permitting him to get married and to wander around in
battle-dress (despite the fact that he had no ration cards) doi
odd jobs. His story was so grotesque that his statements we

accepted with some reserve. Ultimately he confessed that his story was fabricated. He had become "fed up and couldn't stick it" (the Army), purposely deserting to return to his civilian job on a trawler (on which, incidentally, he had made a voyage to Iceland), marrying during one of his spells on shore, and ultimately giving himself up on his wife's advice. His M.A. was 14 11/12 years.

Case VI (Schizophrenia)

Was admitted to a general hospital for eight weeks for treatment for an attack of gonorrhoea. During this period he had become depressed ("fed up") on account of all his articles being marked and his having to spin unconvincing stories to his fellow patients (by whom he said he was ultimately shunned) as to why he was so discriminated against. His attitude when he came out of hospital was: "If you're not good enough to mix with people you're not good enough to soldier with them." One week after his discharge from hospital his rifle, which he was hurrying to put away in order to get to tea, discharged accidentally, the bullet going through his left great toe. He himself had not loaded the rifle, nor did he understand how it came to be loaded. Expatiating on his attitude to the Army, he said, "I never did care for the Army," in which he was slow at "picking things up." His mental age was 8 7/12 years. Concerning his previous history, he said he had always been nervous and had phobias associated with darkness and loneliness, and if ever he found himself in such circumstances was afraid he might be attacked from behind. He also had phobias associated with water, heights, cows, and horses; he was a lifelong nail-biter, was shy, blushed easily, and said, "I kept myself to myself, more or less": he was a "mother's boy." Hysterical symptoms had supervened in connexion with the gunshot wound of his foot: there was a moderate degree of cyanosis and paralysis, due, he said, to pain associated with the healed wound which caused him to limp.

It was not until these hysterical symptoms were removed with treatment that he confessed to the previous existence of auditory hallucinations which made him think he "was going soft." His attitude towards the Army, the unbearable separation from his mother, and his auditory hallucinations all combined to make him thoroughly "browned off," in which state of mind (he now confessed) he shot himself through the great toe in an endeavour to be quit of the Army and to be returned to the home life in which the care and sympathy he needed would be forthcoming. (It should be noted that his hallucinations had no bearing on his deliberate conscious attempt to avoid service by shooting himself—e.g., the men's voices he heard holding everyday conversations did not tell him to shoot himself.)

Analysis of the Cases

From a study of these cases, of which only brief details have been given, certain aspects of malingering emerged conspicuously.

In the first place, the choice of symptom (i.e., insanity, paralysis, gunshot wound, or amnesia) was apparently largely determined by unrecognized emotional factors rather than by any intellectual process. In all cases save Case II no reason for the choice of symptom was given other than "It was all I could think of," "I don't know," etc. Case II, after stating that his "paralysed" hand might have been suggested by his previous accident, subsequently said that he doubted very much if that were the real reason. Since no analytical treatment of these cases was attempted it is perhaps unwise to speculate as to what the factors determining the choice of symptom were. Nevertheless, it was very noticeable that all cases (including Case I—only superficially aggressive) clearly showed a mental attitude in which a desire, a thirst for punishment, was dominant, though the patient himself was unappreciative of the existence of this desire. The point was well illustrated in Case III—his having been bullied at school because he was afraid to hit back, his repeated trouble with the police and subsequent punishment, and finally his attempt to escape from them by volunteering for an organization which has discipline and unquestioning obedience for its mainstays, an organization which, following a short period of service in 1927, had discharged him after he had served 56 days' detention for absence without leave. His phobias had also been used as vehicles for punishment—e.g., despite his dread of water he had worked for a spell on a tugboat until he fell into the water "by accident" (he was a non-swimmer); and, despite his dread of heights, he had worked for a spell as a riveter's mate until he fell "by accident" down the hold of a ship under construction. They also led him, after his discharge, to return to a city which has been repeatedly and heavily bombed, despite the fact that during a previous leave he had sustained slight physical injury during a "blitz" then in progress—a city in which his old temptations are awaiting him.

Closely associated with this desire for punishment, a marked attitude of infantile dependence was present in all cases, well illustrated in Case II, who had always sought and expected "pity and sympathy from other people," and in Case VI, whose desire to return to his mother amounted to a craving. This attitude was pronounced in Case I, who was desperate to get home to look after his mother although he was a married man with a wife and child. It is no digression from my theme (indeed, it is fundamental) to expand this point concerning the patients' attitude towards mothers whom absence has tended to idealize. Not infrequently, in actual fact, the mother has beaten and in other ways has psychologically misunderstood and mistreated the patient from his earliest days. This is of very frequent occurrence in psychoneurotics. The craving for "the good mother" is usually quite open and apparent in those of low mental age, and is concealed, disguised, and rationalized in more intelligent patients. The desire to be near the mother is remarkable in that while it is very real it is apparently unreasonable; for, on inquiry in all such cases that I have examined, it is found that the mother is quite capable of looking after herself and is suffering from no untoward domestic, pecuniary, or other distress.

Further inquiry elicits the fact that this desire on the part of the patient is not by any means of recent origin but has exerted itself with the same abnormal intensity and persistence as long as he can remember. As I have already said, it does not always show and has not always shown in an open longing for the good mother. It may show instead in a deep attachment to and affection for her house and home, etc., or to the wife, who frequently is an obvious mother-substitute. This attitude is natural up to a point, but in the cases under discussion it is quite pathological. It is no exaggeration to say that these patients are still psychologically united to their mother by an emotional "umbilical cord," the forceful severance of which produces the most intense anxiety, which he is constitutionally incapable of mastering adequately. In other words, however much the psychoneurotic conveys the impression that he is fully adult, he still remains emotionally immature. The terrified scream of an infant when faced with a danger that appears overwhelming may have as its adult variant the blind panic of a man who exposes himself to the fire of his own guns during an enemy bombardment: in moments of stress he tends to revert to a state of infantile helplessness, a terrified bewilderment—a state exerting the most pernicious influence on his fellow soldier, whereas it is expected of him that he will "acquire such a standard of morale as will enable him to put the welfare of his unit before his own personal safety" (War Office Report, 1922b).

The second aspect which emerged conspicuously from the study of these 6 cases was that all showed an entire absence of guilt-feeling in connexion with their malingering—entirely different, if such a thing could be imagined, from what would occur in a well-adjusted personality who resorted to such methods. Now, the absence of guilt-feeling in circumstances in which a normal person would experience it is the hall-mark of the psychopath. The term "psychopath" is used in this instance in the very narrow sense as defined by Henderson (1939)—briefly, the existence of a peculiar state of mind which does not render the patient certifiably insane, which causes him to exhibit conduct of an antisocial or asocial nature, and on which treatment or punishment has no deterrent effect. (The discrimination between the psychopath whose intelligence is average or above and the moral imbecile who is of low intelligence would seem to be purely arbitrary: fundamentally, the psychic attitudes and reactions towards their environment and its problems are the same in both cases.)

In the third place, all 6 cases showed a pronounced anxiety concerning military service, the extent of this anxiety being out of all proportion to the circumstances engendering it. Their malingering was, indeed, an endeavour to overcome this anxiety by the simple expedient of attempting to remove themselves, by the simulation of symptoms, from the circumstances which gave rise to the anxiety.

Disposal of the Malingerer

So far as the relation of the malingerer to the Army is concerned, it is essential to consider two points. The first of these is that the man's absence of guilt-feeling concerning his malingering leads to punishment or treatment having no deterrent effect on the future repetition of such conduct. The second point—and this is of the utmost importance in wartime—is the repercussion which the malingerer's conduct and mental attitude may have upon his Army comrades and, through them, upon military efficiency in general. It has already been pointed out that the malingerer is in a state of extreme emotional immaturity. Consequently, he has broken down in adult circumstances which were successfully withstood by his more strongly constituted brothers-in-arms. In these circumstances he reverts to a state of open childishness. He may grumble and grouse: his work, his adult capacity for work, falls off; he continually reports sick and is unappreciative of and does not co-operate in the treatment prescribed; he becomes a burden to all with whom he comes in contact in the environment for which he has a phobic anxiety; he develops the craving to return to his home, where the only real security he knows of is to be found and where his childish immaturity is understood and the pity and sympathy he has always expected from other people are forthcoming.

All this is clear and understandable, and in peacetime one could leisurely endeavour to wean such a case to a more adult independent state. When, however, he is a member of the fighting Services, and when the interests of the individual have of necessity to be subordinated to the group, this is out of the question. It is demanded of him that he "become a man" and "put away childish things"—which he is constitutionally incapable of doing. In his behaviour and attitude he is expected to contribute to the promotion and maintenance of good morale, instead of which he mopes about his group a potential and extremely dangerous menace to good morale in the more susceptible (i.e., the more emotionally immature) of his as yet mentally healthy comrades. Infectivity in these circumstances is as real a threat as the potential infectivity of a typhoid carrier in the physical sphere, as Wittkower *et al.* (1941) point out.

This constant and dangerous menace to good morale is, in effect, the crux of the matter concerning the disposal of the psychopath of this type in wartime. The report of the unit officers in referring the man to the R.M.O. when ordinary methods of producing correction have failed eloquently testifies to this. The paramount importance of the maintenance of excellent morale among soldiers has been appreciated from the earliest times, as also has its obvious remedy—namely, the ruthless weeding out of all influences adversely affecting morale. Such a view was arrived at by considered inquiry in 1922: "The occurrence of the [psychoneurotic] conditions militates against the efficiency of the Army, swells the sick returns, increases the amount of hospital accommodation and transport required, and absorbs the time and attention of the medical personnel" (War Office Report, 1922c).

The continued presence of these people in any unit thus tends to promote a vicious circle—infection by the psychoneurotic and the psychopath of the more mentally immature of previously mentally healthy subjects, with increase of further frank psychiatric cases and a further lowering of morale. And the morale of an army is a barometer by which the fighting efficiency of that army can be read at a glance.

The removal of a weak link in an otherwise strong chain designed purposely to bear an enormous stress therefore requires no apology. Nor is it, as some might imagine, from a hasty assessment of facts, an admission of culpable failure. The psychiatrist, like the surgeon, can radically treat only those growths that are not beyond the reach of his therapeutic knife. In such cases, however, the psychiatrist is potent, from the prophylactic point of view, in removing a dangerous source of infection. Thereby he contributes not inconsiderably to the promotion of that morale and efficiency in the absence of which a fight is never won.

Summary

The malingerer is a psychopath with, among other features, a complete absence of guilt-feeling concerning his malingering. Although he consciously assumes and exploits symptoms of physical or mental illness, the variety of symptom adopted (i.e., whether amnesia, gunshot wound, insanity, or paralysis) is, however, apparently determined by an unrecognized masochistic and very infantile dependent attitude.

Malingering is a defence mechanism employed by a constitutionally weak ego against a real but unreasonable and intense anxiety concerning military service.

The disposal of the malingerer in wartime should be pre-eminently determined by considerations of military morale and efficiency.

I am indebted to Lieut.-Col. R. J. Rosie, R.A.M.C., for encouragement and permission to pursue these investigations, and to Major J. P. McGuinness, R.A.M.C., for his assistance in Case III and the details concerning his Case V. To both, and to Major T. F. Rodger, R.A.M.C., I am beholden for their constructive criticism of the script of this paper.

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FOREIGN BODIES IN THE ALIMENTARY TRACT

BY

G. O. CHAMBERS, F.R.C.S.
Visiting Surgeon to H.M. Prisons

When Nature has provided so many problems in surgery to occupy scientific attention it seems inconsiderate that man should, by accident or otherwise, go one further by self-mutilation in the swallowing of foreign bodies. These cases, however, tend to provide compensations in the element of surprise and the interest they arouse, and create an atmosphere akin to the treasure hunt until such time as the quarry has been unearthed or retrieved. The excitement of all this inclines to be somewhat tempered by the fact that the majority of these perverse individuals are of dubious use to society and, moreover, in some cases develop a morbid appetite for foreign bodies. For some strange reason they seem to stand abdominal section well and develop peritoneal antibodies that serve them to such good purpose that either septic complications are avoided or their relative dangers are overcome.

This paper refers chiefly to intentional swallowing and not to cases of accident occurring usually in children and normal adults, with whom small articles swallowed—inadvertently—have a safe passage. The open safety-pin, fish-bone, or needle may cause trouble by impaction or perforation and necessitate removal. The cases under review are those of adults in detention, in whom the swallowing of large, irregular, and ill-assorted articles is the main feature. Only 3 cases are reported as accidental, and concern the loss of two needles and a small denture.

Psychology of the Intentional Swallower

The psychological aspect of the intentional swallower is interesting, and varies in type with the environment and mode of life. In all there is an underlying psychological framework of egoism, vanity, and self-attention.

From time immemorial this faculty has been utilized as a means of livelihood in exhibitions such as the swallowing of a sword, watch, or live goldfish—duly returned unharmed from their immersion in the stomach. Proof of the last-named performance was given a few years ago at a medical society in London, where an astute radiologist inserted some small lead shot inside each fish—through its mouth—so that their movements in the performer's stomach could be observed with the radiological screen. The possessor of a pharyngeal pouch sometimes uses it as a financial asset for the disappearing-watch trick. An *x*-ray demonstration on a performer of this act at the above meeting was declined, as no doubt he wished it to remain a mystery.

Under conditions of restraint the psychological factor becomes intensified and certain prisoners take up an attitude stubborn, defiant, and antisocial to their surroundings. The mental picture is best described by Dr. W. Norwood East in his interesting book, *Medical Aspects of Crime* (1936), in which he says: "A few of these prisoners are insane, but the majority are not. Most of them are ignorant of the dangers they incur, and are reckless of injury in their attempt to defy authority or exchange imprisonment for the comforts of a civil hospital. . . . Many offenders who swallow foreign bodies are psychopathic personalities. Vanity prompts others to attempt to secure the admiration of their fellows by these means. . . . The unconcern with which an hysteric regards a mass of foreign bodies, including dinner forks and pieces of sharp metal, in his intestinal tract is very striking."

In a few instances an element of concern in not wishing to cause too much bodily harm to himself is evidenced by previous removal of the prongs of a fork or the ladle end of a spoon. These individuals are usually hysteric delinquents. One patient swallowed some cotton-wool before taking 9 foreign bodies, presumably with the object of lessening the risk of impaction or perforation.

Treatment

Where the condition is quiescent, palliative measures are given for a reasonable length of time. These consist simply of a dietary such as porridge, bread, pease-brose, vegetables, and perhaps chopped-up string. Periodic *x*-ray examination is carried out; and, in the case of operative measures, as near as possible before operation. Careful examination of all stools and vomit should of course be made. Small articles may ultimately be assisted from the rectum by enema, by digital aid, or through the proctoscope. In general, 6 weeks may be taken as a rough guide to the period a foreign body which is producing no symptoms may be left *in situ*. Finally, in suitable cases—chiefly accidental—the patient's fears should be allayed by the reassuring attitude of the medical attendant.

The Table shows a series of 16 cases that were sent to hospital for surgical treatment between 1936 and 1939. Cases considered not urgent were observed for a variable period and checked up by *x*-ray examination. The minimum time a large foreign body remained in the stomach before extraction was 6 days. In urgent cases requiring operation reliance had to be placed on the history and clinical signs, with or without previous *x*-ray examination.

Points of Interest

From these sixteen cases it may be of interest to note that:

(*a*) Eight were found perforated, as follows: duodenum, 1 (Case 1); jejunum, 1 (Case 3); lower ileum, 1 (Case 12); caecum, 1 (Case 6); transverse colon, 2 (Cases 2, 8); pelvic colon, 1 (Case 5); right inguinal canal (? caecum or ileum), 1 (Case 7).

(*b*) All these perforations were in situations distal to the pylorus, 4 of them distal to the ileo-caecal valve.

(*c*) The case incidence of perforation in this series was 50%, and all beyond the pylorus. This indicates that the patient is not necessarily out of danger when a foreign body has managed to pass the pylorus.

(*d*) With the exception of Cases 6, 7, and 8 the cases of perforation presented signs of acute abdomen with sudden and intense onset.

(*e*) Case incidence of impaction with intestinal obstruction was *nil*.

(*f*) Case incidence of impaction in the second part of the duodenum or at the ileo-caecal valve was *nil*.

(*g*) In no case did an ordinary intact fork or dessert-spoon, average length 7 in., or other article more than 1 in. in width, pass through the pylorus (Cases 4, 11, 13, 14, 15, 16).

(*h*) The widest article that passed through the pylorus was 1 in. (Case 2)—a piece of tin.

(*i*) The longest articles that traversed the duodenum were 5¼ in. and 5 in. (Cases 8, 12)—broken dessert-spoons.

(*j*) The widest article that passed the ileo-caecal valve was 1 in. (Case 2) and the longest 5¼ in. (Case 8).

(*k*) In one case in which a similar operation—gastrotomy—had been performed 7 weeks previously no evidence of the former wound on the stomach wall was visible (Case 15).

(*l*) Case mortality: 15 recovered, 1 died (6.25%).

Although the series of cases is a limited one and the type of foreign body rather different from and larger than that found in accidental cases, it is submitted that some findings at operation appear to run counter to certain of the views expressed in well-known textbooks on surgery and therefore may be considered unusual in this respect.

Choyce's *System of Surgery* (1932) states that: "The great majority of foreign bodies, having successfully passed the pylorus, safely traverse the remaining segments of the alimentary canal. The most common site of arrest is the lower part of the ileum, ileo-caecal valve, or caecum." Romanis and Mitchiner (*Surgery*, 1941) say that "foreign bodies are not commonly met with in the intestine as, if they pass through the pylorus, they will probably traverse the whole intestinal length and emerge at the anus. Elongated or heavy bodies will become impacted occasionally in the second part of the duodenum, and the only other point at which impaction is likely to occur is the neighbourhood of the ileo-caecal valve."

Maingot points out in his *Post-graduate Surgery*: "Very rarely does a foreign body, swallowed accidentally or intentionally, become lodged in the intestine. If perforation occurs the process is usually slow, resulting in either a localized abscess or an internal or external fistula." Rose and Carless's *Manual of Surgery* (16th edition, revised by Wakeley and Hunter, 1940) states: "Foreign bodies accidentally or intentionally swallowed occasionally pass through the stomach and become lodged in the intestinal canal. Lunatics and children are most frequently affected, and in the former the most astonishing collections are occasionally found. The symptoms caused by such conditions will be either those of intestinal obstruction or perforation. In the latter the process is usually gradual, rather than sudden, giving time for adhesions to form, thereby limiting the mischief. Suppuration follows, and possibly the foreign body may be extruded naturally or removed by the surgeon through the abscess cavity. Fragments of glass or metal may sometimes lodge in the pouches of the colon."

In the series under review the majority of the articles that had passed the pylorus and ileo-caecal valve were retained in the large bowel with signs of impaction or perforation. The sacculations, pouches, flexures, and sluggish peristalsis of the large intestine doubtless facilitate lodgment and, in some cases, perforation.

Commentary

Commenting briefly on certain cases, it may be mentioned that in Case 10 a small single tooth denture was searched for—on account of the haematemesis—but without success. This body may have eluded discovery by lodging in a duodenal pouch or diverticulum. The main point was its departure from the stomach and the subsequent freedom from symptoms. In Case 7 the supposition was a quiescent perforation by the needle through the caecum or lower ileum into the internal inguinal ring. This patient had undergone two abdominal sections previously and admitted to three separate occasions of foreign-body swallowing—a statement which was borne out by *x*-ray examination in each case. No. 12 was the only patient certified insane. He had no previous foreign-body history. In Case 9 operation was considered urgent, and was carried out the same night upon the history and failure of oesophagoscopy elsewhere. The transgastric approach was made. The location and extraction of the lower end of the foreign body (an impacted dessert-spoon) were difficult. Owing to the depth and curve, and to the failure of all ordinary forceps—curved or angular—to reach it, recourse was had to Cheatle's sterilizing forceps, which proved successful.

Recovery took place in all patients but one (Case 8), who died 24 hours after operation. He had a history of 3 former laparotomies for foreign bodies. The post-mortem findings showed small haemorrhages in the intestinal tract, atheroma, and myocardial degeneration.

Conclusion

It might be worth while recording a somewhat baffling case of trauma from a foreign body inserted into the lower orifice of the alimentary tract. There was a history of about 6 months' intermittent bleeding per anum whilst at another institution. There the patient was investigated on many occasions. Piles were suspected, and were injected. As bleeding continued he was removed to a hospital, where sigmoidoscopy and barium *x*-ray examination were carried out. Finally the patient consented to an abdominal exploration, which also gave a negative result. He was, however, much improved, and for a time there was no bleeding; later it recurred after leaving hospital. On admission to the surgical unit he appeared anaemic and wasted, with much loss of strength. His colour index was 0.9 and the red cells 3,500,000 per c.mm. Bleeding per rectum was present, mixed with faeces; wash-outs contained blood and occasional clots. Examination by proctoscope showed a deeply injected and

Table showing Details of Cases

Case No.	Description of Foreign Bodies	When taken	Past F.B. History	Condition on Admission	Findings at Operation		Result
					Peritonitis	Location	
1	Two 2½" needles, bits of glass, copper wire (the two latter passed before operation)	8 weeks before	Nil	Nausea. Slight epigastric pain and right rectus rigidity	Present; localized	(1) Needle in pyloric antrum of stomach—impacted (2) Needle in first part of duodenum—perforated	Recovered
2	Piece of tin (3" × 1"), penholder (4½"), pocket-knife (3"), toothbrush handle (4½"), small wooden spoon, 4 nails. (Maximum width of F.B.s other than the first was ¾")	2 and 8 days before	Laparotomy for F.B. in stomach 2 years ago	Acute abdomen; very ill	Present; central	(1) Piece of tin in transverse colon—perforated (2) Other articles—except nails—found lying free in pelvic colon (3) Nails felt free in rectum and left—passed 4 days later	"
3	Three large needles (triangular, pointed, 3"), one 2" needle, 2 bits of wire, 1 piece of tin, 1 piece of wood, 1 slate-pencil. (Maximum width of F.B.s ¾"; length 4")	14 days before	Nil	Acute abdomen; very ill	Present; gas and free fluid in pelvis	(1) One needle found free in peritoneal cavity—perforated through jejunum (2) Other needles, wire, tin, and wood found lying free in stomach (3) Slate-pencil free in jejunum (4) Doughy mass felt in ileum—? wool; left alone	"
4	Table fork (less prongs), length 5½", width ⅞"	6 days before	Two former abdominal operations for F.B.s	Nausea. Slight pain and tenderness over left epigastrium	No	Broken end of fork near greater curvature of stomach—impacted; other end in pyloric antrum—impacted	"
5	One 3" needle	7 days before. Stated by accident	19 days before (Same patient as Case 3)	Acute abdomen	Present; localized to lower abdomen	Needle found in pelvic colon with point perforating through wall. Ileus present. Many adhesions from former peritonitis	"
6	One 3" needle	3 weeks before. Accident	Nil	Tender in right iliac fossa over McBurney's point	No	Needle found perforating wall of caecum at a point ½" below appendix. Omentum wrapped round protruding needle. Surrounding area of caecum and appendix acutely inflamed	"
7	One 2½" needle	Unknown	Same patient as Cases 3 and 5 (five mths. later)	Pain and tenderness over right inguinal region; small lump, no impulse	—	Needle removed from right inguinal canal near internal ring. Much fibrous tissue present. No evidence of hernia or recent bowel perforation	"
8	One dessert-spoon (handle and shaft only), length 5½", width ¾"	10 days before	Three former abdominal operations for F.B.s	Acute abdomen	No	Spoon found in transverse colon impacted and on point of perforating. Many adhesions present	Died 24 hours later
9	One dessert-spoon, length 7", width of spoon 1½"; one 2½" needle	4 days before	Two former abdominal operations for F.B.s	Dysphagia. Presternal pain. Frequent retching. Inanition debility. Attempted removal by means of oesophagoscope at another hospital 2 days ago, but failed	—	(1) Spoon impacted in oesophagus. Tip of handle located 3½" above cardiac orifice by transgastric section. Impaction of ladle end of spoon near level of tracheal bifurcation. Difficult extraction by use of Cheatle's long sterilizer forceps (2) Needle removed from transverse colon	Recovered
10	One small denture—single incisor with metal clip, ½" × ⅜"	8 days before. Accident	Nil	Two attacks of haematemesis. Pain and vomiting. *X*-rayed on two occasions; second on day of operation	No	Stomach carefully examined by palpation externally, also whole of small intestine, lesser sac, and transverse colon—five times. F.B. could not be detected. Convalescence uneventful	"
11	One dessert-spoon (minus handle), length 6", width of spoon end 1½"	4 weeks before	"	Epigastric pain. Nausea. *X*-ray report: "in transverse colon"	"	Spoon found in stomach with broken end of shaft impacted at greater curvature	"
12	Handle and shaft of spoon, length 5", width of handle ¾"; one safety-pin (open)	Unknown. Insane	"	Acute abdomen	Present; localized	Spoon handle and safety-pin found in lower ileum, which was perforated in two places. Intestinal contents had escaped into pelvic cavity	"
13	One fork, length 6⅞", width ¾"	10 days before	"	Nausea. Epigastric pain. Right rectus rigidity	No	Fork found in stomach—impacted between greater and lesser curvatures	"
14	One fork—size as Case 13	7 days before	"	Nausea. Retching. Epigastric pain	"	Fork found lying free in stomach; handle towards pyloric antrum	"
15	One fork—size as Case 13	Unknown	Laparotomy for F.B. 7 weeks before (Same patient as Case 14)	Symptoms as above	"	Fork found free in stomach—handle presenting. Scar of former gastrotomy not visible	"
16	One fork (size as Case 13), 3 steel rings, 1½" diameter	6 days before	Nil	Nausea. Occasional vomiting. Epigastric pain	"	Fork found free in stomach, also rings, although the latter were somewhat elusive	"

velvety appearance of the anal mucosa and lower third of the rectum. Above this area the surface was normal. Some form of self-infliction was suspected, and close observation was kept for several weeks without result. All this time the patient was kept in bed on a milk diet. It might be mentioned that he was most co-operative in treatment, grateful for all that was being done, and often expressed a profound wish to get better. He was alert, intelligent, and an ardent book reader. At length the mystery was solved. While the patient was in the theatre for a final proctoscopy an intensive search, one of many, was being made of his bed and belongings. Concealed in the binding of a library book were found two pieces of twisted wire, 2 to 3 inches in length, with the ends set apart at one extremity—designed to create trauma and haemorrhage. The wire had a faecal odour. Confirmatory examination by microscope and spectroscope revealed blood cells, *B. coli*, and a haemoglobin absorption band. From this moment the patient rapidly got well.

I should like to express my thanks to the Commissioners, H.M. Prison Commission, Home Office, for permission to publish this paper, though it does not necessarily represent their views.

PERIODIC MEDICAL EXAMINATION

BY

FRANK ELLIS, M.B., M.Sc., F.F.R., D.M.R.

Since periodic medical examination was suggested by Dobell (1861) it has made little or no headway. This may be due to medical apathy, since it is easier to work as individuals in medicine, but almost impossible to carry out such examinations without organization. On the other hand, it may be due to the fact that considered medical opinion disapproves of the principle, regards the procedure as scientifically unsound, ineffective, or impracticable, or regards the necessary administration and organization as too difficult under conditions hitherto existing in medicine and its relation to society. There is such attraction, however, in the idea that by periodic examinations minor tendencies to major maladies can be detected and thus corrected relatively easily before breakdown of the organism occurs that I think the evidence on the question should be reviewed, and the possibilities of the applicability and value of such examination assessed.

The great fault of the present method of bringing the doctor to the patient is that in most cases the doctor is not called at the beginning of ill-health, but when the compensation which is characteristic of the vital organism is failing the individual in his attempt to live up to his usual standard of efficiency. Periodic examinations, if they offered an opportunity for detection and correction before this failure of compensation occurred, would constitute an important branch of the preventive medicine which is rightly emphasized in the Medical Planning Commission's interim report (1942) as one of the most important functions of the medical practitioner.

Studies from the Literature

Sir James Mackenzie was able to make his contribution to modern cardiology as a result of carrying out regular examinations, and he emphasized the necessity for a systematic study of the beginnings of disease. Apart from the work of his disciples at St. Andrews, however, nothing on the subject has been reported in this country except from the Peckham Health Centre (1938). In America, following recommendation of the procedure by Dr. Gould in 1905, various sporadic individual attempts have been made to carry out such examinations, the most noteworthy being those of the Life Extension Institute, an account of which is given by Fisk (1923) and Fisk and Crawford (1927). Like the Peckham group, they report a high incidence of unsuspected defects in the apparently healthy. They assess the ratio of major to minor maladies as 1:10, and stress the fact that considerable relief follows the correction of minor complaints. Other published work is mostly American, and the relatively high incidence of defects in apparently healthy individuals is supported by Page (1938), Faught (1939), Ryan (1927), Griswold (1940), Brandabur (1937, 1940), Harrison (1938), and Emerson and Irving (1938). From the Continent comes similar evidence (Kattentidt, 1933).

Assuming that such defects can be found, it is important to know if they can be corrected. The Peckham report says the course of many maladies has been arrested with success and with satisfaction to the sufferer. Improvement in various conditions on subsequent examination is reported by the workers mentioned above, correction of from 50 to 70% of defects of all kinds being recorded. Noteworthy among these are reports of improvement and disappearance of hypertension following hygienic measures only (adjusted habits of life, etc.) by Brandabur and by Emerson and Irving. The former reports a recovery to normal in 114 out of 382 railway workers, and the latter report an average reduction in blood pressure of 18 mm. of mercury in 78 out of 120 sufferers found in 1,020 examinees. When it is remembered that the actuarial assessment of actual to expected deaths of men aged 40 to 49 is improved from 138 to 97% as a result of 10 mm. difference in blood pressure, the importance of these results can be appreciated (Actuarial Society of America, 1939).

Improved Expectation of Life

This appreciation based on ordinary life insurance examinations nullifies possible criticisms of the significance of these blood-pressure estimates. Caution because of possible inaccuracies in ordinary estimates is necessary, as emphasized by Bethea and Hardy (1932). The thoroughness of the periodic examinations determines the number and the nature of the defects recorded, but Mishler (1939) reports on the employees of a "Truck Line" system, 40% of whom were found to have defects on examination by general practitioners distributed over a wide area, while the Life Extension Institute (Fisk, 1923) found some defect in all of 10,800 males of an average age of 34 from typical industrial groups. That improvement in expectation of life results from such examinations is shown by a report of the Metropolitan Life Insurance Company of New York (Fisk, 1923). It is stated that instead of a mortality rate for seriously impaired life of 2½ times the tabular rate, it was only 82% of the tabular rate, and 38,000 lives were saved for the company in 1920.

In spite of the value of the procedure as indicated by these published findings, and although the American Medical Association publicly endorsed the principle of periodic medical examinations in 1922, the apparent popularization of such examinations in the United States is only relative. This is shown by Collins (1934), senior statistician to the United States Public Health Service, who, in a survey of a cross-section of 8,758 families, found that only 3% of the population at the age of 60 underwent periodic examinations, and that this was the maximum proportion after the age of 20. Thus it would seem that unorganized voluntary examinations only touch on the problem, and that a national effort is needed to make examinations an important part of preventive medicine. Organized examinations have been reported from France, Germany, Turkey (Asim Arar, 1938), and Russia (Fredlyand, 1938), while in Canada, Harrison (1938) states, "recent Canadian Provincial Health Insurance Acts make provision for periodic health examination."

It is my contention that all this evidence calls for the serious consideration of periodic medical examination on a national scale as part of our post-war medical organization. In addition to the immediate benefit to the individual which can reasonably be expected, it is anticipated that with adequate statistical analysis of thea findings carried out at central bureaux the significance of hitherto unappreciated facts in clinical history and examination will be assessed, with the result that early diagnosis of disease will be facilitated, and the emphasis in medicine will be on the physiological rather than, as at present, on the pathological. Such a scheme is not beyond the bounds of practicability. The cost should be a national concern, and it must not be forgotten that the saving of life and health would, taking the long view, probably more than pay for it. Fisk shows that for 105,000,000 people in America the gain, after deducting the cost of examinations and treatment, represented about $1,500,000,000; a proportional figure for the United Kingdom would be £100,000,000 a year.

A Suggested National Scheme

Any such scheme should be run by the general practitioners. In Detroit the school medical service sent school children to their family doctors for periodic examinations, 37,348 being sent in 3 years, and Shurley (1937) reports that it is intended to make this a routine procedure. The examinations should be routine, and preferably more than one doctor should be present, so that each acts as a check on the other to ensure that the work is well done. A consultant should be readily available. Practitioners should be adequately paid for their services, and nurses and clerical staff should relieve them of routine duties. They should be able to work in groups and at suitably arranged health centres, and postgraduate study should be insisted upon. The health centre should provide routine laboratory and *x*-ray facilities with specialist assistance for interpreting radiographs. The emphasis should be on abundant vitality as the normal state, and the general practitioner should be in a position also to observe the usual mode of life of the individual; as the Peckham group express it—his reaction to his environment.

The treatment of the sick (private and panel practice) should be carried out at the same centre, which might well be a part of the community centre of an estate, closely associated with its recreational facilities. Adequate records should be kept and duplicates sent to a central statistical bureau, which would be able to provide morbidity statistics, and, by correlating early symptoms with later events, facilitate early diagnosis. This advance in medicine is especially desirable in connexion, for instance, with cancer of the stomach. It may be that conditions such as Paget's disease and the aetiology of juvenile spondylitis might become better understood.

The national identity cards would provide a suitable basis for classification and making contact with individuals. It would be necessary to see that future generations of practitioners were taught the routine and value of periodic examinations. The public should be induced to come voluntarily, and taught through the Press, the wireless, and lectures to realize the importance to their children, themselves, and the nation of such examination. It is suggested that the present civil defence services, the Home Guard, first-aid parties, and schools and universities offer a method of rapid and wide diffusion of such instruction. The frequency of the examinations would be dictated at first by the limits of practicability, but even an examination every 3 years has been shown to be of considerable value. Irregular spacing might be found with experience to be best. It is considered, for instance, that during the first year of life (Peterman, 1937) very frequent examinations are desirable, and between the ages of 5 and 15 fewer may be necessary than later.

As a safeguard against the breakdown of a national scheme through practical difficulties, experiments could be conducted in which medical, administrative, and financial experience could be gained. Two types suggest themselves: (1) An experiment on an estate of about 5,000 people. This would be relatively inexpensive and capable of control because of the ease of contact between doctors and the public. It would provide useful information of the detailed working of individual health units. It could precede (2) an experiment for a large city. This would require a considerable organization, and mistakes might be relatively costly unless the preliminary experiment had been carried out. It would provide enough information to run a national scheme perfectly, but would have to be conducted by the Ministry of Health, probably through the local authority.

That the idea of periodic examination has an appeal even without knowledge of all the foregoing evidence is shown by the fact that a group of doctors on an estate in Sheffield are eager to carry out the first experiment. The success of the school medical service, with its necessarily rather perfunctory examinations, in improving the health of school children in this country is an argument for periodic examinations. With such a scheme should go some form of adequate social insurance as recommended in the Medical Planning Commission's report. The possibility of neuroses being caused by such examinations may influence the opinion of practitioners. Faught (1939), Sensenich (1938), Fisk and Crawford (1927), and Pokorny (1940) state specifically, however, as a result of experience, that neurotics are fewer rather than increased in number. It seems reasonable to suppose that children, if examined at regular intervals, would grow up as unconcerned at the prospect of a medical examination as they are of the dentist's chair, occupied at regular intervals.

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Medical Memoranda

Congenital Diverticulum of the Common Bile Duct

This condition, sometimes called cystic dilatation of the common bile duct, is so rare (less than 100 cases have been reported) that any case of it is worthy of record. The pathology, aetiology, and variations in symptomatology, as well as the literature, have been fully considered by Sir James Walton (*Brit. J. Surg.*, 1939, **27**, 295).

CASE REPORT

The patient was a married woman aged 39. In her medical history there was nothing to suggest disease of the gall-bladder or bile ducts. She had, in fact, been remarkably free from illness of any kind. It should be noted that her first pregnancy terminated in Caesarean section three months before her admission to hospital. Ten days before admission she developed a severe colicky pain in the right hypochondrium, radiating through to the back and up to the right shoulder. On account of this pain she was admitted to hospital under the care of Mr. J. E. Paterson.

Examination revealed tenderness and guarding over the gall-bladder region. The liver edge could not be felt, and there was no palpable swelling. She was not, and never had been, jaundiced. Vomiting did not occur. There was no rise of temperature. A diagnosis of gall-stone colic was made, and an *x*-ray examination carried out. "Straight" *x*-ray films gave negative results, and cholecystography showed no evidence of gall-bladder shadow. The clinical diagnosis was considered to be substantiated and operation was advised.

At operation the gall-bladder was found to be healthy in appearance and of normal size. The first and second parts of the duodenum were lifted forwards and pushed down to the left by a large cystic swelling. This swelling, covered by peritoneum, was somewhat pear-shaped. The upper narrow portion extended up to the portal fissure lying in the gastro-hepatic omentum. About 1½ in. above the duodenum the cyst became more globular and measured some 4 in. in diameter. It extended down behind the first and second parts of the duodenum almost to the ampulla of Vater. The right border was definite and rounded, and extended beyond the limits of the duodenum. The left border was indefinite. Aspiration through a fine needle proved that the cyst contained pale-green bile in which there was a fair amount of mucus. There was no gross sepsis of the contents. The cyst was gradually decompressed by aspiration, but even when empty it did not collapse completely owing to the fibrous nature of its walls. No obvious obstruction to the duct was found.

A two-layer anastomosis between the cyst and the second part of the duodenum was made and the suture line reinforced with an omental graft. A drain was inserted into Morison's pouch. Leakage did not occur, and the patient made an uneventful recovery. When seen ten weeks after operation the woman was very well and had returned to work.

Since this note was written the patient has been seen again. Several times she has had attacks of pain in the right hypochondrium, and on one occasion has had a feeling of chilliness with slight shivering—symptoms which may reasonably be attributed to a mild infection of the bile ducts. The attacks were not severe or prolonged, but they deserve mention, as other reports give conflicting accounts of the incidence and severity of this complication.

My thanks for permission to publish this case report are due to Mr. J. E. Paterson, who performed the operation, and to the late Dr. W. Martin, superintendent of Stobhill Hospital.

W. GRAY, M.B., Ch.B., F.R.F.P.S.
Senior Resident Surgical Officer,
Stobhill Hospital, Glasgow.

Tenosynovitis in Untrained Farm-workers

The occurrence of a large number of cases of tenosynovitis crepitans among workers from this camp appears to be worth recording. Within a few months we have seen 16 such cases, 12 in men going out on farm work. As the average number of men doing such work at that time was 52 this forms a rather high proportion. The other 4 cases occurred in men doing some unaccustomed type of work in the camp. Of these 16 men 14 did office work or other non-manual labour in normal life, although no manual labour had been done by any of the men for at least 4 months. The tendons involved were the same in all cases: the extensor carpi radialis longus and the extensor digitorum communis—usually both, and in a few cases the latter only. These tendons are known to be frequently affected. Signs and symptoms were typical: swelling and tenderness along the tendon, with pain and crepitation on movement.

Treatment

Most of the men presented themselves at the camp hospital immediately upon the appearance of symptoms. Treatment consisted of rest, immobilization of the wrist by strapping, fomentation for two or three days, followed by radiant heat or infra-red treatment and massage with ung. iod. denigres. Under such treatment most patients improved rapidly and appeared to be completely cured within 8 to 10 days. Two cases which did not come under observation until almost 10 days after the onset took a much longer course and were not cured until 3 weeks after the beginning of treatment. In one of these cases immobilization by splinting had to be resorted to, since the patient would not obey instructions to refrain from using his hands. Two other patients, who interrupted their treatment prematurely and against advice, were forced to return by a recurrence of the symptoms, and thus the period of inactivity was considerably lengthened. In a further 2 cases some thickening of the tendon remained and is still noticeable, without, however, causing any pain or incapacity for work. Of the 12 farm-workers 11 returned to work of the same type immediately after the condition had cleared up: 10 were able to do such work without either inconvenience or recurrence of the tenosynovitis, but one had to give up on account of a relapse.

From our observation it would appear that treatment and rest should be started immediately upon the first appearance of the symptoms, thereby shortening the course and limiting the loss of working time, whereas neglect would tend to prolong the incapacity. The easy accessibility to medical aid in this camp and the necessity for reporting all ailments immediately may have made early treatment and diagnosis possible, whereas, normally, people outside might tend to disregard the first symptoms.

Causative Condition

All the cases seem to have occurred after work involving repetition of stereotyped movements, and it is our impression that inexperience in such work resulted in an incorrect and uneconomic muscular effort—a fault which was rectified by continued practice. It would be interesting to know of any similar accumulation of cases of tenosynovitis now that a large part of the population has taken up unaccustomed manual labour.

It is said that a rheumatic factor may be partly responsible for tenosynovitis. We certainly have seen a proportionately large number of cases of other rheumatic manifestations, such as fibrositis, in this camp, very likely due to damp houses and damp bedding, both of which are probably unavoidable under the climatic conditions. The question of a maladjusted nutrition (lack of vitamins, "too much starch," here usually made responsible for any indisposition) can probably be disregarded, as the farm-workers have their food on the farm and are the best-nourished section of the camp.

It seems remarkable to us that no cases of tenosynovitis have occurred among those who take part in sport, as the vast majority do, including men who for years have not played any games at all.

R. E. FLOWERDEW, C.I.E., Lieut.-Col. I.M.S.(ret.).
O. B. BODE, M.D.
Hospital of Camp M, Isle of Man.

Synergic Action of Intravenous Mercurials and Gum-saline in Nephrotic Nephritis

Case History

The patient, a stonemason aged 42, was admitted to the Royal Halifax Infirmary on June 29, 1940. He had had malaria in 1917, and "winter bronchitis" for 20 years. He gave a history of 8 weeks' malaise and 6 weeks' puffiness of face and swelling of hands and legs. He complained of aching in loins, nocturnal frequency, occasional headache, anorexia, and nausea.

Examination showed pallor and wasting, with marked generalized oedema of the lower extremities, genitalia, and sacral pad; ascites with shifting dullness; and physical signs of basal congestion of both lungs. B.P. 160/100. Urine: S.G. 1028, acid; albumin + +; abundant hyaline, granular, and epithelial casts; no red cells. Blood urea: 26 mg. N per 100 c.cm. Blood: R.B.C. 4,500,000, W.B.C. 8,400, Hb 75%. Faeces: fluid but non-pathological.

Treatment with the following diuretic measures was attempted without success over a period of 3 months, the average urinary output remaining about 40 oz. in 48 hours: restricted fluid intake, high protein–salt-free diet, calcium lactate, thyroid, urea, aminophyllin I.V. 10 c.cm., and 12 I.V. injections of various mercurials (1 to 2 c.cm. novurit, mersalyl, and neptal), preceded by courses of ammonium chloride. An intraperitoneal injection of 4 c.cm. of neptal on Sept. 1 was followed by an excretion of 110 oz. of urine in 48 hours. Intravenous injection of gum-saline (6% gum acacia) was then tried (Landis, 1937). A drip infusion of 1,000 c.cm. of gum-saline was given on Oct. 14 without result. Two days later a drip infusion of 1,000 c.cm. of gum-saline to which was added 3 c.cm. of neptal was given, with a resultant diuresis of 160 oz. in 48 hours. Four days later a repetition of this latter measure yielded a similar result. The patient was considered fit for discharge on Oct. 23.

Fersolate, 2 tablets thrice daily, was prescribed on admission, but was inadvertently omitted for some weeks, and a Hb value of 60% was subsequently noted.

		Urinary Output in 48 Hours
July to Sept. ..	Various diuretic methods (including 2 c.cm. I.V. neptal)	Average 40 oz.
Oct. 8 ..	Test dose 50 c.cm. I.V. 6% gum-saline	30 oz.
Oct. 14 ..	1,000 c.cm. I.V. (drip) 6% gum-saline	40 oz.
Oct. 16 ..	1,000 c.cm. 6% gum-saline + 3 c.cm. neptal I.V. (drip)	160 oz.
Oct. 20 ..	" " " "	160 oz.

Comment

In a case of nephrotic nephritis, neither mercurial diuretics nor gum-saline injected separately promoted diuresis, but simultaneous infusion of both substances apparently produced a striking increase in urinary output. It is suggested that the simultaneous injection of mercurials with serum, plasma, or whole-blood transfusions might improve the otherwise poor results recorded in these cases by Brown, Gray, and Mollison (1942), using serum transfusions alone. From their findings these authors suggest that tissue fluid is drawn into the circulation during transfusion. It is possible that the simultaneous presence of mercurials in the blood might act effectively on the withdrawn tissue fluid in cases of nephrotic oedema. The frequent association of low haemoglobin values in these cases further suggests that whole blood might in certain cases yield better clinical results than normal serum or plasma, provided the addition of mercurials does not adversely affect the course of whole-blood transfusions.

I wish to thank Dr. L. Glick, assistant honorary physician to the Royal Halifax Infirmary, for permission to publish this case.

S. T. WINTER, M.B.,
Flying Officer, R.A.F.V.R.

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Reviews

OUT-PATIENT SURGERY

Surgery of the Ambulatory Patient. By L. Kraeer Ferguson, M.D., F.A.C.S. With a section on Fractures by Louis Kaplin, M.D., F.A.C.S. (Pp. 923; illustrated 63s.) Philadelphia, Montreal, London: J. B. Lippincott Company.

Under the rather unusual title *Surgery of the Ambulatory Patient* Dr. L. K. Ferguson of Philadelphia has written a comprehensive book of over 900 pages upon minor surgery. The scope of out-patient or minor surgery is always difficult to define, but the author's assurance that all the procedures mentioned have actually been carried out on ambulatory patients shows that the limits of such work have been respected.

It is pleasing to note that on the whole the treatments adopted are very like those in common use in this country, but the chapter which deals with the bites of poisonous snakes, the black-widow spider, scorpions, and ticks makes strange, if interesting, reading here. The field of minor surgery appears to have been well covered and there are accounts of many of the rarer and newly recognized conditions. Thus the curious "burrowing ulcers" described by Meleney receive notice; zinc peroxide, as originally advised, is successfully used in their treatment, as also of progressive gangrene of the skin (a condition, here called "progressive bacterial synergistic gangrene," which can hardly lend itself to out-patient treatment) after the wound has been excised surgically. Erysipeloid, due to the swine-fever organism and a commoner infection than is usually recognized, receives proper attention.

There is a useful chapter on foreign bodies and their removal, although we were surprised to find no mention of the peculiar injuries produced by the points of indelible pencils, since these are said to be more frequent in the United States than elsewhere. Two conditions which are notoriously difficult to eradicate—i.e., thyroglossal and pilonidal sinuses—receive special notice. Suitable radical operations are described, and in both instances the use of sclerosing solutions is stated to be well worth a trial. A very considerable section of four chapters on fractures is written by Dr. L. Kaplin, and here all fractures which are at all suitable for ambulatory treatment are adequately dealt with.

In testing the general comprehensiveness of the volume we looked up the subject of the suture of divided tendons, especially on account of the doubts which have recently been expressed as to the value of this procedure, anyhow in the case of tendons enclosed in sheaths. We were disappointed to find only the briefest of references to a subject which surely comes under the heading of ambulatory surgery. Division of tendons is common and often leads to great disability, so that its consideration should be granted much more space in any further editions. The general tone of the book is, however, extremely practical, and to this end there are over 600 useful illustrations; it is easy to read, well produced, and can be recommended with confidence.

BIOCHEMISTRY OF ACUTE ALCOHOLISM

Acute Alcoholic Intoxication: A Critical Review. By Henry W. Newman, M.D. (Pp. 207. $2.50 or 15s. 6d.) California: Stanford University Press; London: Oxford University Press.

The title of this monograph does not sufficiently stress the fact that it is a critical review of the biochemistry of acute alcoholic intoxication, and is indeed of the utmost practical and scientific value. A large proportion of the research on alcoholic intoxication during the past decade has been inspired by the increasing importance of the diagnosis owing to the widespread use of the automobile and the danger to society of both the intoxicated driver and the intoxicated pedestrian. Newman summarizes knowledge of the absorption and excretion of alcohol and shows that only about 10% is excreted in the breath and urine, and this fraction cannot be increased to any significant extent by therapeutic measures. The remainder of the alcohol undergoes combustion to carbon dioxide and water, the initial steps of this process taking place in the liver. A 70 kg. man cannot metabolize much more than a pint of 90-proof whisky in the 24 hours, and, though this quantity may be exceeded temporarily, it cannot be continued without interruption for any period without a lethal outcome; the fact that death does not more often occur from acute alcoholism alone is explained by the protective actions of coma and emesis. This amount of alcohol yields approximately 1,200 calories, which is a considerable proportion of the basal metabolic requirements. We cannot expect any therapeutic measure aimed at the removal of the alcohol by combustion to do more than double this, or more calories will be produced than the body can use, leading to an increase in total heat production. Combustion may be speeded up to some extent by fever, by increased protein metabolism, and by insulin. Although alcohol is a pharmacological antidote to strychnine and benzedrine, these drugs are of little use in treating acute alcoholism. Analeptics such as leptazol are of more value, while glucose, with or without insulin, increases the resistance of the nervous system to the lethal action of alcohol. Carbon dioxide is helpful for the respiratory depression.

The chemical diagnosis of alcoholism may be based on analysis of the breath, saliva, urine, cerebrospinal fluid, blood, or plasma. The last is probably the most reliable. In a complete review of this difficult and controversial subject, Newman points out that the effect of the same concentration of alcohol in the blood varies in different individuals. In one very well controlled study "the percentage intoxicated at each level of blood alcohol was enumerated as follows: 5–75 mg.% blood alcohol, 10.5% intoxicated; 75–125 mg., 18.5%; 125–175 mg., 47%; 175–225 mg., 83.6%; 225–275 mg., 90%; 275–325 mg., 95.1%; 325–375 mg., 96%; 375–425 mg., 98.3%; and over 425 mg., 100%. It can be seen quite readily that although the general correlation is definite, a great deal of individual variation in tolerance must exist to account for those individuals called drunk at low blood alcohol levels as well as those designated sober at very high levels." In addition, the reduction of driving ability below that of a reasonably cautious and prudent person depends not only on the amount of alcohol taken and in circulation and whether the concentration is rising or falling, but also on the previous degree of practice and skill. Hence, unless we decide to punish people for drinking alcohol at all if they are in charge of a car, we should probably regard a chemical analysis as only one item in the evidence, and in this connexion Newman stresses the importance of early examination by a physician, who may at the same time, if necessary, take a sample for analysis.

A CHALLENGE TO OBSTETRICIANS

Revelation of Childbirth. The Principles and Practice of Natural Childbirth. By Grantly Dick Read, M.A., M.D. (Pp. 262. 21s.) London: William Heinemann (Medical Books), Ltd. 1942.

This book accuses the medical profession in general and the consulting obstetrician in particular of gross mismanagement of all cases of normal pregnancy and labour. The early chapters are concerned with the anatomy of the uterus, pain-producing factors, and appreciation of pain. Next, the fear of childbirth is discussed together with its effect upon the neuromuscular mechanism of the genital canal. It is this effect which, according to Dr. Read, is responsible for the pain experienced during labour. He holds that labour should be painless, except perhaps during the final contractions of the first stage. These chapters do not make easy reading, and the simile between childbirth and defaecation is not convincing. The abuse of anaesthetics and analgesics in labour is then discussed, in which chapter there is much needless repetition. In fact, there is much redundancy throughout.

The most interesting part of the book describes the author's education of the pregnant woman, his treatment of her, both ante-natally and during labour. Here again he disagrees with orthodox teaching, for he believes that, in the early weeks of pregnancy, it is the retroverted rather than the anteverted uterus which will cause frequency of micturition. The chapter on relaxation would have been more appreciated before that on the conduct of labour rather than after it.

The end comes with an appendix consisting of a series of letters from patients reminiscent of advertisements for patent medicines. Yet, in spite of all this, no one can doubt Dr. Read's sincerity, and the book contains a message to all those who work in the field of midwifery—namely, that the physical condition is considered at the expense of the psychological and that neglect of the latter frequently converts what would have been a normal physiological function into a pathological process.

Notes on Books

In *My Self, My Thinking, My Thoughts* Mr. K. W. MONSARRAT makes a gallant attempt to analyse his own mental processes. In his opinion the present world crisis calls for a criticism of human habits of thought as an essential preliminary to a better state of affairs, and the first step must be a self-criticism. The book is not easy reading, even with the aid of the symbolic diagrams provided, and it illustrates the difficulty of conveying to others one's own methods of thought. In the chapter on sociology the author adopts the Adlerian philosophy; the general reader will probably be most interested in his view that the attraction of the mystery religions lay in their providing an antidote to fear. The book is published at 7s. 6d. by the Liverpool University Press, and in London by Hodder and Stoughton.

Although the editors of *The 1941 Year Book of Radiology* (H. K. Lewis, 27s. 6d.) have had to rely, because of the war, on radiological work done in the Western Hemisphere, the standard of this publication has been well maintained. As before, it appears in two sections—Diagnosis, edited by Dr. Charles A. Waters assisted by Whitmer B. Firor; and Therapeutics, by Ira D. Kaplan. In the section on diagnosis articles of interest are those on injuries from metrazol therapy, osteoporosis from circulatory obstruction, and insidious fractures from repeated mild trauma. Georg Brandt's paper on this is comprehensive and of considerable importance in wartime. The value of tomography in sinus disease is pointed out in a paper by Sherwood Moore and Cone, which also records two cases of enlargement of the internal auditory canal from VIIIth-nerve tumour, demonstrated tomographically. In the gastro-intestinal section there are interesting articles on *x*-ray control in the use of the Miller-Abbott tube in intestinal obstruction and on the small intestine in sprue and deficiency diseases. There is a report on the use of pheniodol for cholecystography. In the radiotherapy half of the book there is reviewed a wealth of articles on research in cancer and on general principles of radiotherapy and technique in individual systematic treatment. The editors and publishers are to be congratulated on the continued excellence of this yearbook, which is doubly welcome in these times of stress, when original papers are difficult of access. No radiologist should be without it.

A sixth edition of TORALD SOLLMANN'S *Manual of Pharmacology* has been published by W. B. Saunders Company at 45s. This well-known manual, which in our last review we described as "the fullest work of reference . . . written in English," is modestly introduced by the author in his preface as "a rather comprehensive outline of current knowledge and conceptions of drug actions, especially from the point of view of their practical importance in medicine, therapeutics, and toxicology." So much has happened since the preparation of the 1936 edition that the author has found it necessary not only to add new sections on such items as the sulphonamides, but also to rewrite almost every paragraph. This, as he says, has been made necessary by the fact that, in addition to the spectacular advances that have been made, there have been "quiet developments in nearly every field of medicine." To make room for the new material, and so as not to increase the size of the volume unduly, matter which was becoming out of date has been either omitted or condensed: the author has wisely decided to omit the section on specific sera and vaccines. Sollmann's *Pharmacology* is not only an indispensable reference book; the matter set in large type provides a continuous narrative that serves as a text for the student. The volume is completed with 104 pages of bibliography which has been "checked repeatedly to increase its accuracy."

Studies in Hay Fever and Asthma records a series of investigations undertaken by Dr. DAVID HARLEY during the tenure of an Asthma Research Council Fellowship, 1932-9, in the laboratories of the Inoculation Department, St. Mary's Hospital, London. The work represents advanced studies of a chemical and immunological nature dealing with the substances concerned in allergic reactions and in the mechanism of specific desensitization. Hence the work is of more interest to the specialist than to the practitioner. Many experiments are detailed to show the differences between the hay-fever idioceptor and anaphylactic and other antibodies, and in investigating the chemical nature of the hay-fever idiotoxin the strongest reactions were obtained with a fraction which contained denatured protein of albumin type. The role of heredity in hay-fever is discussed, and Harley considers it connected with the inability of the blood to digest certain constituents of the pollen grain. In the specific diagnosis of hay-fever it is stated that "for routine purposes it is sufficient to make a test with Timothy (Phleum pratense) pollen extract," a statement with which most other observers will not agree, and the possibility of other sensitizations in "seasonal" hay-fever cases is not mentioned. The book is published by William Heinemann at 10s. 6d.

Messrs. H. K. Lewis and Co., 136, Gower Street, W.C.1, publish on behalf of Dr. S. L. SIMPSON a simple scheme of instructions for measuring insulin as used at the Willesden General Hospital diabetic clinic. The front page of the card contains the instructions and at the middle opening there are illustrative diagrams. The publishers will send a specimen card on receipt of 8d.

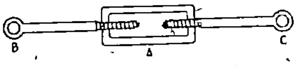
Preparations and Appliances

FRACTURE OF BOTH BONES OF LOWER LEG: A TRACTION APPARATUS

Surgeon Lieut. W. A. HUTTON, R.N.V.R., writes: The method of choice in the reduction of lower leg fractures associated with overriding lies in skeletal traction with plaster fixation. Recent suggestions that this is productive of delayed union have not been supported by our experience. The apparatus described below was devised when simplicity with ease of construction was essential; it has been found competent to deal adequately with any of these fractures, and it is considered that in certain respects it is an improvement on existing methods.

Apparatus.—Primarily this is a bottle-screw traction of common engineering practice. At one end of each of two metal rods of arbitrary length is bent a metal loop, and at the other end of each rod a thread is cut. In one rod this thread is left-handed and in the other right-handed. A metal bottle-screw bridges the rods across the threaded extremities. By rotation of the bottle-screw the ends of the rods can be approximated or separated, according to the direction of rotation.

Operation.—The loop at the end of one rod is attached to the lower fractured fragment; the loop at the end of the other rod is attached to a fixed point. In our case this fixed point is a metal hook cemented into the theatre wall some six feet from the ground. Under local anaesthesia a Steinmann pin is inserted through the lower tibia or os calcis and the stirrup connected; the remaining metal loop is then connected to the stirrup by means of the Steinmann pin. The table is tilted to the Trendelenburg position to provide the counter-extension of the patient's body weight. Traction is now applied by rotation of the bottle-screw, which is controlled radiographically.



A=Bottle-screw. B=Loop attached to a fixed point. C=Loop attached to skeletal traction.

After overriding has been corrected, and apposition obtained by lateral pressure, two flannel strips are passed under the leg, the one at the fracture level and the other below; a third may be passed under the knee-joint if thought necessary. The bottom flap of the table is then dropped, an assistant supporting the limb by means of the flannel strips. A posterior plaster slab is applied from the plantar surface of the foot to mid-thigh, passing through the stirrup and incorporating the posterior portions of the flannel strips. When this has set, the assistant supports the limb by the cast, the redundant pieces of flannel are cut away, and the plaster completed in the usual manner. When the cast has firmly set the extension is removed and the patient returned to bed, with application of weight extension if the type of fracture renders the reduction likely to be unstable. To prevent rotatory stress on the fragments, the plaster is renewed or wedged around the knee-joint in slight flexion previous to the fitting of a walking-iron.

Summary.—The points in which it is suggested this apparatus is of value are: (1) It is very simple and cheap, and can be constructed, as in our case, in a non-technical workshop. (2) The traction is applied with the knee extended, avoiding the necessity for completing the plaster in two portions, the one with the knee flexed and the other with the knee extended. Loss of the reduced position has been noticed when the limb is straightened to complete the plaster. (3) The operator has ample room in which to complete the plaster, there being no traction apparatus near the limb. (4) The rate of reduction is very gradual, and when obtained the reduction is positive, there being no possibility of any slip-back. It is under radiographic and mechanical control throughout.

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A NUTRITION COUNCIL

The well-informed article that appeared under the main heading of "Food and Food Values" in the *Times* of August 28 is welcome for more reasons than one. The medical man, and other workers in applied science, have for long deplored the apathy towards, and ignorance of, science, and especially biology, that exist not only among the general public but in particular among educated men and women. In peacetime it was a common criticism in the world of science that those who were in charge of the destinies of this country, and especially the civil servants responsible for the day-to-day administration of Government policy, were lamentably ignorant of those scientific facts and principles upon which the material world in which we live is largely hinged. Since the outbreak of war recurrent protests from workers in various branches of science have borne witness to the frustration felt by men who understand what is meant by the hackneyed phrase, "We live in an age of science," when they observe the recurrent stupidities committed by civil servants educated in the classics and the humanities. We believe that, in overcoming the apathy and ignorance that still exist, organs of responsible opinion such as the *Times* have an important part to play, and it is therefore with pleasure that we see published in its columns an article referring to such matters as "the microscopic examination of the eye." and "blood and urine analysis." There is a real potential interest in biological subjects, and so in medicine—especially when applied to the prevention of disease—that is still largely unsatisfied, and until this is satisfied it will not be easy to arouse public interest—and so promote public action—in the proposal made in the *Times* article that a Nutrition Council should be formed.

The first question to be decided is whether there is need for such a council. The arguments adduced in the article referred to are very much in line with discussions that have taken place during the war on the need for the unification of the medical services. As the *Times* correspondent points out, there are a number of bodies concerned in some way or other with nutrition. For example, there are the Medical Research Council, the Ministry of Food, the Ministry of Health, the newly formed Nutrition Society. There are the Board of Education, the Ministry of Labour and National Service, the Agricultural Research Council, the Food Investigation Board, the Department of Scientific and Industrial Research, and the Cabinet Advisory Committee on Food Policy. There are, too, the food manufacturers and the caterers. At the moment the country is very "food-conscious," and everyone is acutely aware of the fact that, in the main, the stomachs of the nation are filled with produce brought to this country by ships which have to run the gauntlet of the enemy submarine and surface raider, and that even if we produce the maximum amount of foodstuffs that can be home-grown we must, as a small island with a large population, depend for our sustenance largely upon what comes from other countries. This in itself has recently brought to the fore the important technical problem of dehydrating foodstuffs, so that the holds of ships shall be occupied by what is essential and not by the large quantities of water which the natural food contains. Again, the shortage of citrus fruits has focused attention on the technical problem of canning and cooking vitamin-containing foods so that these vital factors of diet are not destroyed. The most enlightened Government Department thrown up by the war, the Ministry of Food, has played a fine part in bringing home to the consciousness of every man and woman in the country the multitude of factors that enter into providing them with the kinds and amounts of foods that are necessary to keep body and soul together. What is more, it has stirred an interest in nutrition as the basis of good health and has created a demand for good and sufficient food that the people of the country will insist upon having satisfied when this war is over.

With so many diverse interests involved, with so much technical information that is ill co-ordinated, there would indeed seem to be a sound case for forming the proposed Nutrition Council. If this is granted, the next question is whether any of the various organizations referred to above is by its present constitution fitted to fulfil the function of such a council. It seems obvious that the work should not be undertaken by any Government Department which has at its head a Minister who, whatever else he is, is first and foremost a politician. In a letter to the *Times* Lord Dawson suggested that "the Medical Research Council is designed for just such a purpose, as its record will show." We need not remind readers of the valuable work done by the M.R.C. in the field of nutrition as well as in all other fields of medical research, or remind them of the high position in the world of nutritional science held by its present secretary. But as its function under the Privy Council is limited to medical research, and as in the conduct of a food policy for the country as a whole so many non-medical sciences are involved, not to mention the key position of agriculture and the contributions of economists and statisticians, it may be doubted whether the task is one that the M.R.C. would be anxious to undertake. We come, therefore, to the other proposal made in the same newspaper by Lord Horder—namely, that the Nutrition Council should itself be a committee of the Privy Council; and this seems to meet the "logic of the situation."

The Nutrition Council should first and foremost act as a bureau of information, and its first task should be to collect and collate all the information from the various sources that exist, from ministries, research organizations, individual research workers, clinicians, medical officers of health, dietitians, biochemists, food chemists, food manufacturers, agriculturists, economists, and even perhaps from food tasters. Once existing information had been assembled and card-indexed, the second task of the Nutrition Council would be to discover the existing gaps in knowledge and to arrange these in order of importance so that research workers could be encouraged to tackle first those problems the solution of which is of first importance to the health and well-being of the people. The research worker, whether he wants to follow his own bent or whether he is encouraged or directed to pursue a certain line of inquiry, often enough finds at the end of his task that he has wasted a lot of time in going over the same field as other workers. The Nutrition Council should be able to make the individual worker or research organization fully acquainted with the work in progress on any particular subject. The third function of the Nutrition Council would be to initiate research along co-ordinated lines among the various sciences that converge on the kitchen table.

All this is not to suggest that nutritional research should be controlled by an authoritarian body. All fundamental research is, we believe, carried out by exceptional individuals whose instinct of curiosity fastens itself on to subjects of peculiar interest to their own genius. But it is idle to deny that much scientific research has been determined by motives other than those aiming at the welfare of the consumer. Research into processing, canning, and bottling, into methods of marketing, etc., may be directed to forming tastes and habits of diet that benefit the manufacturers and producers but not the consumer, and as medical men our primary concern is that the food eaten should maintain and improve health. The results of research in the food industry are often kept secret or protected by patent, and in such a matter as the large-scale manufacture of vitamins an essential process may be the close preserve of one company to its own commercial profit and the detriment of the world-wide consumer. How powerful commercial influence can work against the health of the community is well illustrated by the successful opposition in this country to pasteurization of milk, and the opposition to the introduction of wholemeal flour. One way to remedy these abuses is to bring them into the light of day and to broadcast the facts to the public in season and out. This could be done if the Nutrition Council had a publicity department with power to advertise in the Press and to use film, radio, and booklet to inform all and sundry of the facts about food—in other words, to follow in time of peace the excellent example set by the Ministry of Food in time of war.

There is need not only for a national clearing house for information but also for an international one, and, whether or not the Health Organization at Geneva is resuscitated after this war, there would seem to be a good case for the establishment of nutrition councils in all civilized countries to be linked up in one international establishment. In this way it should not be impossible to build up a social order in which the hungry and ill-nourished man in a world of plenty becomes a legend of the past.

BOVINE TUBERCULOSIS

Vital statistics of England and Wales in 1941 showed[1] a considerable increase in tuberculosis mortality among children. Such an increase may be caused by greater opportunities for infection with the tubercle bacillus derived from either human or bovine sources, or from both. In this war the incidence of bovine tuberculosis in childhood might rise because of less efficient control of tuberculosis in cattle and of milk or because evacuated children used to pasteurized milk were unable to obtain this in smaller urban and rural districts. To investigate the relative part played by each type of bacillus involves analysis of both respiratory and non-respiratory deaths in relation to towns and country districts, and bacteriological typing of organisms derived from cases of tuberculosis. Examination of mortality figures suggests at all events that the increase in incidence of tuberculosis among children cannot entirely be accounted for by bovine infection. But even in peacetime bovine tuberculosis took a great toll from childhood in deaths and disease, and measures to control this were generally recognized to be inadequate. About 30% of all cases of non-pulmonary tuberculosis in Great Britain are caused by the bovine bacillus. At all ages it is responsible for about 6% of deaths from tuberculosis (all forms); but this figure is much higher among infants and children than among adults. In 1937 Stanley Griffith considered[2] that "the latest findings in regard to this intractable problem should be made widely known, since they prove beyond any doubt that bovine tuberculosis is a serious menace which must be fought with the utmost vigour." He thought "the apathy of public opinion in this respect is astonishing in face of the incontrovertible evidence which has been published during the last quarter of a century. . . ."

Tuberculosis is widespread among cattle in this country, and much milk sold to the public contains live tubercle bacilli. It is generally believed that before the war about 40% of cattle reacted to the tuberculin test. This is a rough "average figure." As H. T. Matthews pointed out at a recent discussion at the R.S.M.,[3] there are districts in Britain where this incidence is nearly 100% and others where it is correspondingly low. Thus, using the tuberculin test, Montgomerie and Rowlands found 11.8% reactors in a North Wales district, Thomas 2.6% in South Wales, and Rabagliati 7.6% in a part of Yorkshire. Matthews rightly insists that "the conception of a uniform 40% incidence as a total bar to the application of American methods [slaughter, with compensation to owners, of all reactors] is therefore misleading." S. R. Gloyne stated that, in his laboratories, among 1,560 mixed samples of milk (mostly collected in the Home Counties), which were examined in 1928-31 tubercle bacilli were demonstrated in 9.1%; in 1935-9 this figure fell to 6.2%. He thought that at the outbreak of the war the incidence had probably fallen to about 4%, but there had occurred "a disturbing increase" in the figures since then. Examination of milk from individual herds has in the past shown that over 6% of all farms were sending out milk containing tubercle bacilli; it can be inferred, therefore, that nearly all bulked milk when mixed from twenty or more herds is likely to be infected.

In 1937 the Ministry of Agriculture introduced the Tuberculosis (Attested Herd) Scheme to encourage milk producers to eradicate tuberculous infection from their herds; and in 1939 about 3% of the dairy farmers in the country had had their herds attested. No progress in this policy could be made since the outbreak of war. Clearly this method is somewhat laborious and costly, and time must elapse before success can be achieved. This depends on the frequent and accurate use of the tuberculin test, which has in the past not always been carried out with either a satisfactory tuberculin or a satisfactory technique. Gloyne[3] pointed out that even among the specially designated milks tubercle bacilli could be found in nearly 1%. Prof. T. Dalling deplored that no provision is made for the disposal of cattle that react to the tuberculin test, so that in the clearing of a herd of tuberculous infection by the use of the test many infected animals may find their way to open markets and in their turn create new sources of infection or even perpetuate infection in herds throughout the country. Nevertheless, he thought "the eradication of tuberculosis from a herd or group of animals and the prevention of further infection is the ideal method of control." R. F. Montgomerie considered that to "segregate our infected animals from our clean" was the correct policy for this country. He added, further, that "the greatest hindrance to the establishment of tuberculosis-free herds is due to the apathy of the public in not demanding milk from tuberculosis-free herds and in not being prepared to pay a fair price for it." H. J. Parish insisted that if milk containing dangerous organisms had been sold to the public surely it was not the public but the Government Departments concerned which were responsible.

Opinion on the beneficial effects of B.C.G. vaccination in cattle is still divided, and the immunizing properties of the recently discovered vole bacillus are still under experimental investigation. On the whole, therefore, little progress is likely to be made in the eradication of tuberculosis in cattle while the war continues. The solution of the related problem in man must therefore be sought in pasteurization, which should be compulsory not only because of tuberculosis but also because of the number of other infections spread by milk. But pasteurization must be efficient. Gloyne found that 2.5% of 276 pasteurized samples contained tubercle bacilli. In discussing the Milk (Special Designations) Regulations, 1941, we pointed out[4] that the widespread use of the phosphatase test by authorities controlling licensed pasteurization plants had in the previous two or three years shown that in an alarming number of cases the terms of the licences had not been observed. The 1941 Regulations permit local authorities to grant licences to use the special designation "pasteurized" in respect of milk processed also by "high-temperature short-time pasteurization." The differences between this and the holder system are that at no time is the flow of milk actually arrested, and the margins of safety are less in terms of absolute time and temperature and demand great precision in control. It is evident that this Order, which is considered provisional and justified by the abnormal times, requires even more skilled working and an even more well-informed and technically minded inspectorate than before. We hope that these are available or are being trained for extension of pasteurization. In the meantime we note with pleasure that the Chief Medical Officer of the Ministry of Health recommends that for children all milk which has not been pasteurized should be boiled.

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[1] *British Medical Journal*, 1942, **1**, 789.
[2] *Tubercle*, 1937, **18**, 529.
[3] *Proc. roy. Soc. Med.*, 1942, **35**, 469.

PHARMACOLOGICAL PROPERTIES OF SERUM

The great stimulus of the war to a fresh search for the perfect blood substitute has once again aroused interest in the possible value of serum. From the technical point of view serum has the advantage of being filtered more easily than plasma, but otherwise there is little difference between the physico-chemical characteristics of the two. So the main controversy has turned on whether the side-reactions produced by serum are so serious as entirely to invalidate its use. Toward the end of the last century the presence of a vasopressor substance was demonstrated in serum, to which the name "vasotonin" was given.[5] [6] And the earlier workers were able to show that this substance appeared in connexion with the process of clotting and was not adrenaline. Stewart in 1913 and subsequent workers have associated it with the presence of blood platelets, though others believed that the vasoconstriction was really due to the blocking of capillaries with minute particles. In addition to the "vasotonins" there is evidence that freshly prepared serum contains a vasodilator substance, considered by Zipf to be an adenyl derivative, and also some other substance which Brodie in 1900 found would cause a profound respiratory and cardiovascular depression in cats.

Reid and Bick[7] have confirmed and extended some of these observations. They found that the vasotonins, which would cause contraction of isolated strips of ox carotid and guinea-pig jejunum, and so could not act by virtue of their particulate nature, could be eliminated in the preparation of serum by any procedure which will remove the platelets, such as the recalcification of plasma which had been centrifuged or "cream-separated." Platelet extracts, on the other hand, were vasoconstrictor. The vasotonins passed through cellophane membranes and could be dried, stored, and were thermostable. No adenyl compounds were detected, as the serum used was always at least 12 hours old and contained an enzyme which inactivates adenosine. In the dog and rabbit serum injections were without ill effect, but in the cat experiences similar to those of Brodie were recorded, in which a few cubic centimetres of even homologous serum caused a profound fall of blood pressure, sometimes followed by death. This was attributed to pulmonary and coronary vasoconstriction, and the substance responsible was found only in platelet-rich serum; it was not the same as vasotonin, for it was destroyed by heat, and was not dialysable or ultra-filterable. These facts are being used in Australia to produce a serum which is free from pharmacological disadvantages. By keeping it for 12 hours any adenyl compounds are destroyed, and by removing the platelets the vasotonins and the substance responsible for collapse in the cat are removed at the same time. The fact that serum possesses practical advantages over plasma from the point of view of preparation should encourage the trial of these methods. The final decision must depend on clinical experience, and what there is does not exclude the use of serum as an efficient substitute for blood.

MATERNAL PULMONARY EMBOLISM

Maternal death has a tragic poignancy unique in human experience. The feeling of hopelessness which all in attendance experience at such a time is not lessened by the diagnosis of "obstetric shock" for which on occasion no satisfying explanation can be offered. An excellent paper by Steiner and Lushbaugh[1] throws new light on the subject of sudden maternal death, and raises the possibility that in the future at least some of these deaths may be prevented. They maintain that the most common cause of death during labour and the first few hours that follow it is the occurrence of pulmonary emboli due to the passage of meconium, liquor amnii, and vernix into the maternal circulation. These findings were based on an analysis of the clinical histories and post-mortem material of 72 maternal deaths investigated in the department of pathology of the University of Chicago. In eight cases the evidence suggested that death was due to the passage of emboli of foetal origin into the maternal circulation. The clinical picture revealed by analysing the case histories was a fairly constant one. Uterine contractions tended to be violent, with actual tonic contraction in two cases. Then suddenly a rigor occurred, or the patient complained of feeling cold and passed into a state of shock. This was characterized by restlessness, dyspnoea, cyanosis, low blood pressure, and, on occasion, vomiting and delirium. Two of the eight patients died undelivered, and all were dead within 12 hours of the onset of symptoms. In the small series studied, all but one patient was parous and four of the infants had died before labour began. Necropsy revealed a characteristic pathological picture. In seven of the eight cases there was macroscopic pulmonary oedema with no visible emboli in the main pulmonary vessels and no evidence of infarction. The striking changes were found on microscopical examination of the lungs, when emboli were seen in the smallest pulmonary arteries (those with a diameter of less than 1 mm.), arterioles, and capillaries. These emboli consisted of epithelial squames, amorphous debris identified as vernix, and mucin identified as meconium. In a control series of 34 patients who died after the 7th month of pregnancy and before the 7th day of the puerperium the changes described above were not discovered. In view of this it would appear that these emboli were associated with the clinical picture of shock in the series recorded. Further evidence was collected from experimental studies on dogs and rabbits. By injecting intravenously meconium and amniotic fluid the authors made the following important observations: the animals could be killed by the injections, and when this took place the clinical picture was one of anaphylactic shock. In this connexion it is interesting to note the observation made by DeLee[3] that in women who die unexpectedly during labour or just after it, and in whom no cause of death can be found at necropsy, the picture resembles that of anaphylactic shock. If death of the animals did not happen too rapidly pulmonary oedema developed. Post-mortem examination revealed changes in the lungs similar to those found in the 8 patients who had died. As a result of these investigations the authors claim that they have established the identity of a new disease with distinctive aetiology, symptomatology, and pathology. The criticism could be made that the evidence in support of this claim was collected from a very small series of cases, but none the less it has been very carefully and critically analysed. Now that attention has been drawn to the condition there is certain to be a more careful study of cases presenting the syndrome, and the accumulation of further facts cannot be long delayed.

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[4] *British Medical Journal*, 1941, **2**, 916.
[5] *Arch. intern. Med.*, 1918, **21**, 565.
[6] *Biol Rev.*, 1937, **12**, 48.
[7] *Med. J. Austral.*, 1942, **1**, 245.

[1] *J. Amer. med. Ass.*, 1941, **117**, 1245, 1340.

THE AETIOLOGY OF PHLYCTENULAR OPHTHALMIA

The provision of the White Oak Hospital by the London County Council for the care of children with eye affections requiring prolonged treatment is of great value. It is a real regional provision for eye cases. Children were admitted at first for trachoma. Now this affection is rare, so the beds are available for other cases. Mr. Arnold Sorsby has worked in this hospital as the ophthalmologist for several years, and his work and observations on cases of phlyctenular ophthalmia were the basis of his Hunterian Lecture at the Royal College of Surgeons in January of this year. In the *British Journal of Ophthalmology* of April and May his observation and those of many workers are set out. He has made an excellent review of historical research on this disease, but the greatest interest is centred in his own observations. The records cover 16 years and 1,392 children, of whom 39.1% were boys and 60.9% girls; in other cases of eye disease admitted the sex incidence was roughly equal. He found no obvious difference in the state of nutrition in the phlycten cases, nor any material difference in the incidence of focal sepsis and pediculosis. Reactions to non-bacterial allergens (derivatives of milk and egg, house dust, dandruff, pollens, etc.) were negative. The positive reactions were obtained by the testing with tuberculin. All the children were so tested for 16 years: children over 6 years of age by the Mantoux test, those under 6 by the Moro test. Positive reactions were obtained in 84.8% of all phlycten cases; whereas the corresponding incidence in cases of blepharitis was only 15.3%. Radiography of the chest in 510 cases showed that there was evidence of tuberculosis in 72.2% of phlycten cases—nearly 9 times more than in the controls. Clinical tuberculosis was seen in 6.4% of phlycten cases, against no cases in the controls; and a family history of tuberculosis in 28.9%, against 3.7% in the normal school population. The blood sedimentation rate was raised to 79.8% in active phlyctens, against the normal rate in others. Tubercle bacilli could not be recovered in stomach washings or in excised tonsils. The after-histories of ten years of cases showed an incidence of 5.3% of clinical tuberculosis and a mortality rate of 0.8%, about 5 times the incidence in the controls. Mr. Sorsby writes: "It is therefore concluded that phlyctenular ophthalmia is a manifestation not of tuberculous disease but of tuberculous infection, the phlycten making its appearance only when a hyperallergic phase is present and there is a suitable (? specific) exciting factor of endogenous or exogenous origin."

There is one point that arises in the consideration of this excellent report of observations and records of Mr. Sorsby. Why should the eye be attacked and damaged by this strumous bodily reaction and condition? This report gives no hint of an answer to this question. One observer (Harman: *The Conjunctiva in Health and Disease,* 1905) found some evidence in the acute cases seen in a children's hospital of a hint of an answer to this question. The position of the fresh acute lesions seen during ten years was marked on charts. The tabulation was conclusive. The limbus in the temporo-malar quadrant was the seat of election. The limbus has the most delicate nerve supply of the whole conjunctiva, and in this quadrant there is a direct connexion with the nerves of the teeth of the upper jaw. There is much dental irritation in children of the age group of the incidence of phlyctens. The serious general bodily affection by some tuberculous infection, so conclusively demonstrated by Mr. Sorsby, would render this seat of possible dental irritation particularly sensitive. Mr. Sorsby concludes: "The prognostic significance of the phlycten is graver than that of a positive tuberculin reaction in a child; this is borne out by the subsequent incidence of tuberculosis and mortality from it in children previously affected with phlyctenulosis." So this eye disease is in a sense an indication of the grade of physical fitness or unfitness in children.

ESSENTIAL FRUCTOSURIA

Among inherited human anomalies of metabolism essential fructosuria must be one of the rarest and, at the same time, in all probability one of the most harmless. In this condition a definite and constant part of the fructose ingested, about 13%, is excreted unchanged in the urine, and this is found whether the fructose is ingested as such or results from the breakdown of cane sugar. The usual tests do not differentiate fructose from glucose, and affected persons are usually supposed, until more careful investigation is made, to be cases of ordinary glycosuria. Margaret Lasker[1] has made a very extensive study of the anomaly and has greatly amplified the sparse knowledge collected during the 64 years since the condition was recognized. Some idea of its rarity may be gathered from the fact that she has been able to collect no more than 58 cases from the literature, and, of these, 18 do not satisfy the requirements for positive recognition. The incidence of fructosuria is probably considerably less than one in a million. Lasker, as the result, obviously, of a prolonged search and with the co-operation of other physicians, has added no fewer than five families. Recessive inheritance is clearly indicated. In four out of her five sibships containing affected persons the parents were blood relatives, and this is true of two others reported previously. In the other recorded families no statement was made on this important point. The proportion of affected among the brothers and sisters of those persons who brought the families to notice is sufficiently close to the theoretical one in four. In the comparatively few instances in which parents or offspring have been tested they have invariably been found to be normal. The harmless nature of the condition is indicated by the fact that, although accompanying departures from normality have often been described, these are nearly always different and seem to be associated only accidentally with the fructosuria. Lasker's paper performs a service in summarizing the literature, in adding valuable original material, and in clarifying this small by-way in medicine.

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[3] DeLee. J. B., *Principles and Practice of Obstetrics*, 1938, 7th ed., p. 905, Philadelphia.

[1] *Human Biology*, 1941, **13**, 51.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

DYSENTERY AND DIARRHOEA IN WARTIME

BY

Sir P. H. MANSON-BAHR, C.M.G., D.S.O., M.D., F.R.C.P.

(*Concluded from p.* 348)

Treatment of Bacillary Dysentery

The first thing to be said about treatment is that the sooner the disease is diagnosed and treatment commenced, the better. At the beginning of the last war patients were given opium and opium pills—a pernicious practice; but when the patient is being transported over long distances morphine or tincture of opium may be given to keep him quiet, and to stop the violent peristalsis, dysuria, and tenesmus. "*Saline treatment,*" introduced by Army surgeons 300 years ago, has still the greatest vogue. Large doses of the salts are given. Some like senna, others rhubarb; but I myself believe that there is nothing better than sodium sulphate, 1 drachm every three hours for the first forty-eight hours and then four times daily until the stools become faeculent, because at first they contain no faeces at all.

Diet is most important. Do not starve your patients. There is no sense whatever in that system, for the upper small intestine is still functioning, and so is the stomach. Not much milk must be given, because it forms into clots and curds, which are passed with difficulty. They should have large amounts to drink—four or six pints of lemonade or barley-water—to replace dehydration. They can be fed on junket, jellies, beef-tea, and chicken broth. In America ice-creams are in vogue. Do not attempt to give anything solid like milk puddings or sago until the stools contain faeces. Above all things, arrowroot is suited for the treatment of bacillary dysentery. The natives of the Pacific have treated dysenteries with arrowroot since time immemorial. The addition of brandy is stimulating and comforting.

Recently it has been shown that blood transfusion is an excellent measure in desperate cases, and has recently been employed in a big outbreak of dysentery in Poland. The other measure is intravenous hypertonic saline with 5% glucose. Then we come to antidysenteric serum, about which a number of doubts have recently been expressed. The real trouble arises from the fact that the antidysenteric serum of the last war was polyvalent, but now we have a concentrated form of Shiga serum. The cases that require serum treatment are Shiga infections. You do not have to wait until your laboratory diagnosis has been perfected before acting, but serum must be given early and in sufficient amount—i.e., 80 c.cm. intramuscularly to adults. The muscles of the buttocks are suitable for the purpose, also the adductor muscles of the thigh, but it should not be injected subcutaneously. Many a soldier has told me he would rather put up with his dysentery than with subcutaneous serum. Serum sickness, which can be obviated by injections of adrenaline, commonly ensues. In severe toxic cases serum can be given intravenously in doses of 50 to 60 c.cm. Anaphylaxis is apt to occur in bacillary dysentery with antidysenteric serum, especially if the patient has been sensitized to it previously, but not many die from this cause. But please do not give everybody antidysenteric serum indiscriminately. The majority of cases get well without it. I think it is a very good rule to say that, if the patient is very toxic, if his pulse rate is about 120, if his temperature is 103° or 104° F., and if the stools number more than twelve in the twenty-four hours and contain a lot of blood and slime, then antidysenteric serum should be given, but otherwise not.

Chronic bacillary dysentery is not so easy to treat. The best method is irrigation of the large intestine with eusol—1 part to 5 parts water. This can be injected into the large intestine, but some of these cases do not respond at all, and a valvular caecostomy may have to be performed to put the bowel at rest. The whole problem of treatment of the bacillary dysenteries, in both the acute and the chronic stages, has now been transformed by the introduction of sulphaguanidine, a sulphonamide which is specific for dysentery bacilli and is given in doses of 6 to 9 g. daily for the first five days; reports on this subject are now coming to hand. It really seems as if this drug was specific, especially for Shiga and Flexner infections. It is also curative in the chronic form.

The best way of diagnosing bacillary dysentery is to examine the exudate under the microscope. Clinicians used to say that if you had to wait for the laboratory to give the correct diagnosis the patient would have either recovered entirely or have succumbed. Nevertheless, a pretty accurate forecast can be made from a study of the cellular exudate. Sigmoidoscopy is a useful adjunct.

In chronic bacillary dysenteries the whole of the mucous membrane is covered with granulation tissue. The normal folds have disappeared and the walls are thickened and stenosed. Therefore stenosis of the bowel is a feature of the post-dysenteric state. This occurs after bacillary dysentery; never after amoebic. Sometimes masses of granulation tissue form and are known as pseudopolyposis, similar to that of chronic ulcerative colitis.

Amoebic Dysentery

Great emphasis has been laid on amoebic dysentery, but it is not anything like the danger it is stated to be. Dobell has claimed that *E. histolytica* infection is the most easily controlled of any in man. This protozoan produces ulcers of the large intestine, but apparently it is a question here of a struggle between the processes of repair and those of destruction. The *E. histolytica* is a parasite of the submucous layer of the large intestine; it lives mostly beneath the surface and not above. It may be looked upon as a sort of intestinal "rabbit," and the first lesions visible are little superficial abscesses on the mucosa which indicate its burrows. If one of these be incised there exudes some grumous material containing active *E. histolytica.* Although these lesions are scattered throughout the length of the intestine, the intervening mucous membrane is perfectly normal. A familar form of lesion is known as the "sea anemone" ulcer. It will be observed that fissures traverse the bowel, and there are blood-stained sloughs hanging down like seaweed. Sometimes multiple ulcerations or solitary ulcers of large size are present. The clinical phenomena of amoebic dysentery are produced by local lesions of the intestinal canal. Thus the two main dysenteries are as unlike and apart as the two poles.

There is no mistaking the *E. histolytica* for anything else when it is seen under the microscope. The difficulty always is that it may not be present in the particular portion of the stool when examined. This parasite does not live very long outside the human body—in the tropics perhaps two hours, in this country perhaps three or four. It is most important to examine the stools as quickly as possible. In a fresh specimen the active *E. histolytica* moves, as Dobell says, "like a slug at express speed." Each individual has the characteristic nuclear granular endoplasm and clear marginal ectoplasm, and it lives upon red blood corpuscles. What the oyster is to the alderman the red blood corpuscle is to the *E. histolytica*! Sometimes as many as 60 or more may be found inside one individual. Then there are in the exudate Charcot-Leyden crystals. But do not jump to the conclusion that these crystals necessarily mean amoebic dysentery: they are found in all kinds of infections of the large intestine, especially ulcerative colitis, but they are certainly common in association with amoebic dysentery.

Amoebic dysentery may produce astonishing situations. In 1937 a man who had had an appendicostomy wound since 1900 was seen. He had been washing himself out daily with 7 pints of fluid, but in the stools one *E. histolytica* was found. He was then rapidly cured by anti-amoebic treatment and the wound rapidly healed. Amoebic dysentery may present amazingly long incubation periods. There was an old lady aged 74 with a liver abscess for which she had been operated upon. When the stools were examined she proved to have a heavy infection with *E. histolytica,* and the organism was also present in the pus from the liver abscess. On probing into her history it was found that the only time she had been abroad was when, as a bride aged 17, she went out to Bombay for ten days and had had some intestinal disturbance there. The incubation period in her case was approximately fifty-seven years! Another case was that of a man who was playing tennis at Wimbledon and went down with acute dysentery, which was thought to be ulcerative colitis. I could not find the amoebae in the stools; but his intestinal canal was full of typical ulcers, and in scrapings made from them *E. histolytica* was discovered in large numbers. He had lived in Mauritius till he was 4 years of age, and was then 27. Not very long ago a man was sent to me as a case of carcinoma of the rectum. He had a large fungating rectal ulcer. During the last war he had had dysentery on the Somme in 1916, but had not noticed anything until, after eating some fried fish, he passed blood and mucus in the stools and was taken to hospital, where the ulcer was scraped and found to contain *E. histolytica.* In other words, the disease had taken from 1916 to 1937 to develop.

The chronic stage is different from the acute. These people generally suffer from flatulency, from abdominal pain, and from periods of constipation alternating with diarrhoea. The cysts which are found in the chronic stage have four distinctive nuclei; they stain with iodine, which shows up the chromatoid body in their interior. But the cysts of *E. coli* are also found in the stools, and it is necessary to differentiate one from the other. Sometimes four nucleated cysts are present, but the patient does not show any symptoms of acute disease at all. These cases are known as "cyst passers" or "cyst carriers." In India the cyst-carrier rate varies from 60 to 15%, in the United States about 10%. There was a great epidemic of amoebic dysentery in Chicago a few years ago—one of the most remarkable epidemics of all time. Two big hotels were implicated. It was proved afterwards that *E. histolytica* was present in the drinking-water. One of the drains was infiltrating into the main water supply. Thus it was proved that amoebic dysentery is a water-borne disease. The incubation period is anything from 2 weeks to 120 days. We know that the *E. histolytica* may lie dormant for a long time inside the body without producing any outward signs of disease. The chief point is to examine the stools in as fresh a state as possible.

The entry of *E. histolytica* into the bowel is first effected by proliferating in the intestinal mucus. Thence they penetrate into the submucosa and produce typical flask-shaped ulcers. This process is entirely different from that of the bacillary disease.

Amoebic dysentery may give many kinds of clinical pictures. The great majority of the cases are chronic. Often they cannot be diagnosed correctly without the aid of the sigmoidoscope. The ulcers are easily seen just inside the sphincter, and *E. histolytica* can be demonstrated under the microscope in preparations from the lesions. In chronic amoebic dysentery ulcers appear like small craters, and it is known that this parasite may produce extremely minute lesions. One investigator once cut 250,000 sections of a bowel, and in one section only he found a nest of *E. histolytica* in the submucosa. There must be a great many people with these minimal lesions inside them. Many so-called carcinomata of the rectum turn out really to be instances of localized chronic amoebic ulceration.

Infections of the skin with *E. histolytica* have been known since 1892. Many instances of what is known as "synergistic gangrene" of the abdominal wall after operation are really due to cutaneous amoebiasis at the site of a colostomy. Instead of the colostomy wound healing up, the whole abdominal wall becomes gangrenous and amoebae in numbers can be found in the exudate. I recall one case of amoebic infection of the skin in a soldier who had a rectal abscess which had burst and spread, involving the whole of the lower rectum and both buttocks. He was given 8 grains of emetine; when all the sloughs cleared away and he is now perfectly well. He was an old soldier from India, who had never had "dysentery," though cysts of *E. histolytica* were present in the faeces.

Treatment of Amoebic Dysentery

In the treatment of amoebic dysentery, when the disease is acute and the amoebae are present and active in the stools and there is blood and mucus, emetine is the drug of election; but emetine is not everything that has been claimed for it. It kills off the vegetative *E. histolytica* in a strength of one in five million; but it does not entirely eradicate the disease, and it causes these organisms to scuttle away into their burrows.

The dose of emetine for an adult man is 1 grain a day, or 0.04 mg. per kilogramme of body weight. It is given for ten days and no longer. Let me beg of you not to overdo the emetine. This is a toxic drug, which may have an effect on the myocardium, and children may die of acute heart failure from overdosage. It has an affinity for the nerve endings and may produce neuritis, with muscular wasting resembling progressive muscular atrophy. In others it produces desquamation of the skin and cracked nails. It is not wise to say to one's patient, "I will give you 10 grains of emetine and you will be cured." Some people adopt the principle of giving 10 grains a month and repeating this dosage indefinitely. This is bad practice. When there are cysts in the stools you will not get rid of them with emetine therapy by the injection method, but by the oral route by emetine-bismuth-iodide, popularly known as "E.B.I." This has been shown to exert a direct action on the cysts. It is a red powder, and 1 grain is given as the first dose and 2 grains as the second. It is not necessary to use bigger doses than 2 grains. The total amount necessary to cure amoebic dysentery is about 18 to 20 grains. I have effected permanent cures with 18 grains of emetine-bismuth-iodide, and have now treated over 1,000 cases, only three of which have been known to relapse. Many of these cases have been watched for a period of ten to fifteen years.

The drug must be given last thing at night and be preceded by a sedative, the best being luminal. I usually prescribe 1 grain at 8 p.m., another 1/2 grain at 8.30 p.m., and the E.B.I. at 9.30 p.m., not allowing my patient to take anything solid by the mouth after 6.30 p.m. By this means cysts are got rid of; but that is not the whole story. It is not enough by itself to follow this regime, and it should be aided by quinoxyl (anayodin in America and chiniofon in the *British Pharmacopoeia*). These preparations are quinoline-sulphonic acid. When this substance in 2½% solution is injected into the bowel in the form of retention enema it heals up the ulcers wherever it comes into contact with them in the rectum and lower sigmoid. A preliminary wash-out of 2% sodium bicarbonate is given in the morning and then 7 oz. of the quinoline solution is run in; the patient should absorb and retain it for six or eight hours. If you give emetine-bismuth-iodide at night and quinoxyl during the day you can cure almost every case. At the end of the ten days' treatment the patient may eat any diet that he may prefer. It takes from ten to twelve days to heal the amoebic ulcers, and, if the treatment is carried out and the patient well nursed, no great inconvenience or undue risks are involved.

A great many other drugs are recommended for amoebic dysentery. Their name is legion. But I do not think any of them approach in efficacy those of which I have spoken. You can be quite certain that when the patient is once cured of his amoebic dysentery and all ulcers have disappeared, further relapses will not occur.

The Minister of Health has appointed a central technical committee to advise on the organization of mass radiography; it will be a subcommittee of the Minister's Standing Advisory Committee on Tuberculosis. Membership is as follows: Chairman, Mr. T. Lindsay (Ministry of Health), Dr. A. E. Barclay, Dr. G. Lissant Cox, Dr. J. Ferguson, Surgeon Commander W. Fitzpatrick, Dr. F. R. G. Heaf, Dr. G. Jessel, Major P. Kerley, Brigadier D. B. McGrigor, Dr. S. Cochrane Shanks, Dr. Norman F. Smith, Wing Commander R. R. Trail, Dr. Harley Williams (secretary), with representatives of the Ministry of Labour and the Department of Health for Scotland. The first sets of apparatus for mass miniature radiography are expected to be available before the end of the year, and the remainder of the 25 already ordered will be in use during 1943. The committee intends to provide a complete scheme for the full employment of these units throughout the country, including adequate technical standards. It has already considered the training of personnel and the allocation of the first sets of apparatus.

A NEW COMPOSITE MEDICAL CERTIFICATE FORM FOR FOOD

The Ministry of Food invites the attention of medical practitioners to a new and simplified form of composite medical certificate, R.G.50, which is now available on application from local food offices. This new composite certificate, it is hoped, will help to lessen the work involved for the medical profession by the schemes for priorities and extra rations. It will take the place of the three separate medical certificates which exist at present for priority milk, priority eggs, and extra soap, and also provides for possible extensions of rationing. Doctors are asked, however, for the sake of paper economy, to use up any stocks of the old forms of certificate which they may hold at the moment, before applying to the local food office for a supply of the new certificate.

R.G.50.

MINISTRY OF FOOD

MEDICAL CERTIFICATE

FOR FOOD OFFICE USE

COMMODITY	AMOUNT	PERIOD	
		FROM	TO
MILK			
NATIONAL DRIED MILK			
EGGS			
DRIED EGGS			
SOAP			

I CERTIFY THAT:—

NAME ....
(Block Letters)

ADDRESS ....

....

is:— ....

* Indicate which is applicable.

* (i) an expectant mother

* (ii) a nursing mother.

*(iii) (*a*) suffering from the condition of Class........of the Schedule of Conditions qualifying for priority supplies of MILK,

*(*b*) suffering from the condition of Class........of the Schedule of Conditions qualifying for priority supplies of EGGS;

*(*c*) suffering from the condition of Class........of the Schedule of Conditions qualifying for extra supplies of SOAP,

*(*d*) suffering from the condition of Class........of the Schedule of Conditions qualifying for extra supplies of................

and should be granted such supplies as are at present authorized.

Signed..............................Registered Medical Practitioner.
(or Certified Midwife or Health Visitor if this certificate is for category (i) or (ii) above.)

Date................

Take this certificate with your ration book to your Food Office.

The new certificate is for use in conjunction with the schedules of conditions qualifying for priority eggs, for priority milk, and for extra soap, copies of which doctors already hold. When completing the composite certificate, doctors are asked to indicate clearly under which schedule of conditions a patient qualifies. There is no period or quantity entry to make on the new certificate; that will be done in the food office. The periods and quantities which hitherto have been maxima are now standard. In cases where a patient qualifies for more than one of the commodities covered by the certificate, only one certificate form need be used, the separate entries being made in the relevant spaces.

The certificate may not yet be used in respect of national dried milk or dried eggs. Nor is paragraph (iii) (*d*) yet available for use. This paragraph is provided solely in case it becomes necessary to provide extra allowances of another commodity.

A patient aged 46 diagnosed as a case of schizophrenia had been given shock treatment with insulin in 1938, after which his mental condition became much worse. In 1940 he was treated by hpyothermia, during which a minimum rectal temperature of 80° F. was observed. During restoration of temperature external heat was applied too rapidly. Cardiovascular failure followed, and the patient died. Necropsy showed patchy bronchopneumonia, slight degeneration of the cortical cells of the brain, and a small adenoma of the pituitary gland. J. H. Talbot and his colleagues (*Arch. intern. Med.*, 1941, **68**, 1120), who report this case, believe that sudden vasodilatation was responsible for the cardiovascular breakdown, and conclude that prolonged hypothermia causes no serious changes in normal tissues.

Nova et Vetera

BOOKS OF TRAVEL BY MEDICAL AUTHORS

Contributions to fiction by medical authors—from Rabelais onwards—have often been discussed and listed. A somewhat neglected field of medical authorship—that of travel literature—is recalled and illustrated by a section of the latest catalogue of medical books issued by Messrs. Davis and Orioli, now of 1, St. Martin's Street, Wallingford, Berkshire. Quite a number of medical men, famous many years after for professional eminence, appear to have written interesting and in many cases valuable books of travel in their early days. Richard Bright, for instance, wrote an account of Vienna and Hungary, which was published in 1818. Sir John Bell's description of Italy, particularly Florence, was printed in 1825 (after his death); the first edition is represented in this catalogue. Thomas Hodgkin described his journeys in Morocco in 1863–4; Sir Henry Holland did the same in respect of Ionia, Albania, Thessaly, and Macedonia in 1812–13. Tobias Smollett wrote of France and Italy (1766), as did John Moore (1781), who described his acquaintance at Florence with Charles Edward Stuart (the Young Pretender). Martin Lister's account of Paris went through many editions (the first, 1699, is to be found in this list, as well as a later one), and was reprinted as lately as 1816. Alexander Russell, who described Aleppo, was lucky enough to include with his own writings two papers by John Hunter on the jerboa and the camel's stomach respectively; a copy of the second edition (1794) is now offered for sale. Commercially more valuable than these old travel books are some of the treasures of French Renaissance medicine now catalogued: such as Rabelais's translation of Galen, 1539, with a picture of a weird machine said to have been invented by Rabelais himself—it looks as if it may have been meant for the treatment of fracture of the patella, compound fracture of the femur, or dislocation of the hip-joint; Paulus of Aegineta (1540); Guy de Chauliac's *Surgery* (1500); and many others. Smellie's *Midwifery* (1754) is another treasure for a medical bibliophile.

Correspondence

Post-mortem Facilities for All

SIR,—Many years ago it was part of my duty, and incidentally a valuable experience, to go out to small houses to make post-mortem examinations, either in connexion with workmen's compensation cases or to satisfy the scientific spirit by endeavouring to discover the real cause of death in some obscure case where the patient had died at home after leaving hospital. It was a great convenience to many country doctors to be able to secure the services of someone, trained in the arts of the post-mortem room, who could go out with the necessary armamentarium and conduct such examinations, even though others more experienced in morbid appearances had sometimes to be relied upon to interpret the findings. There was a very great interest among the doctors concerned, and a considerable amount of interested curiosity among the people. None the less my numerous, and sometimes remarkable, experiences emphasized not only the difficulties but the unsatisfactory conditions under which the work was usually carried out, so that such an examination often proved much more of an ordeal to everyone concerned than it ought to have been if post-mortems outside hospitals were ever to become more than unusual events.

For long I have thought that this problem ought to be tackled by the public health authorities, who might make themselves responsible for having such examinations carried out by trained pathologists in fully equipped institutes. On proper request, conveyed by the medical practitioner, the public health services should be prepared to transport the body from the place of death to such an institute and, except in these abnormal times of petrol restriction, this ought to present no difficulty, whatever the distance. If desired, the body should be returned to the private residence after the examination, so that burial could be conducted in the way that was customary and acceptable to the relatives and friends. If it were generally known that by arrangement with the authorities such an examination could be made, I think the privileges would be frequently used. The practitioner should cordially welcome such an arrangement; and I feel sure that, far from any objection being raised on the side of the public, it would rather be otherwise, and in very many instances relatives would readily consent to an after-death examination which would often be the ultimate arbiter of their doubts and fears.

Naturally some confidential arrangements would have to be made as to the findings, and for some cases a very considerable amount of privacy might have to be observed. In other cases, if the identity of the subject were not disclosed, the examination could be conducted much as other examinations are made in the big pathological departments of many of our hospitals, where several necropsies take place in any one day and only those particularly concerned with the case know anything more than the mere facts of the history and the problem to be solved by the examination. I feel sure it will be generally conceded that any public health authority who undertook this work would be supplying a service which is greatly needed and which would be very much appreciated.—I am, etc.,

London. G. Grey Turner.

Lister Technique for Emergency Surgery

Sir,—As one who has endeavoured, with indifferent success, to preserve some of Lord Lister's methods, I hope that Prof. R. J. Willan's plea (Sept. 5, p. 291) may receive consideration. The need for a Listerian revival is not so great in the theatre as in the ward. The fashion of the moment seems to be to do all dressings without lotions of any sort, although, for some obscure reason, a little spirit is tolerated. The nurse who has perfunctorily scrubbed her hands with soap and water behaves as though they were surgically clean. How long the dressings from a frequently opened drum remain sterile is open to question. In a ward where most of the patients' wounds have been closed completely little harm is done, but it is not surprising that wound sepsis is reported to spread in the wards of E.M.S. hospitals. Suggestions by Mr. W. McKissock, Dr. Joyce Wright, and Prof. A. A. Miles (Sept. 13, 1941, p. 375) for coping with the problem seem to ignore the use of antiseptic lotions. Lister could open and drain a psoas abscess and avoid a mixed infection. In how many English hospitals could that be done to-day under modern methods of ward dressing?

The application of an antiseptic lotion to an open wound should be avoided, but surely it has its uses in preserving the sterility of dressings and instruments, and in cleansing the skin of the patient who is being dressed and the gloves which should be on the hands of the dresser.—I am, etc.,

Northampton. C. C. Holman.

Anaemia in X-ray Workers

Sir,—I was very glad to read Dr. F. Ellis's letter (Sept. 5, p. 291) criticizing the Ministry of Health's memorandum on anaemia in *x*-ray workers. In case anyone should think that the risks from exposure to *x* rays are negligible it would be well to recall that in the light of recent experiences in this country the Ministry of Health found it necessary to issue a warning against the setting of fractures and removing foreign bodies under the *x*-ray screen (E.M.S. Circular, 1941, Suppl. 6, Sect. III). It must be admitted that *x* rays are always essentially dangerous unless employed with adequate precautions. Clinically we know that administration of *x* rays as a bath to the whole of the body may be attended by a profound disturbance of health, which may be reflected by changes in the blood picture. Technicians are not called upon to bathe in *x* rays, but from time to time one may be guilty of negligence. I have met with examples of such. Others may sustain too much exposure from *x* rays because their hours of duty are too long or because they are working with old-fashioned or defective apparatus—conditions which are apt to exist where there is no qualified radiologist in charge.

I am in full agreement with the suggestion that far too much attention is given to the specific action of *x* rays as a cause of anaemia. In a well-conducted department anaemia is almost always due to some cause other than *x* rays, and usually responds to treatment without the affected person being taken off work. Generally variations in the blood counts are within the limits of technical error, but occasionally there are changes which are difficult to explain. Before attributing these to some specific action of *x* rays, it must be remembered that as yet we have little knowledge of the natural variations in other groups of workers working under similar conditions without contact with *x* rays. Clearly this is a problem which should be taken up by the Protection Committee in consultation with physicians and haematologists. If a definite explanation is not forthcoming at the present time, perhaps the committee will indicate certain arbitrary standards of health (as judged by haematological methods) so that we may know when a worker should be suspended from duty.

Finally, I have no doubt that all *x*-ray workers may be called upon to take a full part in national service, for under proper conditions there is no more danger to them from their work than exists in many other trades.—I am, etc.,

Oxford F. H. Kemp.

Diphtheria Immunization Campaign

Sir,—In the *Journal* of Aug. 29 (p. 255) you refer to a Press conference *re* the above in which you report the M.O.H. of the London County Council as estimating that 36% of London children are now immunized, and the president of the Home Counties branch of the Society of M.O's.H. as saying that his figures are 35% of those under 5 and 48% of those between 5 and 15, which would be about 41% of the total. I believe the latest figure given by the Ministry for the whole country is 33%. All these figures are lamentably small.

I am M.O.H. for an urban district where the figures are 75% of those under 5 and 85% of those between 5 and 15, and this is after making a quite adequate deduction for those who have been immunized under the scheme but who have by now passed the age of 15. In this district the whole of the work is left to the general practitioners, and they are paid for doing it. They provide their own prophylactics and use F.T. for those under 6, and T.A.F. for those over that age. I am also M.O.H. for a rural district where the same plan obtains. There are only two practitioners resident in the area, and therefore much of the work is done by practitioners from about ten adjacent towns. It is obviously less easy to work any scheme under these circumstances, but we have 60% of the children immunized. I am not convinced that school medical officers, school nurses, and teachers would be much help in propaganda, and as they are under the control of another authority I have not asked for their assistance. We have posted a few notices, we have had circulars distributed by the men with the scavenging lorries, and when each child reaches the age of 1 year the parents receive a letter from me reminding them that it is now time the child was immunized. I have no assistant M.O.H. and I have done no immunizations myself.—I am, etc.,

Llandudno. Arthur T. Blease.

Diphtheria Incidence

Sir,—The age incidence of diphtheria is shifting in this area. At the present time the number of adult cases (over 16 years) is relatively increased owing to a fall in the numbers of child and juvenile cases. This is the earliest clinical evidence of the success of the inoculation campaign. It is necessary to keep a sharp eye on all cases of "adult sore throat" at the present time.—I am, etc.,

Worcester. Howard E. Collier.

Breast-feeding

Sir,—We must all welcome Prof. McNeil's splendid article (Sept. 5, p. 271). One cannot help agreeing that the medical and nursing professions are largely to blame for the present unsatisfactory position with regard to the premature weaning of infants. It is so much easier to win the mother's gratitude by showing one's knowledge of the latest methods of artificial feeding than to endeavour to convince her that she ought to keep her infant on the breast. Yet, if public opinion were sounder on the question, the large majority of mothers would feed their infants as a matter of course and there would be no further trouble; it ought not to have to depend on the advice of the doctor and nurse at all.

Perhaps the time has come when we should reconsider the whole question of our treatment of the nursing mother and her baby and ask ourselves whether the present routine methods for the establishment of lactation are psychologically sound.

There is one paragraph in Prof. McNeil's "alphabet" which has occasioned these reflections: paragraph (*m*), in which he accepts the "battle between nurse and baby" in difficult cases and speaks of "goading" the child into action. On reconsideration would he not substitute "coaxing" for the latter word?

A very interesting book was written by the late Dr. Merrell Middlemore (*The Nursing Couple*, Hamish Hamilton) in which the relationship between mother and baby is analysed from the psychological standpoint. The author showed how many women are frightened of their babies, while the infants are themselves frightened by the clumsy or rough handling they receive. The mother presses her baby awkwardly against her breast while the nurse forces the nipple into his mouth; the infant is nervous, cries, tries to turn his head away, and if forced to persist soon becomes aggressive in his fear and clenches his gums, biting the nipple. The mother flinches in pain, and a vicious circle of tension and exasperation on both sides is established. Often there is definite physical distaste on the mother's part. In Dr. Middlemore's book two women are described, one of whom shuddered and said she could not watch her baby feeding, while the other kept her eyes fixed on the door of the ward as the time for the feed approached and exclaimed: "There, that's him! I can't bear to see him coming." These are extreme examples, but workers in antenatal clinics frequently meet these cases of unawakened maternal instinct where there is an obvious dislike of the idea of lactation; there is no more satisfying work than to succeed in changing the young mother's ideas by helping to awaken her fundamental instincts.

A nervous mother attended one of the Kensington welfare centres a short time ago with a small and inert baby who had refused the breast "with screams" since birth. The mother was expressing her milk, which was still abundant, and was giving it with a spoon—fortunately not in a bottle. She was anxious to feed and willing to give up all household duties to devote herself to the child. The following week she returned to the centre with pride and said that the infant was sucking well and entirely on the breast. Her revised technique had been to play with him when he wished, soothing him and encouraging him to suck at frequent intervals but not teasing him to persist. At the end of the first day she felt him beginning to suck more strongly, and subsequently he took definite feeds at half-hour intervals: their mutual adaptation was thereafter assured. At the end of the first week there was nearly two hours between the feeds, and I have no doubt that another week or two will establish the proper intervals with the infant's entire concurrence.

I should like tentatively to suggest, for the consideration of our paediatricians, that in cases of difficult feeding such as the above it may be desirable to let our rules of regular feeding at routine intervals lapse and to encourage the mother to play with her baby and give him small feeds when he wishes. This is only to establish feeding; the regular intervals will come naturally in a week or two. But the first and fundamental consideration is to get the mother to regard breast-feeding as a pleasure, and not as an irksome duty, and to establish the proper relations between the nursing couple—mutual sympathy, trust, and adjustment. It may be submitted that the routine of a hospital ward would not permit such irregularities, but might not the baby's cot be placed beside the mother's bed? One does not lay down rules for a regular life for young married couples on their honeymoon; that works itself out later. Can we not also look with more leniency upon the calls for nourishment and maternal sympathy from the new-born infant?—I am, etc.,

Kensington, W 8. VIOLET RUSSELL.

SIR,—Prof. Charles McNeil has written a very interesting and much-needed article on "breast-feeding." It is extraordinary how, at the slightest excuse, so many doctors, nurses, and mothers fight shy of making a determined effort to continue giving the baby what is by far and away the best food he can possibly have. There is one point, however, which does not seem to receive the attention it should, and this is the necessity for the mother, from the moment her baby is born, to take large quantities of fluid. For the production of milk this is much more important than taking extra solid food, although, of course, a good mixed nourishing diet is essential, and failure to take extra fluid may well result in inadequate lactation, a common cause of early weaning. It stands to reason that if the mother is to produce three-quarters to one and a half pints of fluid daily in the form of milk, in addition to her normal fluid output, then her own supplies must be kept up by drinking more herself. I have been surprised at the failure to realize this among those with whom I have discussed the point, and I am sure that if doctors and midwives insisted on their patients drinking at least one glass of water shortly before and shortly after each baby's feed, in addition to her usual fluid intake, then the percentage of those unfortunate infants who are weaned in the first few weeks of life would be lessened.
—I am, etc.,

Exeter DAVID GILMOUR.

Pyogenic Skin Infections and the Skin-carrier Rate

SIR,—The observations of Major N. H. Martin on the relation of pyogenic skin infections to the skin-carrier rate (Aug. 29, p. 245) are most interesting, but call for comment in several places.

First, he concludes that "there appears to be a significant rise in the incidence of β haemolytic streptococci on the face, but not elsewhere." The usual criterion of significance, as pointed out by Dr. Bradford Hill in his excellent elementary book on *Medical Statistics*, is that the difference between two proportions is significant when it is greater than twice the standard error of the difference. The standard error of the difference between two proportions is given by $\sqrt{\frac{pq}{n} + \frac{p_1q_1}{n_1}}$, where p, p_1, are the proportions in the two samples possessing a character; q, q_1, the proportions not possessing that character; and n, n_1, the number of observations in the series. Making the simple calculation involved, the standard error is approximately 2.69, and the difference—3.5—much less than twice the standard error. The difference, therefore, may have arisen by chance.

Second, the tabulation of the results could be altered with some improvement. I have calculated some figures not explicitly stated and find them more interesting even than appears at first sight. The carrier rate for group A is 72.8%, and of these 42.2% are carriers on all three sites selected. For the control group B the carrier rate is 44%, and of these only 15.9% carry on all three sites. These differences are undoubtedly significant in the statistical sense; but more should be known about the clinical history of both patients and controls. In how many patients had the boils burst or been opened surgically? How had they been treated up to the time of swabbing? Were the swabs taken on admission or after they had been in the ward a day or two? Were the controls ambulant healthy individuals, chosen at random, or were they ward patients suffering from some non-pyogenic disorder? If the latter, were they in the same ward as the group A patients?

This information is essential before one can assess the clinical significance of the data presented. Recent observations have shown how easily infection spreads in hospital wards, and it is common knowledge how easily boils spread when some forms of treatment are used. If the boils had been allowed to burst, or had been treated with wet applications, a high degree of skin infection would be expected; but if they were unopened at the time of swabbing and treated till then with an occlusive dressing, such a high degree of infection is unexpected.—I am, etc.,

St Albans, Herts. GEORGE DISCOMBE.

Treatment of Phosphorus Burns

SIR,—The article on "The Treatment of Phosphorus Burns" by Dr. A. Thelwall Jones (Aug. 29, p. 244) is of particular value at the present time as it provides actual clinical data regarding treatment under industrial conditions. In this article he refers to our paper under the same title (April 4, p. 433), and we think it might be useful to make the following comments:

1. Dr. Thelwall Jones states that we are in error in supposing that the object of the copper sulphate is to destroy the whole of the phosphorus, but in this we are merely following the "official" instructions, which state, "*To free the burn from*

all traces of phosphorus wash with 1% solution copper sulphate," etc. (our italics). It seems clear from both our own experience and that of Dr. Thelwall Jones that 1% copper sulphate solution can only indicate and not completely destroy appreciable quantities of phosphorus.

2. Although Dr. Thelwall Jones considers that the "official" concentrations of copper sulphate and alkali are adequate for clinical treatment of industrial phosphorus burns, he admits that they might show deficiencies under field or Service conditions, which are precisely those which our proposed treatment was designed to encounter. As an example we might quote the difficulty of removing, by means of forceps, liquid phosphorus, as compared with the usual waxy product. We might also refer to the added advantage of the osmotic effect of the concentrated applications as compared with the "official solutions."

3. We were glad to receive Dr. Thelwall Jones's support for two important points—namely: (*a*) the necessity for prolonged treatment with hypertonic "alkalis"; (*b*) the avoidance of coagulants as a continuation treatment.

It would appear, therefore, that our criticisms of the "official" method as issued by the Army authorities and the Ministry of Health receive substantial support from Dr. Thelwall Jones, and, we trust, so far as liquid phosphorus is concerned, his complete concurrence. We would emphasize that the main object of our paper was to make suggestions for an adequate first-aid treatment, which we are sure Dr. Thelwall Jones will agree is not provided by the "official" treatment.—We are, etc.,

E. W. GODDING.
The Crookes Laboratories, London, N.W.10 H. E. F. NOTTON.

"Silent" Sinusitis

SIR,—I hope that the experiences of Dr. Rosa Ford (Aug. 1, p. 128) and Dr. J. J. Craig (Aug. 22, p. 230) will not influence any of your readers to submit either themselves or any of their patients who suffer from disturbances of vision and headaches to operations on healthy nasal accessory sinuses. In the absence of clinical evidence (including proof puncture) and radiological evidence of disease it has been, and I hope still is, the custom to regard the sinuses as healthy. That a diseased sinus may be the cause of headaches is established beyond all possible doubt, but I believe sinus disease as a cause of visual disturbance to be a very rare event. As operations on the sinuses are neither easy to perform nor free from discomfort or hazard, very clear indications that the sinus or sinuses are diseased and that they are the probable cause of the symptoms are required before we submit our patients with visual symptoms or headaches to operation.—I am, etc.,

London, W.1. TERENCE CAWTHORNE.

SIR,—Further to Dr. Rosa Ford's letter (Sept. 5, p. 295) Dr. C. Newman Smith could with advantage read the chapter on orbito-ocular affections in Watson-Williams's *Chronic Nasal Sinusitis and its Relation to General Medicine*, 2nd edition, p. 117, to which are appended many relevant references. He probably has access also to the *British Journal of Ophthalmology*, March, 1936, p. 164, in which an interesting case of retrobulbar neuritis associated with sinusitis is discussed.—I am, etc.,

London, W.1. BEDFORD RUSSELL.

Sedimentation Rate and the Sedimentin Index

SIR,—I have read Dr. Della Vida's article (Sept. 5, p. 278) with great interest, but have two serious comments to make.

First, the urge to "correct" the measured phenomenon of blood sedimentation which seems to be felt in so many quarters may be founded upon a fallacy. In anaemia one of three things may happen: (1) the deficiency in cell volume may be made good, not by whole plasma, but by the watery inert vehicle (in which the solid constituents of plasma are dissolved or suspended). In this case the percentage of the plasma contents in the blood sample as a whole will remain unaltered, and therefore "correction" of the sedimentin index will be unnecessary. Or (2) the cell volume may be replaced by whole plasma. In this case the percentage of all the constituents of plasma—chlorides, sugar, urea, calcium, sedimentin, etc.—will tend to be raised. This tendency to rise on the part of sedimentin may be unchecked; in which case Dr. Vida's formula for "correction" will be absolutely accurate. But (3) the body, we know, appears to have various vigilant mechanisms for maintaining the percentages of the various blood constituents at predetermined levels, a level presumably being the balance between the rate of secretion by one organ and the rate of elimination by another. The sedimentin level may well be governed by some such mechanism.

Do we know enough about the behaviour of the sedimentin level in the blood to be able to say categorically that anaemia raises it? I have my doubts, especially as I have been able recently to determine the sedimentin indices of two patients suffering from pernicious anaemia. In one, a woman of 26 with three months' history of progressive illness and a red cell volume of 15%, showed an S.I. of 0.60 unit. The "corrected" index would be 0.38 unit, which is so incredibly low as not to make sense. The other case, a woman of 71 with ten years' history of liver-extract injections and a R.C.V. of 30%, showed an S.I. of 0.95 unit. "Corrected," this represents 0.70 unit, which again is incredibly low for a woman of that age. Personally I never dream of correcting for anaemia.

Secondly, I found, as Shuster had found earlier, that oxalated blood behaved capriciously on occasion, and for that reason I laid down in the standardized technique for determining the sedimentin index (*Lancet*, 1940, **1**, 1160) that the blood be diluted, 4 parts to 1 part of 3.8% sodium citrate in normal saline (actually I use diluted sea water); and that one unit of sedimentin was that which made this standard 80% blood mixture sediment at the rate of 10 mm. per 100 minutes. A further advantage of this dilution, which I learned to appreciate later, is that, causing bloods to sediment more slowly, it makes for more accurate observations during the process and therefore more accurate determination of maximum velocities.

Workers using oxalated bloods should be warned that they will obtain figures 25% higher than the standard unit.—I am, etc.,

Vale Royal Abbey, Hartford, Cheshire. GEORGE DAY.

SIR,—Dr. B. L. Della Vida's article (Sept. 5, p. 278) adds yet another technique which further confuses the issue of E.S.R. Any test should be as simple as possible and give the maximum of reliable information. Work to increase our present imperfect knowledge of the mechanism of E.S.R. is welcome, but over-elaboration, which only alters the magnitude of the variations while adding nothing new to our knowledge, will bring the test into disrepute.

Examination of the available evidence shows there is no method which gives any more reliable information than that obtainable from the original Westergren technique. The more one becomes acquainted with the various methods now in use the more one's respect grows for the shrewdly chosen technical data of Westergren. Our personal experience (during the last 10 years) mainly with tuberculous patients has confirmed the value of serial sedimentation tests, and made us adopt a tendency to simplification rather than over-elaboration.

Whatever ways the E.S.R. is expressed—as number, rate, or log—when compared mathematically show a close agreement. Where discrepancies occur they are within the limits of experimental error. The assumption of clinical changes from such data is unsound and quite unreliable. External factors of technique are easily controlled, but variable factors in the blood itself, due to conditions such as rheumatism, anaemia, pregnancy, syphilis, etc., and even common cold, have still to be differentiated by clinical acumen.

It is deplorable that more complicated methods have tended to replace the simple original Westergren technique. No additional reliable information has been made available than that obtained from the Westergren—preferably the second-hour reading.—We are, etc.,

PETER W. EDWARDS.
Cheshire Joint Sanatorium, Market Drayton. L. J. CUTTRILL.

SIR,—In the past one of the great merits of the erythrocyte sedimentation rate was the simplicity of the test. But there has been a tendency recently in Day's sedimentin index and the technique advocated by Dr. B. L. Della Vida (Sept. 5, p. 278) to elaborate the technique until the test takes 5 times as long per specimen, while the resulting gain in accuracy is negligible. Using the ordinary Westergren technique the time spent on each specimen after it reaches the laboratory is roughly 2 minutes, and two people can deal with 30 to 40 specimens. In estimating the maximum velocity of sedimentation one worker cannot watch more than 10 tubes, and during the 2 hours of observation he has no time to settle to any other work. Even one tube will take this time.

If the gain in accuracy over the single-reading method were striking one would have to consider adopting the M.V. method. But in a series of 350 specimens in which the second-hour reading was plotted against M.V. the correlation was very good up to M.V. 60 mm./100 minutes, and sufficiently good up to 80 mm./100 minutes. Thereafter the scatter on the graph increased, but the degree of illness of the few cases represented made slight discrepancies unimportant. The correlation between first-hour reading and M.V. is not quite so good. The Day sedimentin index, which is the log of the M.V., exaggerates small variations in the lower range of E.S.R. This is deceptive, as small day-to-day variations occur in normal subjects.

Della Vida and many other writers on blood sedimentation hold the view that temperature variations in the laboratory do not cause significant variations in E.S.R. However, a series of duplicate tests carried out last winter, when the temperature of the laboratory was from 7° F. to 10° F. below the temperature of the constant temperature chamber in which the test is always carried out at the Cheshire Joint Sanatorium, gave results in the cool specimens 10% to 20% lower than in the temperature-controlled specimens. Contrary to Day's findings, this variation was present in the M.V. as well as in the second-hour readings. This discrepancy in winter is considerably greater than the discrepancy between M.V. and second-hour reading under temperature-controlled conditions.—I am, etc.,

Market Drayton A. CLARK PENMAN.

Carotinaemia

SIR,—The article on carotinaemia by Drs. S. Almond and R. F. L. Logan (Aug. 29, p. 239) raises certain questions with regard to the metabolism of carotene. First, with regard to the transfer of carotene from mother to infant, I have confirmed—in collaboration with Dr. A. Hart (maternity department)—the findings of Menken (*Maandschr. Kindergeneesk.*, 1934, **4**, 22), Wendt (*Klin. Wschr.*, 1935, **1**, 9), Gaehtgens (ibid., 1937, **1**, 894), and Willstaedt and With (*Z. Vitaminf.*, 1939, **9**, 212) that the serum carotene in the newborn is very much lower than that of the mother (6% to 24%), although we found the vitamin A to be about equally high in both; the latter observation is in contrast with the results of those authors—except Menken (1934)—who found only traces of vitamin A in the infant's blood. In the case referred to in the article practically all the carotene must have been transferred to the infant through the breast milk. Secondly, the length of time required for pigmentation was in my experiments 20 and 16 days in the cases of one female and one male who ate 1 lb. of cooked or grated steamed carrots (with about 3% margarine) per day; the pigmentation of the face and the hands started to fade after a few days, but it persisted in the skin of the fingers for more than 16 days after carrots had been discontinued. The sclera did not show any discoloration. In three other subjects the average daily intake of 1/2 lb. of cooked carrots or the corresponding amount of spinach did not result in pigmentation after 14, 63, and 80 days. The concentrations of carotenoids in serum were in the first two cases, when pigmentation appeared, 360 and 470 γ per 100 ml. serum, while in the other three cases the level did not rise above 150 and 180 γ per 100 ml.—I am, etc.,

London Hospital, E 1. H. HOCH.

V.D. in the Forces

SIR,—In the Army considerable numbers of men are being incapacitated through venereal infection. In many cases the women who have spread the disease are known, and in some cases lists of these women have been drawn up. At the present time no effective action can be taken in inducing suspected persons to be examined, and, if necessary, treated. Under recent regulations M.O.H.s have certain powers with regard to lice-infested persons, etc. Would it not be possible for similar powers to be given in the much more serious venereal diseases? Suspected persons could be asked to go to be examined at venereal disease clinics, or to be examined by specialists privately (to be paid for under the National Venereal Disease Service), and failure to do this would involve their being kept in an infectious diseases hospital, for the purpose of isolation.—I am, etc.,

Stonehaven, Kincardineshire. H. GRANT MCPHERSON.

Operations and Workmen's Compensation

SIR,—Mr. Harold Gardiner (Aug. 29, p. 265) questions my contention as to the pitfalls which await the partially disabled worker when he is offered "light work." Perhaps he may be advised to read the *Proceedings* of the Royal Society of Medicine, May, 1942, where Mr. H. E. Griffiths, the famous surgeon and one of the pioneers of rehabilitation in this country, writes under the heading of "The Plague of Light Work": "Under the provisions of the Light Work Clauses in the Workmen's Compensation Acts before and after 1931, the employer may reduce the amount of weekly payment of compensation to the workman if he can show that the workman is fit to undertake light work and if light work is available. When the Light Work Clause first became law it was thought, or perhaps hoped, that light work would help to rehabilitate the patient. The evidence given by the British Medical Association before the Royal Commission on Workmen's Compensation has abundantly proved the opposite, and the reasons are not far to seek." Mr. Griffiths then explains: "In the majority of trades in which accidents occur there is no real light work and jobs are made by the employer for the workman at the instigation of the insurers." Is Mr. Griffiths, in the eyes of Mr. Gardiner, as "biased" as he thinks I am?

As to the other comments which Mr. Gardiner makes, I can only say that he considers too much the theoretical surface rather than the actual working of industrial accident insurance. Whether the employer's doctor is led by other than purely medical motives or not, he will always remain under the suspicion of bias on the part of the disabled. The necessity for creating medical authorities in these matters which are beyond any such suspicion is widely recognized. It is to be hoped that any new workmen's compensation law will embody the point, which of course requires fundamental organizational and administrative changes. If Mr. Gardiner thinks the present law makes it easy for the partially disabled person to claim compensation for total incapacity if he does not find a job, he does not seem to be aware that the workman must in all cases prove that he had taken *all* "reasonable" steps to get employment, a requirement which is not always easy to fulfil to the satisfaction of county courts. This makes the matter far more difficult for the worker (cf. Evidence of the Mineworkers Federation, Royal Commission on Workmen's Compensation, pp. 642 and 771). Moreover, the partially disabled worker must satisfy the county court judge that the employer who has refused to employ him has done so wholly or mainly because of the injury. As to the supply of appliances—the *Final Report on Rehabilitation*, 1939, pp. 132 and 133, states: "A considerable proportion of the cost of special appliances is, we are informed, borne by the patients themselves." The Memorandum of the T.U.C. to the Royal Commission on Workmen's Compensation stated (p. 425 of Evidence) that the omission of the workmen's compensation law to make the supply of appliances a statutory obligation had not been mitigated "to any appreciable extent" by the action of employers and their insurers.

Then comes the difficulty when a second or third employer considers employing a previously injured person. Whether he or the first employer will be liable if a second injury occurs or a recrudescence sets in, he will be anxious not to employ such men in order to avoid costly and annoying litigation. In a case which came before the Court of Appeal on June 27, 1941, it was stated by MacKinnon, L.J., that "although the county court judge found that the workman has physically recovered from his accident, yet the workman was unable to get work by reason of a disinclination on the part of the employers of that class to give him work because of the fact that he had previously had this accident, either because they thought that he was the sort of man who was inclined to have accidents or because they doubted whether the verdict of the doctors in saying he had recovered was really justified and suspected that he had not really recovered." Perhaps Mr. Gardiner will recognize that so long as such things happen one needs no particular "bias" to support very radical changes in the present workmen's compensation law, not only the reform of "weak points."—I am, etc.,

Richmond, Surrey. Hermann Levy.

The Demand on the Blood Donor

Sir,—With reference to the leading article on the above subject in your issue of Sept. 19, it should be known that, as a routine, since the outbreak of war, all donors to the Army Blood Transfusion Service have been issued, at the time of donation, with a seven-day supply of ferrous sulphate tablets, equivalent to 200 mg. of Fe a day.—I am, etc.,

L. E. H. Whitby,
Brigadier,
Consulting Physician in Transfusion
and Resuscitation to the Army.

Obituary

HEDLEY DUNCAN WRIGHT, M.D., D.Sc.

We regret to announce the death on September 9 at Mossley Hill of Prof. Hedley Duncan Wright, who had held since 1934 the post of city bacteriologist to the Liverpool Corporation and the chair of bacteriology at the University of Liverpool.

The son of Robert Stuart Wright, he was born at Ulverstone, Tasmania, on March 3, 1891, and studied at the University of Tasmania, graduating B.A. in 1910. His medical course was taken at the University of Edinburgh, where he obtained the M.B., Ch.B. degrees (with first-class honours) in 1916, the M.D. (with gold medal) in 1925, and the D.Sc. in 1927. He served with the R.A.M.C. during the last war in France, India, and Persia, and then returned to Edinburgh on his appointment as lecturer in bacteriology in the University, assistant director of the Research Laboratory of the Royal College of Physicians, and Lister Research Fellow. In 1923 he came to London to take up the post of lecturer in bacteriology at University College Hospital Medical School, and five years later the University of London appointed him Reader in Bacteriology at U.C.H. In 1930 he was elected to the chair of bacteriology at Sydney University, but returned to this country from Australia four years later to succeed Prof. J. M. Beattie at Liverpool.

Prof. Hedley Wright was for some time assistant editor of the *Journal of Pathology and Bacteriology* and published papers independently and jointly in that journal, in the *Biochemical Journal*, and in the *Edinburgh Medical Journal*. At the Annual Meeting of the British Medical Association in 1927 he was vice-president of the Section of Pathology and Bacteriology.

The death took place at Bournemouth on September 3 of Henry Dobree Woodroffe, M.D., lately of Swanage, who in his time did excellent work for the British Medical Association, which he joined thirty years ago. Dr. Woodroffe, who was a student of Trinity College, Dublin, qualified in 1907. For a number of years he had practised in the small town of Woodstock in Oxfordshire, and while there he was an active member of the Oxford Division of the B.M.A., its chairman in 1933-4, and afterwards its vice-chairman. As a member of the Arrangements Committee and in other ways he took a prominent part in the organization of the Oxford Meeting of the Association in 1936, and not a little of the success of that assembly was due to his great energy and his unusual degree of personal charm. Previously Dr. Woodroffe had practised in East Anglia—he was a representative of the very best type of country doctor—and was honorary secretary for three and a half years of the East Norfolk Division. It was as a representative of that Division that he was introduced to the central affairs of the Association, and for many years from 1924 onwards he was a familiar figure and a not infrequent speaker at the Annual Representative Meeting and the Annual Panel Conference. From 1931 to 1936 he served on the old Medico-Political Committee (now the General Practice Committee), and did good work, especially on the subcommittee which looked after the interests of ship surgeons. He was also interested in insurance practice, and for a time was chairman of the Panel Committee for the county of Oxford. Another of his interests was the British Red Cross Society, and he was a director of its organization in his locality. During the last war he served as temporary captain, R.A.M.C. While living latterly in Dorset he had acted as honorary surgeon to Swanage Cottage Hospital.

We regret to announce the sudden death at Preston, Lancs, of Dr. George Gordon Johnstone. He was born in 1887 at Ilkley, Yorkshire, the elder son of the late Thomas Johnstone, M.D., M.R.C.P. From Marlborough College, and a year at Edinburgh University, he became an exhibitioner at King's College, Cambridge, obtaining a 1st Class in Part I of the Natural Sciences Tripos, and a 2nd Class in Part II. From University College Hospital he graduated M.B., B.Ch. in 1912, M.D. in 1919, and took the D.P.H. in 1920. Johnstone served through the whole of the last war as captain, R.A.M.C.(T.F.), in charge of No. 23 Sanitary Section, being twice mentioned in dispatches and awarded the Military Cross. In 1920 he married Miss Constance Margaret Dempster of Perth. After a period as assistant county medical officer for Wiltshire, he became an assistant county medical officer for Lancashire, where he was in active work when he died. Remaining on the Reserve of the T.A. he was sadly disappointed to be classed medically unfit in Sept., 1939. Dr. Johnstone will be remembered for his sincerity, a man known well by too few, his ability and conscientious thoroughness hidden by caution and dislike of prominence. He had the gift of understanding children, among whom was much of his work. By his death the public health service of the Lancashire County Council has lost one of its most able officers. Kindly and sympathetic in manner, he was untiring in his efforts to ensure the welfare of his patients. Dr. Johnstone was a public health worker whose integrity of character and professional attainments gained the high esteem of all his colleagues and friends, and his loss will be severely felt.

Dr. Samuel McComb died suddenly at his home in Belfast on Aug. 17. He was 57 years of age and a graduate of Queen's University. In his younger days he was an outstanding athlete. In 1910 he was 100 yards champion of Ulster and Ireland, and was a member of the Cliftonville XI which won the Irish Football Cup in 1909. He served with the R.A.M.C. during the last war and attained the rank of captain. During the present war his time was largely occupied with medical boards apart from an outstanding general practice which was almost a hobby to him. Dr. McComb had a genial and lovable personality which won for him a host of friends in every walk of life, and in the profession he was universally popular. He joined the B.M.A. in 1915 and was elected chairman of the Belfast Division last year. He is survived by his widow, a daughter, and a son who is following his father in athletic achievements and into the medical profession.

The Services

Temp. Surg. Lieut. J. A. Smart, R.N.V.R., has been appointed an M.B.E. (Military Division) for skill and devoted service in the care of wounded after H.M.S. *Hermes* had been sunk by enemy air attacks in the Indian Ocean.

Temp. Surg. Lieut. W. R. D. Seymour, R.N.V.R., has been mentioned in dispatches for bravery and devotion to duty when H.M.S. *Electra* was lost.

Among the awards for gallant and distinguished services in the Middle East during the period Nov., 1941, to April, 1942, approved by the King, is the name of Major (Temp. Lieut.-Col.) Norman Berry, R.A.O.C. Major Berry, who receives the Order of the British Empire, is the only son of Prof. R. J. A. Berry, a member of the B.M.A. Council.

CASUALTIES IN THE MEDICAL SERVICES

Brief obituary notices of Group Capts. Hugh Wolfe Corner and Gerard Joseph Hanly, R.A.F., were published in this column on June 27 (p. 807) and Sept. 5 (p. 298) respectively. We are indebted to Air Marshal Sir Harold Whittingham, Director-General of Medical Services of the Royal Air Force, for the following appreciations of these two officers.

The R.A.F. Medical Service has lost two outstanding officers who joined the Service in 1924, and who served as brother officers in that year at the Central Medical Board, and later at the R.A.F. Officers' Hospital at Finchley, one having a medical bent and the other a surgical bent. They were both extremely keen on aviation, qualified as pilots in due course, and lost their lives flying on active service.

Group Capt. Corner was an able physician, and reliable and trustworthy in all his duties. In his last appointment, however, he found his true vocation, for he was a keen pilot, particularly fond of high-speed single-seater aircraft, and his devotion to flying, associated with his profound knowledge of the practical problems of aviation medicine and his friendly, helpful, and unassuming attitude to all with whom he came in contact, made him the ideal medical adviser to flying personnel. The last year of his service was his happiest year, for a unique opportunity was available for the exercise of a keen and critical mind in an environment which he loved. He was the friend of all, but particularly of the men who fly. The rare combination of high professional attainments, whole-hearted devotion to flying, and a charming and ever-youthful personality, has set a standard for his brother medical officers in the Royal Air Force which is not likely to be surpassed.

Group Capt. Hanly was an able surgeon and an efficient and zealous officer, popular with his colleagues and his staff. His interest in flying, combined with his professional qualifications, made him particularly suited to the care of R.A.F. personnel, and gave him an insight into the problems peculiar to the Service, which lent weight to his advice. The loss of Group Capt. Hanly, at a time when his matured experience was of particular value, has been greatly regretted by the Service to which he belonged.

Lieut.-Col. **DAVID LURIE**, S.A.M.C., has been killed in Egypt. He was educated at the University of Capetown, graduating M.A. with distinction and winning a Rhodes scholarship to the University of Oxford, where he took the degrees of B.M., B.Ch. in 1926. In 1932 he obtained the F.R.C.S, and shortly afterwards returned to Johannesburg, where he became registrar and, later, assistant surgeon to the General Hospital. He entered the S.A.M.C. in 1941. He was a member of the B.M.A.

Major **DOUGLAS YEOMAN RICHARDSON**, R.A.M.C., died at Moretonhampstead on Sept. 4. He was born on July 2, 1906, and qualified M.R.C.S., L.R.C.P. in 1931, taking the D.L.O. in 1939. He had held the posts of house-surgeon and out-patient assistant at the Central London Throat, Nose and Ear Hospital, aural house-surgeon at West London Hospital, and resident medical officer at the West Herts Hospital. Before entering the R.A.M.C. as temp. lieut. in February this year he was aural surgeon under the E.M.S. to Louth County Infirmary and clinical assistant to the throat, nose, and ear department of the County Hospital, Lincoln, where he had been in practice since 1935. His contributions to medical literature included "Jacksonian Attacks in Connexion with Extradural Abscess of the Frontal Lobe" (*British Medical Journal*, Dec. 15, 1934), and "A Case of Silent Mastoiditis" (Nov. 23, 1940).

Prisoners of War—War Subs. Capt. A. M. Boyd, R.A.M.C., War Subs. Capt. H. L. Clift, R.A.M.C., Lieut. T. B. D'Costa, R.A.M.C., War Subs. Capt. W. K Frewen, R.A.M.C, Capt. E. T. Gilbert, R.A.M.C., Capt. W O. James, R A.M C., Lieut.-Col. G. P. Kidd, M.C., R.A.M.C., War Subs. Capt. A. Macfarlane, R.A.M.C., Major D A. Macpherson, R.A.M.C., Major J. Parkes, R.A.M.C., War Subs. Capt. A. P. Russell, R.A.M.C., War Subs. Capt. E. T. M. Smith, R.A.M.C., Temp. Major A. McL. W. Thomson, R.A.M.C.

Wounded.—Temp. Surg. Lieut. D. V. Stott, R.N.V.R.

DEATHS IN THE SERVICES

Surg. Lieut.-Cmdr. **WILLIAM ASTLE RYAN**, R.N., died at Port of Spain, Trinidad, on Aug. 28. A native of Cahore, Co. Wexford, he was educated at the University of Dublin, where he graduated M.B., B.Ch., B.A.O. in 1932. He entered the Royal Navy as surg. lieut. soon after qualification, was promoted surg. lieut.-cmdr. in 1938, and was placed on the retired list in June, 1941.

Universities and Colleges

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—F. R Staub.

FINAL M.B., CH.B.—*Part II (Old Regulations)*: Mildred S Airey, T. E. Bairstow, L Crawford, C B. Dawson, Joan A Dawson, Mary D. Fox, Elspeth Harrison, E. B Harrison, Kathleen M Harrison, G. Hipps, H M. Kershaw, T G Kletz, R. E. Lawrence, G K. Laxton, D H. Lewis, Lilias J G. McLeod, H. B Peart, J Priceman, J. D Riley, P A H Rivett, Betty Sanderson, K A Simpson, R. Spink, C. Stringfellow, J W Taylor, Pauline Wynne

The West Riding Panel Practitioners' Prize has been awarded to J G. Brockis.

Medical Notes in Parliament

Tuberculosis in the Services

Mr. ERNEST BEVIN, replying on Sept. 10 to Sir Francis Fremantle, said he knew of an analysis showing that of 300 consecutive cases of pulmonary tuberculosis admitted to a certain sanatorium for the Services, it was considered that 200 could have been detected at the initial examination by mass miniature radiography as a routine procedure. Mr. Bevin said that perhaps half of these 300 cases had been examined by civilian medical boards before the adoption by these boards in Nov., 1940, of improved methods of detection of pulmonary tuberculosis. It was considered impracticable to establish mass miniature radiographic examination at medical boards throughout the country. The alternative method of detection immediately after the men had been enlisted had been found to be the most practical way of dealing with the subject.

Chairmen of Medical Boards

Mr. BEVIN, in a statement on Sept. 10, said he appointed chairmen of medical boards which examined recruits for the Forces. Appointment was normally for one year, and current appointments would expire on May 31, 1943. In making the original appointments, practitioners with special experience of work of an analogous kind were selected wherever possible. Subsequent appointments had usually been made for members of boards who had shown themselves suitable for the position. He did not know how many chairmen were retired officers in receipt of retired pay.

Mines Medical Service Proposed

On Sept. 8 Mr. J. GRIFFITHS asked the Minister of Fuel and Power what steps had been taken to establish a medical service in the several regions under the reorganization scheme, and if he would cause an investigation into the effect of diet deficiencies, particularly of fats, on the health of coal miners. Major LLOYD GEORGE said that officers of his Department, in association with those of the other Departments concerned, were working out a scheme for a mines medical service, and he hoped to be able to announce his proposals shortly. The general question of diet was a matter for the Minister of Health, but as regards coal miners the question of food in relation to the colliery canteens had been considered by the Miners' Welfare Commission in association with the Ministry of Food and in consultation with high medical authorities. He would bring Mr. Griffiths's suggestion to the Commission's notice.

Pasteurized Milk

On Sept. 20 Mr. MABANE told Mr. David Adams that considerable progress had been made towards the elimination of disease organisms from milk for human consumption by pasteurization or other methods. There was close collaboration in this matter between the Minister of Food and the Ministers of Agriculture and of Health. Pasteurization standards were set by the Minister of Health and action was taken by the appropriate officers under the Act and Regulations relating to food generally and to milk in particular. At present responsibility for distribution of milk rested upon the Minister of Food, and it was estimated that some 70% of the milk supply was pasteurized before distribution to consumers. It was anticipated that the rationalization of wholesale and retail distribution now being undertaken would result in a larger proportion of supply being pasteurized.

Diphtheria in Non-immunized Children.—Mr. ERNEST BROWN has told Mr. Leach that incomplete information at present before him, representing about 90% of the local authorities from whom he had asked for returns, showed that in the 6 months ended June 30 last, of some 13,400 children notified as suffering from diphtheria about nine-tenths had not been immunized, and that in 797 fatal cases there were 780 non-immunized children, against 17 who had been inoculated.

Notification of Scabies.—Mr. BROWN has stated that while it would not be appropriate to make scabies notifiable generally, he was prepared to consider applications from local authorities to have scabies made notifiable in their district, upon being satisfied that the authority had adequate facilities for diagnosis and treatment.

Notes in Brief

Mr. Brown has arranged with the Minister of Supply that while supplies permit rubber will be made available for the production of a strictly limited number of rubber hot-water bottles to meet the needs of hospitals and similar institutions. He has also arranged with the President of the Board of Trade for the production of a reasonable quantity of stoneware and earthenware hot-water bottles for the general public

The Ministry of Food is setting up 15 plants with a total annual capacity of about 7,500 tons of mixed dried vegetables, to be produced from 140.000 tons of fresh vegetables Distribution in the coming spring will be restricted to the Forces and certain emergency services It is intended to dry mainly potatoes, carrots, and cabbages.

No. 35

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 5.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	73	3	19	1	7	99	7	39	2	3
Deaths		1	—				—	2		
Diphtheria	787	27	204	51	15	805	27	232	11	30
Deaths	14	—	—	1	1	24	—	5	—	—
Dysentery	112	10	62		—	82	11	56		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	—	—	2		—	3	—	1		—
Deaths		1	—				1	—		
Enteric (typhoid and paratyphoid) fever						68	8	2	3	10
Deaths						2	—	1	—	—
Erysipelas		—	49	9	1		—	54	6	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				125						
Deaths	52	6	15	21	6	35	1	15	19	4
Measles	3,024	295	124	22	20	1,112	37	16	72	3
Deaths	3	—	2	—	—	—	—	—	—	—
Ophthalmia neonatorum	94	7	24	—	—	87	5	16	1	1
Deaths										
Paratyphoid fever ..	13	1	5	1	—	197	3	17	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	379	22	3	—	10	363	15	7	—	—
Deaths (from influenza)	8	1	—	—	—	6	8	3	—	1
Pneumonia, primary ..			106	4				145	2	
Deaths		—		9	7		—		5	4
Polio-encephalitis, acute	4	—				5	1			
Deaths		—					—			
Poliomyelitis, acute ..	24	—	—	10	—	23	—	4	4	—
Deaths		—	—				—	—		
Puerperal fever ..	—	4	16	2	—	1	1	14	5	1
Deaths ..		—					—			
Puerperal pyrexia ..	198	15	18	—	1	135	7	17	1	3
Deaths										
Relapsing fever ..	—	—			—	—	—		—	—
Deaths										
Scarlet fever	1,472	116	275	44	22	958	32	164	29	30
Deaths	1	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	7	—	1	7	1					
Deaths	—	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,197	106	61	112	10	3,173	263	78	36	2
Deaths	11	1	3	5	—	11	2	2	2	2
Deaths (0–1 year) ..	281	33	60	36	25	254	21	73	36	21
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,465	493	491	191	120	3,403	392	517	163	110
Annual death rate (per 1,000 persons living)			11·1	12·8	†			11·3	10 8	†
Live births	6,002	618	816	459	270	4,789	410	782	297	196
Annual rate per 1,000 persons living ..			16 9	30.6	†			15·9	19·7	†
Stillbirths	200	23	38			190	5	28		
Rate per 1,000 total births (including stillborn)			44					35		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week most infectious diseases showed a slight rise in incidence. Diphtheria had 70 more notifications than last week, acute pneumonia 27, and dysentery 21.

Measles showed the smallest weekly reduction for the past nine weeks—141. In several counties the incidence rose, especially in Yorks West Riding 94, and Warwickshire 42. The biggest drops were recorded in Durham 81, Northumberland 51, and Derby 41.

The rise in diphtheria was mainly due to the experience of the northern section of the country, the southern section showing a slight fall. No marked variation occurred in the individual counties, with the exception of Lancashire, where there was an increase of 34 cases.

Fairly large fluctuations in the trend of whooping-cough were observed, the largest increases being those of Yorks West Riding 33, and Warwickshire 19; and the largest decreases were in Surrey 32, and Essex 26.

The principal outbreaks of dysentery during the week were Surrey, Malden and Coombe M.B. 12; Oxfordshire, Oxford C.B. 15; Norfolk, Norwich C.B. 19; Lancashire, Warrington R.D. 7.

The 24 notifications of acute poliomyelitis—10 more than in the preceding week—was the largest weekly total recorded during the present year. The notifications covered 16 counties, and multiple cases occurred in Hertfordshire, Cheshunt U.D. 3; Somerset, Chard M.B. 3; Lancashire, Preston C.B. 2.

In *Scotland* 63 fewer cases of scarlet fever were notified than in the preceding week, but there was a rise in the recorded incidence of diphtheria, measles, and whooping-cough of 31, 52, and 31 cases. Glasgow held the record with a rise of 22 for diphtheria, 26 for measles, and 30 for whooping-cough.

In *Eire* the rise in the notifications of whooping-cough from 63 to 91 was due to the experience of Dublin. Five of the 10 cases of poliomyelitis were notified in Dublin.

Quarterly (Second) Return of the Registrar-General for Scotland

The birth rate was 19.3 per 1,000, the highest recorded in any quarter since 1932 and 0.3 above the average for the five preceding years. The proportion of illegitimate births was 7.3%, and was also the highest rate since 1932. Stillbirths were 37 per 1,000 of total births, this rate being 2 below the rate for the corresponding quarters of 1940-1.

An infant mortality rate of 64 per 1,000 live births was recorded—20 below that for the second quarter of 1941 and 6 below the average rate of the five preceding years. The maternal mortality was 4.0 per 1,000 live births, or 0.4 below the five-year average.

The general death rate was 13.1 per 1,000 of the population—2.1 lower than the rate for the second quarter of 1941 and 0.1 below the five-year average. There was a large reduction in the number of deaths from the principal epidemic diseases, a rate of 20 per 100,000 being recorded compared with 40 for the average of the five preceding years. Deaths from the principal causes under this heading were: influenza 61, diphtheria 58, measles 56, cerebrospinal fever 45, whooping-cough 24. The mortality from tuberculosis, 92 per 100,000 for all forms and 69 for respiratory tuberculosis, showed a slight improvement on the value for the second quarter of 1941. The former rate was 3 below, and the latter the same; but the rate for all forms was 10, and for respiratory 9, above the five-year average. The death rate from malignant disease, 170 per 100,000, also showed a slight improvement on the second quarter of 1941, but was 5 above the five-year average.

Returns for the Week Ending September 12

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,618, whooping-cough 1,074, measles 2,644, acute pneumonia 319, cerebrospinal fever 62, dysentery 146, acute poliomyelitis 20, paratyphoid 7, typhoid 30.

Medical News

The Honorary Medal of the Royal College of Surgeons of England will be presented to Viscount Nuffield on the afternoon of Wednesday, Sept. 30, at the College, in Lincoln's Inn Fields.

The Honorary Fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow has been conferred on Prof. Geoffrey Jefferson, F.R.C.S., of Manchester. At the ceremony on Sept. 7 the President, Mr. Roy F. Young, spoke of the outstanding abilities of Prof. Jefferson and his international reputation in the field of neurosurgery.

Ciba, Ltd., inform us that, in the public interest, they have decided to adopt the name *nupercaine* instead of percaine and *nupercainal* for percainal, so as to avoid further confusion with the possibility of serious accidents owing to the similarity of the names percaine and procaine *B.P.* 1932, in spite of the fact that their trade mark percaine was registered in 1918.

A luncheon to celebrate the inauguration of the Queen Elizabeth Hospital for Children will be given by the president, Lord Iliffe, at the Mansion House on October 1. The amalgamated institution takes over and will maintain all endowments, named wards, departments, and cots possessed by the constituent hospitals—the Queen's Hospital for Children, Hackney Road, London, E.2, and the Princess Elizabeth of York Hospital for Children, Shadwell, London, E.1.

At a public meeting to be held under the auspices of the National Council for Mental Hygiene at 26, Portland Place, W, on Tuesday, Sept. 29, at 5 p.m., Major-General G M. Lindsay will deliver an address on "The German Psychological Machine and the Need to Combat It."

At a meeting convened by the Association of Scientific Workers to be held in the Co-operative Hall, Downing Street, Manchester, on Sunday next, Sept. 27, at 10.30 a.m., Prof. H. Levy will open a discussion on "The Place of Science in the National Effort."

Burroughs Wellcome and Co. (183, Euston Road, N.W.1) state that they are able to supply limited quantities of the alkaloid curarine for the use of research workers. Crude curare for the preparation of this alkaloid has never been plentiful, but they are now in a position to meet all reasonable demands.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B M.A. House, Tavistock Square, London, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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Telephone No.—B.M.A. and *B.M J.*: EUSTON 2111.

Telegraphic Addresses.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London.*

B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Diabetic Food in Wartime

"M.A., M.B.(Cantab.)" writes: I have a diabetic patient whose glycosuria is controlled by diet, but he finds it extremely difficult to get a variety of diabetic foods, jams, etc. I should be glad if any reader could suggest substitutes or give further information.

Itching of Limbs

Surg. Rear-Admiral H. S Burniston, R.N (ret.) writes: In reply to Dr. W. A. Milligan (Aug. 15, p 208), it is almost a perfect description of what I suffered for about three months. In my case the rash was quite definitely urticarial. I therefore put it down to some error in diet and on my own eliminated various articles of food. Finally I brought it down to saccharin, and now I am content to take my tea unsweetened. The trouble is clearing up slowly, so evidently the effect of the saccharin is cumulative. The fact that the trouble in Dr. Milligan's patient has gone on for two years (about the period when sugar rationing began) rather points to my idea of the cause.

Income Tax

Absentee from Practice

C M. is an absentee from his practice. His statutory income for 1941-2 is assessed at £1,250, but his actual earnings have been £750. What relief is he entitled to, and will the position as regards income tax be materially affected if he sells the house from which he has evacuated?

⁂ In view of the fact that his actual total earnings for 1941-2 are less by more than 20% than the amount assessed, he is entitled to have the tax payable for 1941-2 assessed on his aggregate earnings for the actual year ending April 5, 1942. This position would not be materially affected by the sale of his house; it is the fact that he is entitled to some share of any receipts from the old practice, and not the ownership of the property, which matters

LETTERS, NOTES, ETC.

Codeine in Vaccinia

Lieut. H. A. Oatley, R.A.M.C., writes: As a regimental medical officer of a training battalion I am performing a large number of vaccinations (over 1,000 in the last six months), and am becoming increasingly impressed with the effect of tab. codein. co. (*N.H.F.*) in men reporting with symptoms from a successful vaccination For example, men coming in the evening with a temperature of anything up to 103° F. and feeling very ill will return next morning, after being given 2 or 3 tablets, completely apyrexial and able to continue duty, since they now admit to feeling quite recovered except for what they almost all describe as being "washed out." Before I began using this preparation I found that men (sometimes up to 5% of those vaccinated) often required up to 48 hours off duty and were sometimes sufficiently ill to merit admission to a camp reception station. Since tab. A.P.C. (*N.H.F.*) has been used as one of the standard Army preparations for vaccinia, it may well be that the value of tab. codein. co. lies in the codeine. It is because I think this apparently specific action of tab. codein co. may be of some use to other medical officers engaged in vaccination on a large scale that I am communicating this experience. Should others be able to confirm this finding it may be worth while investigating the results more scientifically than I have ventured to do, and the publication of statistics may help to establish proof of the use of this preparation in reducing the severe reaction to vaccination.

Curious Effect of a Short Circuit

Dr. J. Watson (Thornhill, Dumfries) writes: A male patient aged 86 asked me to see him. He gave a history of diarrhoea occurring only at night. During the day, apart from a feeling of weakness, he was symptom-free. This had lasted for a period of ten days The patient fortunately was in bed. On taking his pulse I noticed a tingling feeling in my fingers. This sensation was again apparent on attempting to examine the abdomen. It struck me that for some reason the patient's body was electrified. There was an all-metal bed lamp attached to the bed by a metal clamp. The bedstead was of brass. On touching the lamp and bedstead these were found to be electrified. The lamp was disconnected. This cured the short circuit. On questioning members of the household a lady-help admitted that at times she had felt a "funny" sensation in her arms when making the bed. Since removal of the bed-lamp the patient's nocturnal diarrhoea has ceased. It is interesting to note that the patient was lying on a hair mattress 6 in. thick over an ordinary spring mattress.

MEDICINE 100 YEARS AGO

Letter appearing in the *Provincial Medical Journal* of September 24, 1842, under the heading of "Medical Men and the Income Tax."

"Gentlemen,—I have read your correspondent's letter in your Number for the 3rd instant, respecting the opinion of some commissioners of taxes that medical men must not make any deductions for their horses and carriages (estimating their professional incomes), in case of their ever using them for any other purpose than that of visiting patients.

"With becoming gratitude to the said commissioners I should not think of troubling them for any advice upon the present occasion, but shall take the liberty of using my own judgment in interpreting the *spirit* of the act, and in estimating my actual professional income for the year 1841. Were I a carrier, or a brewer, I should not the less regard my horses as part of my necessary expenditure, because I occasionally used one for sending my family to church; and as I keep horses and carriages entirely for the purpose of carrying on my profession, I should not think of omitting to put them down, as items of unavoidable professional expenditure, in calculating the amount of my income. In making a distant professional journey, I might visit a friend on the way; but I should not, certainly, on that account, consider it unreasonable to deduct such travelling expenses from my annual receipts.

"The return of my professional gains for the year 1841, is an affair between me and my conscience (not commissioners). I have presumed to decide for myself what the Act requires, and have sent in such a return as I think to be a faithful one. If commissioners are dissatisfied, they may put me to my oath, and I will swear to my correctness; if my books are called for, they shall have them, and make them out how they can. I cannot, however, believe that the government will encourage the giving unnecessary trouble where no fraud can be supposed; 'frivolous and vexatious' interpretations of the Property Tax Act in the present discontented state of the country with respect to that impost, would be rather a dangerous game.

"I should like to know how far the London physicians and surgeons have complied with the commissioners' decision that they are to make no deduction for the expense of carriage and horses in their returns of income?—Yours faithfully,

A Provincial Surgeon."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 3 1942

WARTIME ARRANGEMENTS FOR INTERNATIONAL BIOLOGICAL STANDARDS AND THE NEW STANDARD FOR PITUITARY (POSTERIOR LOBE) PREPARATIONS

BY

Sir HENRY H. DALE, C.B.E., M.D., P.R.S.
Director of the National Institute for Medical Research, Hampstead

The International Standards for remedies of which the strength has to be measured by biological methods came into being between the two world wars, through action by the Health Organization of the League of Nations. The work was by no means limited, however, to the nations that had joined the League. Important shares in the enterprise, which began in 1921 on Dr. Madsen's initiative, were taken at the outset by experts from the countries that had not yet been admitted, and during the whole period by those from the United States of America. Even when Germany and her associates later withdrew from the League the international standards remained in use among their men of science, though without official recognition, and German industry continued to make important contributions to the materials required for the preparation of new standards.

There could be no doubt that these international standards were worth preserving for their value to research as well as to practical therapeutics, and it was clearly imperative that war should not endanger the existence of materials which embodied so much work of investigation, freely given to this common enterprise by leading experts of many nationalities. Steps were, in fact, very promptly taken by Dr. Hartley, Director of the Department of Biological Standards at the National Institute for Medical Research, to see that adequate quantities of the international standards held in that department were sent to the control centres of other countries, to meet any probable interruption of normal distribution; while the main stocks were so distributed as to minimize the risk of their destruction. When Denmark was invaded, and the further supply of the international serum standards from Copenhagen to many other countries became doubtful, the identical or exactly equivalent British serum standards were made available during the emergency, at the request of the League of Nations, wherever the need should arise. In addition to making arrangements thus to keep alive the mechanism of distribution in most parts of the world, even during the war, Dr. Hartley also deposited several complete sets of all the international standards (or, in a few cases, their exact equivalents) with institutions having the requisite facilities for ideal storage, in countries widely distant from one another. With these are deposited full technical records of the methods of preparing and using them. It can be regarded as practically certain, therefore, that when the war comes to an end these standards will be available from some source to any organization which can suitably assume responsibility for the matter in the interest of the whole world.

Meanwhile, apart from the special arrangements thus made for the standards which already existed, it was necessary to provide for the completion of work on the materials for certain new ones which were under investigation in Sept., 1939 In one such case the material was on international trial for its suitability to create an entirely new standard for vitamin E, and in due course, after agreement among as many of those concerned with the matter as could still be reached by correspondence, the international standard for vitamin E was adopted and made available (*British Medical Journal,* 1941, **2,** 553). In another case the trials, and the subsequent agreement by correspondence, were concerned with the replacement of an existing standard, the supply of which was nearing exhaustion. This was the international standard for preparations of the posterior lobe of the pituitary gland.

International Standard for Preparations of Pituitary Posterior Lobe

The history of this standard goes back to the first International Conference, held in Edinburgh in 1923, to consider the possibility of international agreement on the biological standardization of certain hormones and drugs. Among the pharmacological experts from different countries who were its members, there were few who then recognized the general importance of the principles on which Paul Ehrlich had firmly based the standardization of the antitoxic sera some thirty years earlier—the creation of a dry stable standard of reference, the definition of the unit as the activity of an exact weight of this material, and the use of samples of this central standard as a currency, enabling the weight representing the unit to be determined by comparison for any other subsidiary standard made for national or local use. In the case of the pituitary posterior lobe, indeed, Professor Carl Voegtlin, of the Public Health Laboratory in Washington, put forward in 1923, at the Edinburgh Conference, a sample of the dried acetone-extracted gland substance for consideration and co-operative trial, with a view to its adoption as a standard of a kind. The trials were successfully carried out, and the second Conference summoned to deal with such matters, which met in Geneva in 1925, readily agreed to adopt Professor Voegtlin's proposal. At a relatively late stage of its discussion this Conference also made the important decision to define a unit of activity for post-pituitary preparations as the activity of 0.5 mg. of the dried material which it had already agreed to recognize as a standard. The full record of its recommendations, however, makes it clear that it did not regard this definition as applicable only to a particular quantity of a standard material, kept at and distributed from a recognized centre. On the contrary, the evidence presented led its members to assume that any sample of this material, if prepared in accordance with the prescribed method from the perfectly fresh substance of ox pituitary glands, would have exactly the same activity; so that 0.5 mg. of any such material, wherever it was prepared, would represent 1 unit of activity. And although Professor Voegtlin was asked by the Conference to make available a small quantity of the material prepared in his own laboratory, this was to be furnished "to any authority which may require it for confirmation of its own national standard." In other words, the object was clearly to enable any national centre which had not confidence in the freshness of its raw material, or in the perfection with which it had followed the prescribed routine of preparation, to assure itself that it had in fact produced a standard of the expected optimal value. There was no suggestion that it would be proper to define the unit as corresponding to some greater or smaller weight than 0.5 mg. of such a secondary national standard if it should be found in a comparative test to be weaker or stronger than the sample provided by Professor Voegtlin's laboratory.

Experience in the administration of the international standards soon showed, however, that the basis which the Geneva Conference of 1925 had regarded as suitable for this particular case was not in fact practically applicable. A British national standard for the pituitary posterior lobe had been prepared in 1926, and had been found, indeed, by tests carried out both in London and in Washington, to be indistinguishable in activity from Professor Voegtlin's original standard preparation. Fortunately this British standard, through the co-operation given by the Armour Laboratories of Chicago in providing the material for it, had been prepared on a scale large enough to enable it to be used for a wider need than that of the national control. Applications received from all over the world soon showed that, whatever had been the intentions of the Geneva Conference, the demand for samples of an international standard for this endocrine preparation would be comparable to that for others, such as the insulin standard, for which a general distribution had been arranged. The material furnished by Professor Voegtlin being in these circumstances rapidly exhausted, it was possible to meet the situation by supplying samples of the British national standard, with a suitable guarantee of its strict equivalence to Professor Voegtlin's original sample. During this intermediate period national standard preparations were made in a number of countries and compared with the British standard. None of these other preparations was found to be more active than this, but there were a few of which the activity was perceptibly lower.

Another point of some importance has come clearly into view since the decisions made in 1925. At that date the question whether the extract of the pituitary posterior lobe owed its activities to one or to several active principles was still a matter of controversy; and the Geneva Conference had accordingly been able only to decide that the unit of activity should be regarded as contained in 0.5 mg. of the standard preparation, whether the test used for its comparative determination was based on the pressor or on the oxytocic action. By the time another Conference met in Frankfurt, in 1928, the question had been settled, as regards the artificial extract in common use, by the demonstrated possibility of making separate pressor and oxytocic extracts, each practically free from the other type of activity. It was possible, therefore, to amend the original definition in detail, and to recommend that "the activity of every such preparation should be expressed in relation to the international standard in units of pressor or oxytocic activity, and that in each case *the unit of such activity* shall be that of 0.5 mg. of the standard powder." There was no further step, however, towards the recognition of a particular preparation as the standard in question; it was still possible, by implication, to make the standard anywhere by following the prescribed routine.

By Oct., 1935, the experience which had accrued enabled the League's Permanent Commission on Biological Standardization to take the further and important step of formally accepting as the international standard preparation the British standard for the pituitary posterior lobe, which had by then been semi-officially current for international purposes for some 9 years. Since the decisions made in 1928 there had been more discussion of the possibility that the third important therapeutic application of this extract, for its antidiuretic action, might be due to yet another separable principle. This could not then (and cannot even now) be regarded as finally settled; so that the Commission at its meeting in 1935 could only provide for any possible development by authorizing the definition of a unit of antidiuretic activity, again as the activity of that type in 0.5 mg. of what was now the international standard. Unfortunately all these decisions adopting and defining the international standard and units were made, not by a conference of specialist experts, but by a Permanent Commission consisting of national representatives who left standing the implication of the earlier recommendations, according to which the standard would still serve to indicate an optimal activity rather than to fix the value of the unit and make it unalterable in either direction.

New (1940) Standard for Pituitary Posterior Lobe

It might well be suggested that such differences of conception as to the meaning and use of a standard would in this case be of theoretical rather than practical interest, since other standards had been made which were equal in potency to that being then adopted for international use, some which were weaker, but none thus far which were perceptibly stronger. And the question did not acquire practical importance until, in 1939, it became necessary to prepare a new supply of international standard material to replace in due course the one which had served for so many years in effect, and since 1935 with official recognition. With the renewed and effective co-operation of the Armour Laboratories a further quantity of the acetone-extracted and dried powder of the fresh posterior lobe substance was obtained, and was further and finally desiccated under the conditions which have now become a standard routine in the Hampstead Institute. Samples of this were distributed to expert collaborators in a number of different countries, for assay with the greatest practicable precision in comparison with the still current standard. Reports were eventually obtained from 13 different laboratories, of which 5 were in the U.S.A., 1 each in France, Holland, and Hungary, and 5 in Britain. In all, 90 determinations of the oxytocic activity of the new standard were reported from 12 of these laboratories and 38 determinations of the pressor activity from 9 laboratories; while 7 laboratories reported determinations of the antidiuretic activity involving the use of a total of more than 600 rats.

It was then at once obvious that, with very few exceptions, the results indicated a small but significantly greater activity for the new than for the current standard with respect to all the three types of activity for which the two had been compared. Two of the co-operating laboratories failed, indeed, to detect any difference in the oxytocic activities, and reported that the two standards appeared to be equivalent. All the others, however, found the new standard stronger in this respect, the highest oxytocic activity reported for it being 125% of that of the current standard. The weighted mean of the whole series of assays for oxytocic activity gave it a value of 111%. The values reported for its pressor activity varied, again, from 100 to 130%, and the weighted mean of all the determinations gave it a pressor activity of 113%. Of the 7 reports on its antidiuretic activity, 6 assigned it values between 107.5 and 122%, with a weighted mean of 116%. The seventh was quite aberrant from the others, giving a value of only 73%. It may be noted, however, that the inclusion of this aberrant finding in the calculation of the average would reduce the weighted mean of the antidiuretic values obtained for the new standard to only 112%, bringing it, in fact, into even closer correspondence with those obtained for the new standard's oxytocic and pressor activities.

By the time these results had been assembled and made available for analysis the outbreak of war had rendered it necessary to postpone, for an indefinite period, any project of an International Conference for personal discussion of their significance and of the appropriate action to be taken on them. The replacement of the current standard, however, before it had been exhausted in distribution, was becoming a matter of urgency, and it was accordingly necessary to arrive at an international agreement by correspondence. There could be no doubt that the new material was suitable for adoption as a standard, and it was further clear that the three important types of activity were represented in it in practically the same proportions to one another as in the current standard; so that the units of oxytocic, pressor, and antidiuretic activity could still be defined as the activities of one weight of the new standard. The only question to be discussed and decided was the weight of the new standard to be recognized as representing the unit in each case: should it remain at 0.5 mg., or should it be slightly diminished, in inverse proportion to the greater activity of the new standard? The following points required consideration in arriving at an agreed decision.

Points requiring Consideration

1. The decision to regard the standard material as giving to the unit an optimal rather than a fixed and arbitrary value must be considered still effective unless a new international agreement was made, for sufficient reason, to change it.

2. There were several features in the definition of the standard material which might be expected to give scope for variation in its activity. The limited experience available at the time of its adoption had not properly justified the assumption that every sample of material so defined would have precisely the same activity, wherever prepared. The material was to be the "fresh" substance of the "posterior lobes" of oxen, extracted with acetone and dried. Even if we allow that the last two procedures have end-points in complete extraction and desiccation, the interpretation given by different workers to the expressions "fresh" and "posterior lobe" could not safely be assumed to be precisely uniform. The activity of the material has, in fact, been observed to fall rapidly with increase of the interval between slaughter and the final stabilization of the dissected substance by acetone or rapid drying. Freshness in this sense, and consequently activity, may obviously vary with the efficiency of organization at the source. This might well improve during the 13 years between the preparation of the two standard materials, and any such improvement might further be accentuated by an increased use of refrigerants even during a quick transfer from abattoir to laboratory. Improved standards of dissection, again, might well give a more severe discrimination between the material to be retained as unquestionably "posterior lobe" substance and that to be rejected as more properly belonging to the stalk; while even small tags of completely inactive dura mater might easily have been included in some preparations of the material by hasty or imperfectly trained dissectors. In these different directions greater experience and perfection of procedure might easily account for the (average) additional 12% of activity shown by the new standard material.

3. The whole basis of biological standardization in units defined by fixed weights of standard preparations, since Ehrlich introduced this method for diphtheria antitoxin, has depended on the assumption that the standard itself has a practically indefinite stability. In the case of an antitoxic serum this is inevitable, since there is no independent basis of comparison and no natural upper limit to the activity of such a standard. All experience, moreover, has shown that such sera, when dried, have a high stability even in air at ordinary temperatures; so that there is no reason to suspect that a serum standard, when kept in perfectly dry nitrogen below 0° C., will suffer any appreciable loss of activity before it is due to be replaced by a fresh one.

In the case of the standard for pituitary posterior lobe the conditions are not identical with those for the sera. Even when the drying of the gland substance has been completed a measurable loss of activity occurs, sometimes in less than a year, if the dry product is kept without special precautions in air at ordinary room temperature. This would not justify an assumption that when sealed in perfectly dry nitrogen and kept at a temperature below 0° C. it would be subject to a significant loss of activity, even in many years; and the fact that none of the subsidiary standards made during its currency had proved to be stronger, while more than one had been somewhat weaker, was against the supposition that the current standard had suffered an important loss of activity during the 13 years since its preparation. Nevertheless it had to be recognized that a loss of activity of the order of 10% would be extremely difficult to detect in the absence of an independent and certainly stable basis of comparison, and that the presumption of perfect stability for this standard substance was not so overwhelmingly strong as in the case of the serum standards.

4. From the scientific point of view the maintenance of any unit of measurement without change has great importance. From the point of view of practical application, the avoidance of any possibility of a decline in the value of the unit is more important for remedies such as the pituitary posterior lobe preparations than for an antitoxic serum. With diphtheria antitoxin, for example, the effect of a small decline in the value of the unit over a decade or so—there is no reason whatever for suspecting its occurrence—would have been completely swamped in practice by the great increase, probably tenfold, in the customary dosage in units made possible in the same period by improvements and refinements of manufacture. Pituitary posterior lobe extract, on the other hand, cannot be given with a large margin of excess units to cover any possibility of a decline in unit value, since over-dosage may be as dangerous from excess of action as under-dosage from lack of effect in an emergency. In that respect its position is comparable to that of insulin.

5. Adoption of the same weight of the new standard as of the old—0.5 mg.—to represent the unit would involve an increase of the unit by not more than 15% of its *present* value. If the activity of the old standard had been constant for 13 years there would be this increase in the value of the unit as originally accepted, but it would be inappreciable in practice. It is to be noted, indeed, that several of the participants failed to detect it even in the laboratory assays made with the special care appropriate to the fixation of the unit value of a new standard. There was no risk, in any case, that such a fractional increase in value would be repeated indefinitely at successive replacements of the standard, since the complete preservation of the activity present in the perfectly fresh gland substance, as contemplated in the original definition, sets a natural upper limit; it is probable, indeed, that the slightly greater activity of the new standard represents a close approach to that limit, so that a further increase of value at later replacements is improbable. On the other hand, the possibility could not be excluded that the increase in the unit on its present value might represent a very slow deterioration of the old standard, with an average loss of about 1% of its activity in each year after its preparation; and if that were the case, a decision to fix the weight of the unit of the new standard at about 0.45 mg., to make it equivalent to 0.5 mg. of the old standard *at the replacement date*, and a continuation of this policy at successive replacements, would obviously involve the risk of a cumulative depreciation of the unit value which would eventually become of serious practical importance. It was necessary, therefore, to balance the disadvantage of a probable single increase of the value of the unit by not more than about 15% against that of a possible *succession* of depreciations of its value in the same proportion.

With all these considerations before them the participants in the preparatory investigation unanimously agreed that the weight of the new standard for the pituitary posterior lobe, representing 1 unit of activity, should be 0.5 mg., although this would entail an increase of the value of the unit of the order indicated at the time of adoption of the new standard.

Conclusion

Though such an increase in the value of the unit is not likely to be significant, or even appreciable, in practice, it will have a greater importance for the manufacturer, concerned to ensure that his product will not be found deficient if independently tested in comparison with the new standard preparation. The *British Pharmacopoeia, 1932,* in describing the assay of an extract for its oxytocic activity in comparison with the standard preparation, indicates the limit of error of the test as ±20%. It will be obvious that a product which had been passed for issue on a test made in comparison with the old standard, and which through testing error had a true activity nearly 20% below the indicated unitage, would incur a greatly increased chance of failure when compared with a standard some 15% stronger. While the existing conditions made it unusually important to avoid wasting material which, from the practical point of view, was not significantly weaker than its stated activity in units, it was also important that the small change involved in adopting the new standard should be made with the greatest practicable speed and unanimity.

Accordingly, the Hampstead Institute has issued a new Memorandum relating to the Second International Standard for Pituitary Posterior Lobe Preparations, in which the grounds for its adoption and for the redefinition of the unit, as above described, are discussed in detail. The new Standard and the Memorandum have been supplied to those countries at present accessible and to the Health Organization of the League of Nations at Geneva; and, in this country, the licensed manufacturers of pituitary (posterior lobe) extract have been notified of the changes indicated above and have been supplied with samples of the new standard preparation and the relevant Memorandum.

THE NON-TOUCH TECHNIQUE
WITH SPECIAL REFERENCE TO THE OPERATIVE TREATMENT OF SIMPLE FRACTURES

BY

H. A. T. FAIRBANK, D.S.O., M.S., F.R.C.S.
Consulting Surgeon, Hospital for Sick Children, Great Ormond Street, etc.

When Arbuthnot Lane (1894) first advocated the extended use of internal fixation in the treatment of simple fractures he insisted on a scrupulous aseptic technique. A technique founded on his original suggestions has become the routine practice of a large number of surgeons for every operation with the exception of those—e.g., abdominal operations—in which the introduction of the gloved hands into the wound is necessary. This is now known as the "non-touch technique," an essential feature of which is that a gloved finger is never allowed to come in contact with the wound or with anything introduced into it. When surgeons speak of the non-touch technique do they all mean precisely the same thing? The answer must, I think, be in the negative, particularly if the details are examined minutely. Assuming this view to be correct, it occurred to me that it might be useful to describe in detail the precautions which many surgeons consider advisable in every operation. It cannot be too strongly insisted that the scrupulous care inherent in this technique should not be regarded as called for only when a simple fracture is plated. If the precautions are accepted as advisable, even imperative, for the internal fixation of a fractured bone, they are surely advisable in every operation, with a few well-recognized exceptions.

The reason for the technique is that gloves are unreliable and cannot be guaranteed against perforation, particularly if forcible use of the hands is necessary. The technique and theatre routine described below are approximately those which, under the inspiration and guidance of Arbuthnot Lane many years ago, became the general practice of the surgeons working at the Hospital for Sick Children, Great Ormond Street. The same or a closely similar technique is now the routine practice in many other hospitals. Scrupulous attention to detail by all concerned with the operation is essential.

Theatre Routine

The skin over a *wide* area should receive a double preparation, with an interval of some hours between them, before the case is taken to the theatre. On the table the part is again painted with a solution of iodine or other preparation. The operation area is surrounded by a generous supply of sterile mackintoshes and towels, the latter being firmly clipped together and to the skin. If it is necessary to palpate the part before making the incision the skin is covered with a sterile towel or a swab consisting of several layers of gauze.

All instruments, swabs, etc., are dry: no germicide is used except that in which ligatures and suture materials are normally kept. Dissecting forceps, artery clips, retractors, and, in fact, the instruments generally, are long, so that the hands are kept well away from the wound. The theatre sister holds an instrument with forceps when passing it to the surgeon, or at any rate carefully avoids touching "the business end." All needles are threaded with the help of two pairs of forceps, and are passed to the surgeon gripped in a needle-holder. Ligatures, if used at all, are touched only with forceps and scissors and they are tied with forceps. Swabs, preferably of dry gauze, are never handled by anyone: all swabbing is done with forceps. The chief assistant is never without a pair of dissecting forceps in one hand for this purpose. Instruments used for any length of time, or forcibly, are resterilized. The knife employed for incising the skin is discarded, and a fresh knife taken for the deeper dissection. When the bleeding vessels have been secured and the wound is dry, the cut edges of the skin may be painted with iodine solution. Towels, tetra-cloths, or "veils"—call them what you will—are clipped *over* the edges of the wound, special care being taken at the extremities of the incision, to exclude the possibility of any instrument, suture, or swab coming in contact later with the raw edges of the skin. Experience shows that it is necessary to stress this point: it is the cut edge and not the surface of the skin which is the special danger. If the wound is large, towels may be used; if smaller, a sheet of close-mesh butter muslin is more convenient. I prefer specially prepared sheets of waterproof batiste between layers of muslin or gauze for this purpose. Lane insisted that the skin-edge clips should be long and heavy, so that they lie well away from the wound. For the vessels he preferred the Mayo-Ochsner type of clips, which are not only long and heavy but are powerful enough to crush the vessels and make ligatures unnecessary for any but the larger vessels. For feeling, blunt dissection, etc., a Buchanan's dissector is a most useful instrument. A needle-holder is indispensable: all sutures, including those in the skin, are tied with this and a pair of dissecting forceps.

In the open method of fracture treatment there is one, and only one, additional precaution to be taken. On a table beside the instrument table is a small sterilizer, the water in which is kept on the boil throughout the operation. All drills, screws, plates, nails, wire, etc., are left in this till required. Screw-holders, plate-holders, screw-drivers, etc., shortly before use are transferred from the instrument table to the small sterilizer, the handles projecting over the edge. After use on each occasion these instruments and the drill are returned to the sterilizer till again required. The business ends of the drill and screw-driver are returned to the boiling water after the insertion of *each* screw. In short, any non-absorbable foreign body that is to be left in the wound, and every instrument that comes in contact with these, is guarded from air-borne infection so far as is possible.

Points in Fracture Treatment

Before deciding to operate on a closed fracture that cannot be satisfactorily dealt with by other methods, the surgeon should never fail to ask himself these among other questions Is this a reasonably easy carpentering job? If I tackle it, have I a good chance of achieving something approaching anatomical perfection? Is there enough accessible bone on both sides of the fracture for the number of screws necessary to maintain the position securely? If not, can the fragments be held securely by some other device?

A few other points may be mentioned. The best period during which to operate on a simple fracture is, in my opinion, the second to the fourth day after the accident. This gives the patient time to recover from the injury, and the surgeon time to make the necessary arrangements for the operation and to have the patient's skin carefully prepared. Two assistants are necessary besides the sister in charge of the instruments. Lane insisted on a generous incision giving free access to the fragments, due regard being paid to the avoidance of damage to important structures. He stripped the periosteum from the bones, and this certainly facilitates exposure of the bone ends, the clearing of clot and muscle, and the reduction of displacement. It is questionable whether stripping the periosteum is altogether wise, and some surgeons prefer to do as little of this as possible. The subperiosteal operation gives rise to less bleeding in a *recent* fracture. Retraction of muscles is achieved with long levers, the curved ends of which are slipped beneath the bone. Lane's tapered lever with serrated edges ("rotating instrument") is useful between the fragments for sliding one on the other and overcoming shortening.

In a transverse fracture, angulation of the limb at the site of fracture till the ends of the fragments engage, followed by straightening the limb, used to be of value more often than it is in these days of orthopaedic tables with facilities for mechanical extension. Peter's lion forceps (double- and single-claw), with a screw to lock the handles, are invaluable for holding the fragments in place while the screws are inserted. When difficulty is experienced in preventing the fragments from slipping, and particularly when a third fragment of some size is present, it may be helpful to include the plate as well as the fragments in the grip of the forceps. The plate must be bent till it accurately fits the surface to which it is applied.

There must be no spring exerting a pull on the screws. Plates should, if possible, be applied to a surface of the bone that is covered by muscle, and they must be stout enough to make bending or breaking improbable. Drills must correspond to screws: soft or cancellous bone calls for smaller drills than hard bone. Lane advised that screws should pierce the distal compact bone only in young children. Particular care has to be taken that the drill-holes for the first two screws correspond with the centres of the holes in the plate, or the fragments may be slightly distracted—an undesirable though fortunately not necessarily a fatal fault. Screws should be driven home tight. The number of screws inserted in each fragment *must* be adequate for the work they have to do. For the femur, at least four screws in each fragment are necessary; for the tibia three screws; and for the radius and ulna two screws in each fragment. One of the commonest mistakes is the use of too short a plate and an insufficient number of screws. Another common fault is inadequate post-operative external splintage, or, if adequate, not maintaining this splintage long enough. These errors all lead to undue strain on the screws, which become loose, with disastrous results. It is not always remembered that with internal fixation of the fragments callus is reduced to a minimum, and in many cases no provisional callus whatsoever is formed. External splintage is necessary for a longer period, if the shaft of a bone is involved, than if a fracture is treated without operation, the apposition of the fragments being equally good in both. In the forearm the fragments may be sufficiently stable when placed in apposition to make a plate unnecessary.

The Vitallium Screw

Vitallium screws, long enough to pierce the cortex on both sides of the medullary canal, are coming into fashion, and some surgeons are showing an inclination to rely entirely on them, no splints of any kind being used. This tendency must be watched: careful judgment is necessary if disasters are to be avoided. Incidentally it is my opinion that the introduction of vitallium should not be regarded as the solution of all our troubles. Great care to guard against sepsis is still just as necessary as it was. I consider that trouble with plates and screws points to a faulty technique on the part of the surgeon. Screws become loose because they are subjected to too great a strain or because they are infected, or both. The theory of electro-chemical irritation around a steel screw is attractive but not very convincing. How do the supporters of this theory explain the by no means rare experience of finding, when removal of steel screws is called for long after their insertion, that one screw is loose while its neighbour can only be removed with the help of a screw-driver? The thread of the vitallium screws reaching this country seems to be quite unnecessarily fine: a coarser thread would, I think, be an advantage. Wires and bands around the shaft of a bone are to be avoided as a rule. Wire rarely affords adequate fixation in the shaft of a bone: disasters following the use of wire are fortunately less common than they were. Parham bands, an attractive device for an oblique fracture of a shaft which is of even diameter in the region of the fracture, are dangerous. If used at all they should be removed later. In the absence of all obvious signs of infection a circular line of absorption of the bone may occur beneath the band, and as there is no subperiosteal callus formed whatsoever, this may weaken the bone to a dangerous degree.

There are definite indications that the pendulum, which I think had swung rather too far from operative to non-operative methods of treatment for simple fractures, is swinging back towards the more extended use of internal fixation. This tendency will need careful watching, or the pendulum may again swing too far.

Finally, I venture to remind my readers that cutting down on a simple fracture is not an operation to be lightly undertaken by any surgeon. Like many another specialized operation, it is a justifiable procedure only in the hands of a surgeon with the necessary training and, above all, one whose technique is above reproach.

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SURGICAL AMPUTATIONS AND THE FITTING OF ARTIFICIAL LIMBS

BY

A. W. J. CRAFT, M.R.C.S., L.R.C.P.

Limb-fitting Surgeon with the Ministry of Pensions, Queen Mary's Hospital, Roehampton

I would like first to express my indebtedness to the Ministry of Pensions, including all the surgical, medical, and technical officers, for granting facilities to make use of the data and information collected in the past 25 years, and in particular to Dr. R. Langdale-Kelham, the senior limb-fitting surgeon to the Ministry, with whom I have worked for some time and who has given me the opportunity of studying the question of fitting of limbs in detail. It is hoped the information and suggestions incorporated in this paper may be of some service to surgeons and possibly to amputees.

Amputations and Rehabilitation

Amputations have been recorded in many surgical textbooks over a number of years, particularly since the advent of aseptic surgery. The types and sites of similar amputations have varied, with the result that a difficult problem is left in many instances for those called upon to supply the prosthesis. It is stated that a good limb-maker should be able to provide a suitable prosthesis for any type of amputation, whether following a surgical operation or due to a congenital deformity. This is quite true, but it is definitely established from results of limb-fitting during the past 25 years that only certain lengths and types of stumps render the amputee free from further surgical attention. Also, latterly the artificial limb has been improved and re-designed to cause less strain and give more comfort to the wearer.

When an amputation is performed upon any limb it starts a new phase in the life of the amputee. He must rehabilitate himself, and rehabilitation is obtained only by co-operation between the patient, surgeon, and all responsible for the treatment of the stump up to and including the actual fitment of the prosthesis. There are three main objectives: first, the surgeon should provide a stump which will not require any further surgical attention; secondly, the nursing staff and others concerned should treat the stump by correct bandaging and exercises, so that it may be fitted in the shortest time with a prosthesis of a design suitable for the patient's future work; thirdly, the patient should be taught to use the prosthesis correctly to enable a speedy return to his original work or some other suitable employment, and so remove the fear of being styled a "cripple."

With the exception of Service cases from the last war it can be stated generally that surgeons have not been able to follow up and watch closely the results of amputations they have performed. Once the operation scar is healed the amputee leaves the hospital with little instruction upon the care of the stump or of the prosthesis he obtains. If the stump breaks down for any reason the amputee consults his own doctor, who may have had little experience in the treatment of such cases.

During the latter part of the war of 1914–18 the Ministry of Pensions set up an organization, with its main centre at Roehampton and 17 centres in the provinces, to provide all Service amputees with prostheses, to supervise the fitting, and to repair broken or worn parts. A very important feature was the regular inspection of the amputations, with the appropriate treatment when required. Records of this work were carefully summarized, with the result that valuable information was obtained, as I shall attempt to show.

Above-knee Amputations

Weight-bearing.—Nature has so developed the human body that, when walking, the weight is borne by the foot, and when sitting by the ischial tuberosity. If the lower limb is amputated at any level the weight ought therefore to be supported by the ischial tuberosity. About 20 years ago most amputees took the weight upon the end of the stump, but within five years over

75% of such cases were corrected. A number had to be re-amputated for surgical reasons, while others were altered before the end of the stump had deteriorated. One seldom now sees a case in which the weight is taken by the end of the stump: such amputations as the Stokes-Gritti and the transcondylar were re-amputated. This above-knee stump fits into the "socket" of the prosthesis, made of metal or wood, carefully shaped so that the ischial tuberosity rests on the inner edge, the patient thus sitting in the socket. Upon walking he naturally lifts the stump a trifle out of the socket, producing a slight "piston" action which is by no means detrimental to the stump except when the scar is terminal and adherent to the amputated end of the femur. Also there should be no scar tissue near the ischial tuberosity, the head of the great trochanter, or the upper part of the thigh, if this can be avoided.

Musculature.—The muscles of the thigh are used by an amputee to control the prosthesis in exactly the same manner as by a normal walker. The flexor muscles enable the stump to lift the prosthesis upward and forward, the lower part being swung forward at the knee-joint. The heel is then pressed on the ground and the extensor muscles push the socket backwards, extending the knee-joint and maintaining it in full extension. Diagram 1 shows the stump control of the prosthesis and the position of the scar. The adductors and abductors control the balance of the amputee on the limb as with a normal person; therefore during amputation as much as possible of these muscles should be left. With the ideal stump length, discussed later, only a small portion of the adductor magnus is removed, as shown in Diagram 2. The extensor muscles should be severed so as to end about half to one inch above the scar in order to avoid adhesion between the muscle ends and the scar tissue.

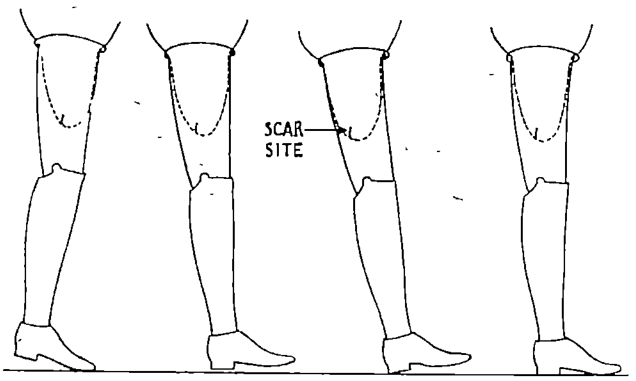


Diagram 1

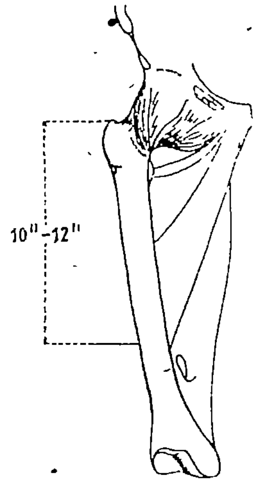


Diagram 2

Diagram 3

Stump Length.—The experience of the past 20 years and the periodic examination of stumps clearly indicate that the ideal length is between 10 in. and 12 in., as measured from the tip of the great trochanter to the amputated end of the femur. Such a length requires no further surgical treatment and affords adequate control of the prosthesis. A number of amputees with a longer stump experience circulatory troubles, while many have had to undergo re-amputation.

Scar.—With the ideal stump there is an ideal site for the scar, as depicted in Diagram 1. The larger anterior flap method ensures a transverse posterior scar about 1½ in. from the end of the stump. If complete haemostasis is obtained no drain is required and the wound will heal quickly. There are many reasons for choosing this position, the chief being that the scar will never have any direct pressure exerted upon it by the use of the prosthesis and also that there will be no traction over the scar such as would occur if it were terminal.

Flaps.—The flaps need only contain enough tissue to maintain their own nourishment; any superfluous tissue may cause discomfort in the wearing of the prosthesis.

Sciatic Nerve.—Various methods of dealing with this nerve during amputation, such as crushing, ligaturing, or injecting the end of the nerve with alcohol or similar substances, have been described in textbooks. Some of these procedures are unfortunately still in use, with the result that there is often a great deal of pain, and in numerous cases "phantom foot" is felt. The nerve should never be crushed, ligatured, or stretched. It should be treated as carefully as possible, being very delicately dissected out of the musculature and severed a little shorter than the cut muscles to prevent adhesion of the nerve-end. The artery of the nerve may in exceptional cases need tying.

Short Above-knee Stumps

If a stump has to be shorter than the ideal just described the amputation should be guided by the above principles, the chief consideration being to leave as much of the adductor musculature as possible, while at the same time removing all pathological tissue to obviate any further surgical intervention. It must be stressed that there should be no complete disarticulation of the head of the femur unless this bone or part of the joint is diseased. After amputations which leave about 4 in. of femur a special prosthesis is designed, because this short stump cannot be accommodated in the ordinary type of socket and there is no stump control. This short stump is flexed to 90 degrees from the normal position and a socket fitted half-way round the pelvis. The projection of the end of the femur, together with the natural contour of the body with the femur in position, allows the patient to wear the socket comfortably. With a complete disarticulation the socket tends to slip down and rotate on the body with every step taken. Whenever possible it is desirable to leave a part of the head of the femur for the comfort of the patient (Diagram 3).

Below-knee Amputations

With an ideal amputation and a correctly fitted limb it should not be possible to detect that a prosthesis is being worn. Examination of hundreds of cases shows that long stumps break down from circulatory disturbances, while a chronic bursitis is the result of taking the weight of the body on the head of the tibia. Modified Syme's amputations and long stumps that have taken end-bearing often call for re-amputation. The following are three important points:

1. Weight-bearing in the past has been largely taken by the head of the tibia, with a leather corset fitted round the thigh for some support. Many cases are being seen in which the resultant bursitis is too painful to allow of a continuance of this method. A longer corset is now fitted which will take the full weight on the ischial tuberosity.

2. The calf muscles should be cut away to produce a conical-shaped stump with their ends just above the resultant scar. A soft flabby stump is more uncomfortable and more difficult to fit than a thinly covered one.

3. Stump length is measured from the inner articular surface of the tibial head to the amputated end of the tibia, and all that is required is 5 to 5½ in. The fibula must be at least half an inch shorter than the tibia, otherwise bony union occurs, causing pain at the stump end or, at times, at the head of the fibula. The head of the fibula should not be removed except for pathological reasons. The front sharp edge of the amputated tibia

should be bevelled to prevent its wearing through the skin. The scar should be about 1 in. from the end of the stump on the posterior surface, formed by a large anterior flap with no superfluous tissue. This site will prevent adhesion to the bone-end. The nerve should be treated with extreme care and not be subjected to trauma by crushing or ligaturing.

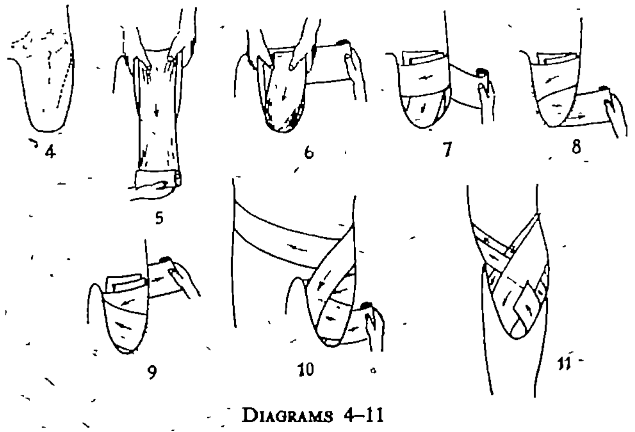
Stump Treatment

Care and treatment of the amputated limb are almost as important as the amputation itself, and should begin from the day of operation. The stump does not require a pillow or pad to rest upon, but ought to lie extended, while in the case of a below-knee amputation a back splint is often necessary to prevent flexion of the knee-joint. After the stitches have been taken out and the wound is healing, active exercises should be started while the stump is still bandaged. Movements of the joints must be encouraged, to tone up the muscles and assist in tissue reduction in the stump. Massage has been shown to be inadvisable. Furthermore, it does not reduce the oedema, but rather irritates the nerves, and should therefore not be given at any stage during recovery.

A temporary walking-leg or plaster pylon has been used in former days with the claim that it reduces terminal oedema and oedema of the stump as a whole. This pylon could not be ordered until the wound was healed and the scar consolidated, which with an above-knee amputation often took a month or more. Then the pylon was ordered and made in a week or so. The patient wore the pylon, in an effort to reduce the oedema, for a further month. I have kept careful record of measurements of stumps which had pylons fitted and of the amount of oedema reduced. In some cases the oedema actually increased; in some it remained stationary; while in a few there was a slight reduction but the patients had acquired the very distinct "pylon" swing, which was very difficult to overcome when the completed prosthesis was worn. It will be seen, therefore, that it was about 10 weeks before the artificial limb could be ordered. The pylon is now only used in special cases.

The modern method devised by the Ministry of Pensions and adopted by the E.M.S. is to bandage the stump with crêpe bandages from the time the stitches are taken out. It has been proved from records compiled at Roehampton that an above-knee stump requires only three weeks' bandaging to render it fit for measurements to be taken for an artificial limb. Thus with this above-knee site actual limb-fitting can take place in less than 8 weeks from the day of amputation, resulting in a great saving of time and expense, and the earlier return of the amputee to work.

In bandaging above-knee stumps it is imperative to use crêpe bandages 6 inches wide. At present they are not made long enough, so that two have to be sewn together. The bandage must be wound tightly and evenly, otherwise the necessary firm application to the stump cannot be obtained (Diagrams 4–11).



DIAGRAMS 4–11

The end of the bandage must be applied to the upper front surface of the stump and be held securely by the patient's thumbs. It is then passed down the front of the stump, back over the end, pulled tightly with even pressure to the upper part of the posterior surface of the stump, and held by the patient's fingers. This process is repeated by bringing the bandage down the back of the stump, over the end to the starting-point—still being held by the patient's thumbs—and drawn down over the end to the back of the stump.

The patient must not allow the tension to slacken in the bandage, which thus supports the tissues in the end of the stump. The bandage is next applied round the upper part of the stump to hold the first applications, and firmly enough to allow the patient to remove his hands. It is brought round the end of the stump very tightly so as to compress the tissues, but not too tightly round the upper part. If the bandage was finished off in this manner it would tend to slip down and off the stump when the patent walked about. To prevent this it is applied round the waist as shown in Diagram 10, and finally round the stump (Diagram 11). Particular care should be taken that the crossing of the bandage on itself when applied round the waist occurs at the side of the body and not on the front, otherwise there will be a tendency to flex the stump. This bandage should be reapplied three or four times a day to take up the new shape which results from reduction of the oedema. Figures are available which show that stumps treated in this way have uniformly shrunk 2 in. in circumference in less than 14 days, thus rendering limb-fitting possible.

The application of a 4-in. bandage to an above-knee stump is useless. Furthermore, the method of applying a crêpe bandage tightly at the upper part of the stump and bandaging downwards will retard the reduction of oedema because it imposes a constriction on the upper part.

To treat a below-knee stump a 4-in. crêpe bandage is applied as in the above-knee method. Three slings are used to support the oedematous tissue, and the bandage is applied tightly and firmly around the end. The bandage is taken above the knee to prevent it slipping off the stump, but the front of the knee over the patella is left free so as to afford mobility to the knee-joint.

Stump Exercises.—A recent development in the care of stumps after amputation is a course of exercises adopted to re-educate the remaining muscles of the stump and thus prepare it to control the artificial limb. A narrow sleeve, about 4 in. wide at the back and 2 in. at the front, from which a cord passes over a pulley and suspends a weight of 7 to 14 lb., is placed on the stump as shown in Diagram 12A. The stump is extended against the pull of the suspended weight to assist the musculature in regaining its strength—the weights, rate of exercise, and duration varying with the increase in muscle tone. The adductors are similarly exercised by the patient's standing with his side toward the pulley, the stump being drawn towards the midline of the body. If the patient is at home the exercise can be carried out by allowing the cord to pass over the back of a chair upon which somebody is sitting to steady it (Diagram 12B).

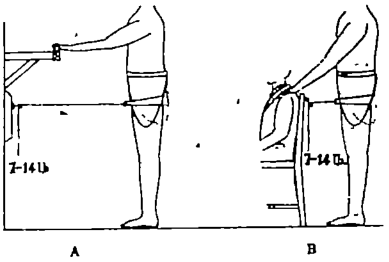


DIAGRAM 12

Arm Amputations

Arm stumps are not weight-bearing, and are subject to quite different strains and stresses from those of the lower limb. Long arm stumps are not so liable to circulatory disturbance, except the very long ones which are produced by disarticulation through the wrist and elbow. The ideal length of an upper-arm amputation in an adult is 8 to 9 in., measured from the tip of the acromion process to the amputated end of the humerus. If the stump has of necessity to be made shorter, at least half an inch of humerus should be left below the axillary fold, thus enabling good control to be maintained over the artificial arm.

If a still smaller length has to be fashioned, every endeavour should be made to leave some part of the head of the humerus. The scar should not be on the anterior or posterior aspect of the stump because pressure is exerted on these surfaces in using the arm. A terminal scar from equal anterior and posterior flaps is ideal, with again little tissue in the flaps and a conical stump. Adhesions of the musculature to the end of the humerus must be avoided. This latter consideration is the chief objection to guillotine operations, which are otherwise satisfactory.

The length of the lower-arm amputation is measured from the tip of the olecranon to the amputated end of the ulna, and should be about 7 in. with the elbow flexed. The radius should be at least half an inch shorter than the ulna to obviate cross-union, and a conical stump be produced for the comfort of the patient and to permit him to use the prosthesis. The scar should be terminal in a line across the ends of the bones, and the flaps should contain no superfluous tissue. The nerves must be cut across cleanly to avoid the "phantom hand."

If an amputation has to be carried out with a shorter length than that suggested above, it will not prevent the amputee from using an artificial arm if at least three and a half inches is allowed to remain, but in such a case more muscle tissue must be trimmed away and a real bony stump left. If as a result of an accident, disunited fracture, or other cause a surgeon is confronted with a disarticulation of the elbow- or wrist-joint, an ideal site amputation is preferable, because these disarticulations do break down repeatedly. Furthermore, artificial arms must have a rotary mechanism at the wrist, and an above-elbow prosthesis will have the elbow-joint together with a rotary arm mechanism. These points are often forgotten when disarticulation amputations are performed.

In all arm amputations the patient should be encouraged to use the proximal joints and truncated muscles as early as possible. Crêpe bandaging with 3-in. bandages is used when the stitches are removed. An arm amputee usually has a more despondent outlook than a leg case. It is for this reason that such cases should be fitted with prostheses as quickly as possible, otherwise there is a tendency to rely too much on the remaining hand. An arm can in the average case be fitted and used within a month of the operation.

Amputations of parts of the hands which have suffered trauma are indeed difficult. If any two working digits, or the thumb or part of it with a digit, can be saved it should be done to form the basis of a working hand. It is, however, surprising what appliances can be fitted to mutilated hands which may have only the minimum of a digit.

Amputations in Children

Children may have a limb amputated as a result of trauma, bone disease, congenital deformation, or aerial bombardment. These cases should all be treated early, for a child will quickly learn to use a leg or an arm with great ability. A plaster pylon or peg-leg should not be advised for the use of a child.

Summary

Records compiled by the Ministry of Pensions during the past 25 years definitely show that periodic examinations of amputated stumps are desirable.

The most suitable and trouble-free lengths of stumps, the position of the resultant scar from correctly fashioned skin flaps, and the treatment of the severed nerve are indicated.

In the past, stumps have received but little supervised attention with regard to their preparation for the fitting of a prosthesis.

A new method of crêpe bandaging is now used, the results of which prove its efficacy in reducing the oedema in a much shorter time than by previous methods. Pylons are not necessary, generally speaking. A course of exercises assists in preparing the stump musculature to control the artificial limb.

Arm amputations, not being weight-bearing, necessitate a different position for the scar. The stumps require bandaging and exercises to encourage the greatest range of joint mobility. The artificial arm should be fitted as soon as possible.

Children should not be fitted with non-articulated peg-legs. They should have a prosthesis at an early age, whether they be arm or leg cases.

RENAL IMPAIRMENT DUE TO CRUSHING LIMBS IN ANAESTHETIZED DOGS

BY

M. GRACE EGGLETON, D.Sc., M.R.C.S.

K. C. RICHARDSON, M.Sc.

H. O. SCHILD, M.D., Ph.D.

AND

F. R. WINTON, M.A., M.D., D.Sc.

Impairment of renal function in dogs under nembutal anaesthesia ensues immediately after a period of 4 to 5 hours, during which both hind limbs have been tightly bound with rubber tubing from ankle to hip and the thigh muscles compressed in a vice and hammered for a few minutes. Removal of the bandage is followed by a large fall in arterial pressure, and by either anuria or severe oliguria. In the latter event the urine is deeply pigmented, presumably with myohaemoglobin, which is freely excreted by the normal kidney, and the creatinine clearance is very low, which might be attributed in part to the low arterial pressure. Restoration of the arterial pressure with intravenous gum-saline or ox serum usually initiates or increases the urine flow; but even if the flow is raised to its initial value with diuretics the creatinine clearance, and therefore the concentrating power of the kidney, recovers to only about one-quarter of its original value.

The low arterial pressure following release of the limbs is not responsible *per se* for the damage to the kidney, since maintenance of even a lower blood pressure for an hour by means of a histamine infusion does not involve reduction in creatinine clearance during a subsequent period at normal arterial pressure. The reduction in urine flow after release of the limbs does not in itself account for the renal damage, since prevention of this reduction by diuretics does not materially affect the degree of the ultimate damage.

The damaged kidneys respond to large doses of diuretics with large increases in urine flow but only small increases in creatinine clearance, which may reach about one-half the normal value. In these respects we did not detect a significant difference in the efficacy of intravenous administration of hypertonic sodium chloride, isotonic sodium chloride, sodium bicarbonate, or sodium sulphate. The depth of colour of the urine from damaged kidneys was not consistently related to the severity of the damage as indicated by fall in creatinine clearance. The nature of the pigment was not examined in this series of experiments. Dr. Rimington has, however, identified the pigment in urine secreted under similar conditions in a later series as mainly myohaemoglobin.

Post mortem there was extensive injury to and oedema of thigh muscles, but no fracture of bones. The kidneys showed a brown cortex and a distinctively bluish-pink medulla, often with a narrow light-coloured zone between the two. The kidneys were notably flaccid, in contrast with the tense kidneys normally found after experimental poisoning.

Microscopically, the kidneys were characterized by the presence of material within the lumina of the tubules which might have been capable of blocking some of the tubules. The material was particularly concentrated in the terminal portion of the proximal convoluted tubules. The distal and collecting tubules were usually free and distended. There was, however, no consistent relation between the extent of the deposit and the impairment of renal function; and, indeed, extensive deposit occurred in some kidneys which were functionally undamaged. In the only dog in which the anuria could not be antagonized even by huge doses of diuretics there were mitochondrial changes in the proximal tubule cells, indicating the action of a poisoning agent.

Discussion

In these observations on 21 dogs we used the reduction in creatinine clearance as the chief indicator of renal damage because, like the inulin clearance, it is probably a measure of the glomerular filtration rate in the dog unless there is leakage of creatinine from the concentrated urine in the tubules back into the blood. The renal damage described above is probably not due mainly to *reduction in glomerular filtration rate,* because oliguria from this cause is associated with very high creatinine and low chloride concentration in the urine, whereas in these experiments the creatinine concentrations are low and the chlorides may be increased. Microscopically the damaged organ appears fairly vascular.

Blockage of the tubules, suggested as a possible factor by the appearance of the deposit in them, should produce a tense kidney, in contrast with the striking flaccidity observed in these damaged kidneys. The deposit does not appear compact enough, nor does it occur in a sufficiently high proportion of tubules, to lead one to expect that it could reduce the creatinine output to one-quarter. A more likely hypothesis would involve release of a *poison* from the damaged limbs that affects the *tubule cells* by increasing their permeability to creatinine, urea, and other substances which are concentrated by the kidney. These substances would diffuse from the concentrated solution in the distal parts of the tubules across the tubule walls to the blood in the venules. Hastening the flow of liquid down the tubules with diuretics should reduce the loss by leakage of creatinine and so increase the creatinine clearance, an expectation which accords with observation. The main objection to regarding this as a self-sufficient hypothesis. is that poisons such as cyanide or mercury salts produce an increased urine flow, due to inhibition of water reabsorption, before they produce the anuria due to increased permeability. Correspondingly, organs poisoned in this way are usually tense. This is, however, not an insuperable objection to the view that the poison here in question affects the permeability mainly.

Such a poison might reach the tubule cells either from the blood stream or, if diffusible, from the lumen of the tubule. In the latter event the poison itself might well be a substance which is concentrated in the tubules, and act the more potently in virtue of its concentration. This possibility has, however, been excluded in the following way. Partial obstruction of one kidney by an increase of ureter pressure resulted in a fourfold concentration of urine (as evidenced by creatinine-U/P ratio) compared with the unobstructed side. If the toxic agent released from the limbs had been similarly more concentrated on the obstructed side the severity of the damage should have been greater on that side. In fact, the obstructed side, after removal of the obstruction, was, if anything, a little less severely damaged than the unobstructed side.

So far as available evidence goes, the injury to the kidneys in our series of dogs appears to be of the same kind as that in man after comparable prolonged crush injury to the limbs. The essential nature of the renal damage has not yet been determined, but the evidence suggests that the main factor may be concerned with increase in permeability of the renal tubules due to a toxic agent released from the damaged limbs, while there may be an additional factor involving reduction in the rate of glomerular filtration probably due to lowering of glomerular capillary pressure.

VARIATIONS IN THE RESPIRATORY RHYTHM OF PROGNOSTIC SIGNIFICANCE IN MALIGNANT HYPERTENSION

BY

H. O. GUNEWARDENE, M.B., B.S., D.M.R.E.
Radiologist, General Hospital, Colombo

Recently I drew attention to variations in the respiratory rhythm in a case of malignant hypertension in its terminal stages (Gunewardene, 1938). A similar type of respiration has been noticed in cases of meningitis (Hutchison and Hunter, 1929). The characteristic feature is that the respirations are grouped; in each group the initial excursion in the tracing is the largest, the subsequent ones getting smaller, until the movements cease for a moment. This means that the depth of the respiration gradually declines as in the waning phase of Cheyne-Stokes respiration. In that case, however, there was no period of apnoea.

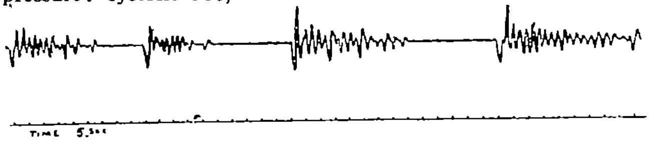
This type of respiration is seen in the terminal stage of malignant hypertension when pronounced albuminuria, persistent hypertension, and extensive eye changes (haemorrhages, exudates, cotton-wool patches, oedema of the disks, etc.) are present. The patient is generally quiet and lies flat on the back without a suggestion of the breathlessness of the cardiac type which previously had been well marked. A little restlessness, not continuous, is often observed; he opens his mouth frequently and breathes as though he is yawning half-heartedly. Occasionally he is irrational. Sometimes there is maniacal excitement; at other times a little drowsiness suggestive of a uraemic state. Uraemic twitching or convulsions were not observed.

These variations in the respiratory rhythm in association with malignant hypertension have not been described before, so far as I can gather from the literature available in Ceylon. Their cause has yet to be explained. Are they due to cerebral oedema, or to the effects of toxins on the respiratory centre? Is the alteration in the chemistry of the blood responsible for them? Eyster has shown that Cheyne-Stokes breathing can be produced in dogs by a rise and fall of the blood pressure in the presence of raised intracranial pressure.

In the following case, grouping of respiratory movements similar to those in the case referred to above was noticed, but each group was followed by a period of apnoea. The tracing is unlike Biot's type, but resembles that of Cheyne-Stokes respiration with the waxing phase absent. The rhythm is irregular and the depth of the respirations varies.

Case Report

The patient, a male sedentary clerical worker aged 42, was admitted on March 7, 1939, complaining of occasional occipital headache, giddiness on and off, and blurring of vision. He was lying quiet, but a few days previously he had been very dyspnoeic. Examination revealed the following characteristics. Heart: heaving apex beat—in fifth space, midclavicular line: second aortic + + ; no murmurs. The lungs were clear. Blood pressure: systolic 300, diastolic 180. The brachial and radial arteries did not feel much thickened, nor did palpation suggest such high pressure. Pulse 78, regular. Urine: scanty; S.G. 1010; albumin 0.7%; no sugar. Fundi showed oedema of the disks; flame-shaped haemorrhages, exudates, thickened arteries, very congested veins. Blood urea, 224 mg. per 100 c.cm.; urea clearance, mean 7.26% normal.



Treatment consisted of venesection; administration of sodium nitrite, theominal, etc.

During his stay in hospital the blood pressure varied between 210/140 and 260/170 (not eliminating effects of drugs). He became somewhat irrational, yawned half-heartedly, and later became a little drowsy and quiet Just before his death (under ayurvedic treatment) on April 7, 1939, he complained that he "couldn't breathe." The accompanying illustration shows the respiratory tracing (thoracic) of this case.

According to Harrison (1939), the carbon dioxide tension in malignant hypertension is abnormally low and patients with periodic breathing have arterial blood which is under-ventilated as regards oxygen and over-ventilated as regards carbon dioxide. It has also been shown that the administration of carbon dioxide abolishes periodic breathing. The fairly sudden transition of a dyspnoeic, sometimes orthopnoeic, patient into a condition of tranquillity would suggest that changes in the chemical constituents of the blood gases and the tissue fluids play a significant part in the production of periodic breathing and the cessation of dyspnoea.

Summary

A form of variation in the respiratory rhythm associated with malignant hypertension is described.

There are changes in the periodicity as well as the depth of the respiratory movements.

These changes are of grave prognostic significance even when the patient does not look seriously ill, the duration of life in the cases described being not more than 6 weeks after their onset.

I gratefully acknowledge the co-operation of Dr. J. R. Blaze and Dr. Cyril F. Fernando, under whose care the patient was; also the kind services of the Physiological Department, Ceylon Medical College.

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VACCINATION IN GLASGOW DOCKS

BY

GEORGE BUCHANAN, L.R.C.P., L.R.C.S. D.P.H., D.P.A.
Medical Officer, Clyde Navigation Trust

AND

STUART LAIDLAW, M.D., B.Sc., D.P.H., D.P.A.
Senior Assistant Medical Officer of Health, Glasgow

The following is an account of an investigation into the potency of vaccine lymph and the effect of vaccination on the sickness and industrial accident rates among Glasgow dock workers.

As a result of small-pox of a severe type occurring in Glasgow, the medical officer of health, on June 29, 1942, issued an appeal for mass vaccination of the city's population. Since the disease had presumably entered through the Port it was felt that every endeavour should be made to have dock workers vaccinated at once. At all times close co-operation is maintained between the city's health services and the Port Authority (Clyde Navigation Trust), so that the drawing-up and completion of the scheme here outlined naturally fell to be dealt with by us. The scheme was approved by the medical officer of health, the Clyde Navigation Trust, and the port regional director.

Outline of Scheme

The first essential was to carry out vaccination promptly and with the minimum interference with the normal working of the harbour; secondly came the necessity of informing the dock workers of the need for vaccination; and, thirdly, conveniently situated vaccination centres had to be established in the Docks.

It was decided to utilize the existing gas-cleansing stations in each dock as vaccination centres and, on the day before the opening of the centres, to make use of a broadcasting van to explain the need for vaccination and to announce the time and place for workers to attend. This scheme answered extremely well, and over 60% of the workers in the Port of Glasgow availed themselves of the opportunity. The medical and nursing staff employed were directed to pay particular attention to the technique of vaccination as outlined by Sir Alexander Macgregor in his communication.

Result of Vaccination

Of the lymph used 95% was supplied by the Government Lymph Establishment, the remaining 5% being from other manufacturers. Our impression was that the Government lymph was somewhat more potent, although all the other varieties gave satisfactory reactions. The follow-up of many of the workers was far from easy owing to the constant changes of working shifts and the movement of gangs of dockers from one dock to another as ships arrived and departed, and we, of necessity, had to satisfy ourselves with records of 1,000 out of the total vaccinated. The accompanying table shows under four headings the results we obtained. (A) Severe reaction evidenced by constitutional upset, enlarged axillary glands, fairly extensive localized reaction, with inflammation extending from the pock sometimes up to the shoulder and down to the forearm. (B) A normal vaccination pock with little or no constitutional upset. (C) An immune reaction sometimes described as the papule of immunity of Pirquet. (D) No reaction.

Table showing Results in 1,000 Cases

	A (Severe)	B (Normal)	C (Immune)	D (No Reaction)
No. of cases	121	719	102	58
Percentage	12	72	10	6

From the table it is evident that the lymph used was particularly potent, 84% of the cases showing severe or normal vaccinations and a further 10% an immune reaction due in practically every instance to a previous successful vaccination. The 58 cases which showed no reaction were all revaccinated, when only two showed an immune reaction.

Effects on Industry

We feared that mass vaccination would interfere with the normal work in the harbour and thus slow down the national effort, but this has not been so. In fact, less than 3% of all classes of workers were off work on account of vaccination. The maximum period of incapacity was one week, the great majority being back at work within 48 hours. Scrutiny of the sickness rate among dockers, office staff, and Clyde Trust employees for the 28 days subsequent to vaccination showed no increase over the normal rate prevailing at this time of year.

The industrial accident rate has also shown no increase above the normal, despite the fact that many crane drivers, capstanmen, and winchmen were vaccinated successfully, and were plucky enough to continue at work despite very sore arms.

Comments

A good previous vaccination scar was no guarantee of immunity. For example, one female who had five large foveated scars resulting from vaccination in infancy, and subsequently in 1921, had a very severe reaction.

Stout persons generally had much more severe local reactions than thin persons.

Elderly persons often showed severe reactions even although previously vaccinated.

Many suffered from a coryza, sometimes associated with sore throat, of about three days' duration from the 8th to the 11th day after vaccination. In no case was the coryza severe enough to cause incapacity for work.

Women reacted more severely than men in the same age groups.

We found that vaccination of the lower limbs caused much more discomfort than vaccination of the upper limbs.

Nine cases in our series showed a post-vaccinial rash; four of these were urticarial in type and associated with previous acne or scabies, three morbilliform, and two scarlatiniform. They all occurred between the 9th and the 10th day following vaccination and disappeared within 48 hours. We noted no case of papular urticaria, nor did any of the dock workers develop pustular rashes resembling small-pox. Neither did we see any case of post-vaccinial encephalitis nor any person who developed nervous symptoms following vaccination. Several cases showed a somewhat delayed local reaction to vaccination.

This investigation was made possible only by the willing co-operation of all classes of dock workers, and we wish to thank the medical officer of health, the general manager of the Clyde Navigation Trust, and the port regional director for permission to print this short review.

The Chadwick Trustees have arranged for the following public lectures to be given on Tuesdays at 2.30 p.m.: Oct. 6, at Royal Society of Tropical Medicine, 26, Portland Place, W., Sir Leonard Hill, F.R.S., "The Interrelation of Clothing and Shortage of Fuel in Matters of Health"; Oct. 27, at Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., Mr. W. T. Creswell, K.C., "The Forensic Aspects of Wartime Public Health Legislation"; Nov. 10, at London School of Hygiene and Tropical Medicine, Keppel Street, W.C., Bossom Lecture by Miss Jocelyn Adburgham, "Land Settlement—Its Sanitary and Architectural Aspects and After-war Possibilities"; Nov. 24, at Westminster Hospital Medical School, Horseferry Road, S.W., Malcolm Morris Memorial Lecture by Sir Arthur MacNalty, "The Prevention of Tuberculosis in Peace and War"; Dec. 8, at Royal Society of Tropical Medicine, Dr. W. Norwood East, "The Differentiation, Prevention, and Treatment of Anti-social Behaviour Disorders." Admission to the lectures is free, and further particulars can be had from the secretary, Chadwick Trust, 204, Abbey House, Westminster, S.W.1.

Medical Memoranda

A Case of Adder Bite

Publication of the following history of a case of adder bite that we have treated recently is prompted by the query of Dr. C. W. Walker in the *Journal* of July 25 (p. 118).

CASE REPORT

A well-developed woman, aged 63 and weighing about 12 st., was bitten by an adder on June 30 while picking wild flowers on the roadside. Two punctures were made by the fangs on the dorsal surface of the web between the middle and ring fingers of the right hand. The bite was inflicted at 5 p.m., and a tight constriction was applied to the wrist about 7 minutes later.

When first seen by one of us (D. S.-J.) 20 minutes after the accident the patient was rather faint (probably from psychic shock) and the hand was swollen as far as the constricted wrist. The two small punctured wounds were incised to provide escape of toxin, and, after a few ounces of fluid (principally blood) had escaped, the constriction at the wrist was removed. Five hours later the whole arm was swollen and very painful.

By the following morning there was marked toxic cellulitis the whole way up the arm, extending to the shoulder and neck on the same side. The oedema of the loose tissues at the base of the neck was so pronounced as to suggest the presence of free fluid. Forty-eight hours after the bite the oedema had increased both in extent and in degree, the back of the hand was very puffed, and the patient was unable to flex her fingers. There was, however, no local reaction at the site of the punctures. The path of the lymphatics from wrist to shoulder was indicated by a series of wide areas of capillary haemorrhages into the subcutaneous tissues, the intervening areas in some cases seeming in comparison so white as to appear blanched.

Four days after the bite the oedema, though less in degree, had spread to the scapular region and upwards into the right side of the scalp. Slow improvement followed from now onwards, the patient being under treatment for 4 weeks. At the end of this time almost full recovery had taken place. All oedema had disappeared, but the muscles of the forearm were still a little thickened and the right side of the neck felt somewhat stiff. Constitutional symptoms were never very prominent, the temperature being 99° on the second and third days and normal from the fourth day onward.

In the absence of specific antivenene the treatment was merely palliative. At the outset coramine was given to combat shock, and sulphapyridine as a prophylactic. On the morning of the second, third, and fourth days the patient received 1 c.cm. of "S.U.P. 36" as a detoxicant. On the fifth and sixth days mersalyl was administered to relieve the oedema by promoting diuresis. In addition the whole limb was immersed frequently in warm iodine baths.

COMMENT

Snake venoms contain two principal types of toxins—namely, neurotoxins and haemotoxins. Neurotoxins preponderate in venoms from cobras and mambas, while haemotoxins are found in the adders (vipers) of the Old World and in the rattlesnakes of the New World. Neurotoxin may kill rapidly by paralysis both of the medullary centres and of the peripheral nerves, sensory and motor, in the last action resembling curare. Survival is usually followed by full recovery without sequelae.

Haemotoxic venom damages by enzyme action the capillary walls, the lipoid membranes of the blood corpuscles, and the tissues themselves, resulting in extravasations of blood, haemolysis, and formation of histamine. If the patient should recover from the initial shock and collapse, of which histamine is believed to be an important cause, the perivascular haemorrhages resolve with the formation of much interstitial fibrosis. This fibrosis may affect all organs—liver, spleen, kidneys, heart—as well as the tissues in the immediate neighbourhood of the bite, and may result in chronic invalidism. Suppuration and gangrene, with repeated interruptions of healing, may occur at the actual site of injection. The prognosis depends on two factors: the amount and toxicity of the injected venom and the availability of specific antivenene.

The bite of the adder found in Britain is rarely fatal owing to the small dose and low toxicity of the venom injected. In the present case there were only local symptoms—toxic oedema and cellulitis, with haemorrhagic extravasations along the course of the lymphatics. The residual thickening of the muscles is presumably due to a slight degree of interstitial fibrosis.

D. STANLEY-JONES, M.B., B.S.
Hayle, Cornwall. CHARLES E. S. HARRIS, M.B., Ch.B.

Two Cases of Pontine Haemorrhage in Typhoid Fever

The complications of typhoid are so numerous that it has been truly said that the whole of medicine may be studied in one case. The following two cases reveal what appears to be a rare complication, as, apart from a brief note in Allbutt and Rolleston's *System of Medicine*, I have been unable to find any reference to it.

CASE REPORTS

Case 1.—A sergeant was admitted to a field ambulance on Sept. 30, 1941, and transferred to a general hospital on Oct. 3 with a history of continued pyrexia. On admission his temperature was 103° and his pulse 80; he was slightly delirious, so that his history of the onset could not be obtained. Blood culture gave a strong growth of *B. typhosus*. The disease, which was severe, ran a normal course till Oct. 6, when he had a profuse epistaxis accompanied by hiccup. When examined he was found to be semi-comatose, the pupils were pin-point, and all reflexes were absent. The temperature was 102.6°, and the pulse 84. The whole picture was that of a pontine haemorrhage, except that the temperature never rose above 103° and there was no glycosuria. His condition steadily deteriorated and he died 36 hours later. At necropsy the caecum showed gross typhoid ulceration almost amounting to gangrene, and there were numerous punctate haemorrhages scattered through the substance of the pons. There was, unfortunately, no record of when he had last been inoculated.

Case 2.—A dockyard worker was admitted to a general hospital on Oct. 30, 1941, and was diagnosed as suffering from enteric on the strength of continued pyrexia, papular rash, a rising titre to TO agglutinin, and the fact that he was one of a small group of eight, most of whom gave positive blood cultures to one of the enteric group. He had been inoculated with T.A.B. vaccine on July 15, 1941. Before admission he had suffered from severe headache, with slight neck rigidity, and on Nov. 1 it was noted that his pupils were pin-point and showed only slight reaction to light. He complained of diplopia at a certain angle, and there was a paresis of the left abducens nerve. Coarse tremor was present in the tongue and fingers, and the deep reflexes were brisk, including the jaw-jerk. The C.S.F. showed no pathological changes. On Nov. 11 he had a slight epistaxis. The disease ran a normal course, the temperature becoming normal about Dec. 15. However, on Dec. 29 he complained of a pain to the left of the sternum about the level of the fifth interspace. At operation a collar-stud abscess of the sixth costal cartilage was found, the pus from which gave a pure culture of *B. typhosus*. On Jan. 15, 1942, the pupils were pin-point, there was some weakness of the left lateral rectus muscle though diplopia was not complained of, all deep reflexes were brisk, jaw-jerk was still present, there was coarse tremor of fingers and slight tonic spasm in left arm and right leg but no mental changes. Unfortunately Service movements prevented a further follow-up.

COMMENTARY

By inference from Case 1 it is reasonable to conclude that Case 2 also had punctate pontine haemorrhages, but it is difficult to understand why this should have occurred. At the time of infection the two cases were separated by at least 100 miles; moreover, none of the others in Case 2's group showed any sign of cerebral haemorrhage, so that the action of a specially selective typhoid toxin does not appear to be feasible. Vitamin C deficiency is a possible explanation, though unlikely in Case 2 because the living conditions permitted of an ample supply of fruit and vegetables (an ascorbic acid estimation was not done). Failing these reasons, one is forced to conclude that there must have been some defect, histological or pathological, in the pontine capillaries and that the haemorrhages were analogous to the epistaxis which occurs in the early stages of some cases of typhoid fever—incidentally, in both the cases described.

D. C. WILSON, M.B., F.R.C.P.Ed.,
Surgeon Commander, R.N.V.R.

H.M. Stationery Office has published on behalf of the Department of Health for Scotland a 4d. pamphlet on the "Feeding of Infants and Pre-school Children" as a guide for use in wartime nurseries. It is commended in a foreword by Dr. Andrew Davidson, Chief Medical Officer of the Department of Health for Scotland.

Reviews

WAR SURGERY

Surgery of Modern Warfare. Edited by Hamilton Bailey, F R C.S Compiled by 72 contributors Volume II Second edition (Pp 517; illustrated. 40s., plus 9d. postage) Edinburgh. E and S. Livingstone. 1942

The first edition of this work appeared in parts which were completed in July 1941; the second consists of two volumes, the earlier of which appeared in May 1942 and was noticed in the *British Medical Journal* of June 27, 1942, p. 792. The second volume is now in our hands and comprises articles by thirty contributors, among whom it is pleasing to note that interspersed among the admirals and generals who have come down from the last war are quite a number of the younger officers of this. This work is a really fine effort on the part of its editor to keep those practising war surgery abreast of the most recent developments and provide them with an up-to-date reference book of a thoroughly practical character. So many books appeared early in this war which were largely reminiscences of the last, and were almost out of date as soon as they were published. An exception to such a criticism is this book of Mr. Hamilton Bailey's, produced with that high standard which we have come to associate with all the textbooks he edits, written by those with special experience of the various subjects which they consider, and brought up-to date by a critical editorial supervision. The second edition shows many improvements over the first.

Volume II of this second edition comprises sections ix to xx, and among the subjects dealt with are burns, wounds of bones and joints, wounds of the hand and foot, peripheral nerve injuries, and amputations. There are also articles on administration, on surgical diseases encountered in subtropical countries, on oto-rhino-laryngology in relation to war injuries, and on wounds of the eye and orbit. An appendix on very recent developments is particularly valuable: as an instance may be cited the article (p. 961) in which recent correspondence on the use of ligature and suture materials of cotton and thread is briefly but adequately discussed. This section, for which the editor himself is responsible, is full of useful information that brings the work right up to date. The production of the volume is excellent, the type clear, the references are full and easily found at the end of the chapters or as footnotes to the appendix, and the illustrations are many and well reproduced.

HANDLING OF CHROMOSOMES

The Handling of Chromosomes By C. D Darlington, F R S., and L F La Cour (Pp 165 8s 6d) London. George Allen & Unwin, Ltd. 1942

It is difficult to avoid the appearance of extravagance in praising this perfect specimen of what a laboratory manual can be at its best. Only masters of a subject could reduce to 165 small pages what others might well be unable to present in less than an indigestible encyclopaedia of four times the size. Only artists could achieve such elegance of presentation. Only publishers with a soul would in these difficult times do full justice to the book in the shape of good paper, clear-print, attractive arrangement, and superb plates; all, moreover, at such an astonishingly low price.

We are reminded that although the cell nucleus was discovered and named by Robert Brown in 1831, it was not till fifty years later that the chromosomes were seen. To-day it is known that they are the chemical organizers of life. It is in terms of their structure, behaviour, and functions that we must study reproduction, heredity, and development. The genes are among the largest molecules that the chemist has studied and at the same time they are the smallest living structures whose behaviour can be observed. In the teaching of biology, whether at school or university, there is nothing else which it is more important to demonstrate, or, what is far better, help the learner to study for himself. In this small volume every stage of treatment is dealt with from the collection of suitable plant and animal material to the drawing and photographing of the finished preparation. The authors have described relatively simple methods in careful detail, and nothing is omitted; to quote one example, there are tables showing the appropriate material for demonstrating the various structures and processes and showing also what is available month by month throughout the year. The apparatus described is as modest as is consistent with obtaining successful results.

It would be a dull student indeed who would not be impatient to start work as soon as the book was placed in his hands. But this is more than a manual for students. Research workers will find indications as to when and how more elaborate methods should be used. They will also find a most useful bibliography of recent reviews together with much information, some unpublished hitherto, which has never before been collected in a single volume.

ADVANCES IN PATHOLOGY

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F R.C.P., and Lawrence P Garrod, M D. F R C P Fourth edition. (Pp. 346, with 35 illustrations 18s.) London: J. and A. Churchill, Ltd.

"Garrod and Hadfield" is fast earning a place as the most important of the volumes in the "Recent Advances" series which began in 1924 with "Beaumont and Dodds." So much has happened in the four years that have passed since the publication of the third edition in 1938 that the authors have found it necessary to rewrite the greater part of this, the fourth edition. It is, indeed, becoming a commonplace for authors now revising books after an interval of four or five years to observe that the advances made in medicine through this period have been spread over such a wide field as to call for an almost complete revision of their work. We have clearly been through a period of almost unexampled activity, and can only hope that the war will at least provide a testing ground for much that is new, and not destroy the ferment that is at work in the mind of medicine.

The subject of inflammation is now dealt with in two chapters instead of one—welcome evidence that pathologists are looking afresh at fundamental problems which many people have looked upon as comfortably solved in standard textbooks. New chapters are given to vitamin deficiency diseases, to essential hypertension, to extrarenal azotaemia, and to crush syndrome. A new chapter on certain aspects of the pathology of the ductless glands has been contributed by Dr. E. F. Scowen, and there are new observations on such subjects as cancer, rheumatic fever. pneumonia, regional ileitis, and lipoid pneumonia. Messrs. Churchill are to be warmly commended for the admirable way in which they have produced this volume at a time when medical and scientific publishers do not receive the encouragement they should from the paper controller. We would draw special attention to the excellent half-tone reproductions. Anyone who wants to understand "the new pathology" cannot do without "Garrod and Hadfield."

Notes on Books

The publication of a fifth edition of Mr. A. P. BERTWISTLE'S *Descriptive Atlas of Radiographs: An Aid to Modern Clinical Methods* three years after the fourth indicates that there is a demand for this kind of atlas. It is a pity, therefore, that the opportunity was not taken to replace many of the older illustrations by ones of modern quality. This is the most important defect in the volume, that many of the illustrations are representations of the radiology of twenty years ago. There is a certain flamboyance in the preliminary matter in this book which the editor would be wise to curb in future editions. For instance, the remarks on the cancer campaign have little bearing on the main subject of the book, nor has the question "Is Abortion justified?" in the legend to the frontispiece. The section "Milestones in Radiology" will be of interest to those acquainted with the history of *x*-ray diagnosis. The publisher is Henry Kimpton and the price 42s.

A second edition has now appeared of Dr. R. D. LAWRENCE'S useful pamphlet *The Diabetic A B C Wartime Supplement*; it is published at 9d. by H. K. Lewis and Co.

Dr. MARGARET DOBSON'S *Binocular Imbalance* (H. K. Lewis and Co.; 10s. 6d.) is partly a restatement of elementary facts concerning binocular vision and partly an account of her personal practice in the diagnosis and correction of its disorders. It is of value in so far as it brings into a comprehensive scheme such new developments as dynamic retinoscopy, anaglyphs, and variable prism stereoscopes. There is much that is new in this monograph, but how much of this can be incorporated into actual practice is not at all clear.

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INFLUENCE OF OCCUPATION AND ENVIRONMENT ON MORTALITY FROM PHTHISIS

The conditions under which the majority of the population live and work have been steadily, if slowly, improving during the present century, and during the past decade particular attention has been paid to social and environmental conditions. The reforms that have been introduced have been a large factor in bringing about the reduction in the rate of mortality that has been experienced during the past fifty years. Factors influencing health may be divided into two main headings—constitutional and environmental. The latter may be broadly subdivided into occupational and social risks. A distinct line between these two subdivisions cannot be drawn, because the social or economic environment is largely conditioned by the occupation followed. If the place of work or the rate of pay forces a worker to live in unhealthy conditions the extra risk involved must be attributed to occupation and may be regarded as an indirect occupational risk. In the past, crowding of the population in a small area around the works was common, and examples of this can be found in the coal, textile, and heavy industries. The occupational mortality section of the Registrar-General's decennial supplements have for years provided valuable information for comparative purposes. Although some diseases can be readily classified as specific risks inherent in the industry, such as chronic poisoning by lead and phosphorus, or due to the cumulative effects of long exposure leading to such morbid conditions as pneumoconiosis in anthracite miners and mule-spinner's cancer, our present knowledge of the occupational risk is imperfect. The method of selecting recruits varies from industry to industry; some occupations demand a high standard of physique and some impose no standard. The importance of selection must be stressed, and because the death rate of a particular occupation is high it cannot be inferred that the trade is inimical to health, because the excessive mortality may be due to indifferent physique allied with a low economic standard and poor domestic conditions.

Hay was the first to attempt to differentiate between the occupational and the environmental risk. He used the experience of the city of Aberdeen during the ten years 1900-9, and compared the phthisis death rate among males in twelve occupations with that of wives and widows and the unmarried children of men who followed these occupations; they were exposed to the environmental but not to the occupational risk. His data showed that the phthisis rate was much greater among males than among the wives and widows; the range was 1.1 to 5.7 for males and 1.1 to 2.1 for wives. Within the limits of his data, which Hay recognized, it would appear that the risk of phthisis in the occupations with a high mortality was of a direct occupational nature, as the married women showed no corresponding excess. Cheeseman,[1] in an interesting paper, has pursued this line of investigation over a wider range of occupations. His observations are based on the data published in the Occupational Supplement of the Registrar-General for 1930-2, and, as for Hay's data, the male mortality was based on the experience of all males, married and single. The occupations of the males were divided into five groups according to whether their standardized mortality ratios from pulmonary tuberculosis were (1) significantly greater, (2) probably significantly greater, (3) not significantly different, (4) probably significantly less, (5) significantly less than the ratio for all males. The standardized mortality rates for wives were similarly subdivided. A combination in any occupation of a significantly greater mortality for males with a mortality for the wives significantly less could be taken as evidence that the direct occupational was more important than the environmental risk. No such occupation was found. Hairdressing was the only occupation with a significantly excessive male ratio associated with a ratio for wives that was probably significantly smaller than that for all married women. Altogether 43 occupations were studied, and of the 19 occupations in which the male phthisis was in excess there were 10 in which the wives had a similar experience and 2 in which the values for the wives were subnormal. In 17 occupations the male experience was below normal, and for 15 of these the ratio for wives was either equal to or in defect of the average for all wives. From the data examined it was concluded that the direct occupational risk could not be differentiated from the environmental, possibly because of imperfections in the statistics.

The failure to distinguish easily between the occupational and the environmental risk emphasizes the importance of the social and economic aspect. A great rebuilding programme will have to be faced after the war, when the housing problem will be acute; it is essential that the relation which exists between the home environment of the workers and mortality should be given full consideration. And however "ideal" the home may be it must be remembered that the size of the rent must not be such as to leave insufficient money for the purchase of proper food and clothing. The relation between social and economic environment and respiratory tuberculosis can be shown by considering the five social classes of the Registrar-General. Mortality increases progressively as the social class decreases. Taking the standardized mortality ratio of all males aged 20-65 as 100, the standardized mortality ratio of social class I is 61, and for social class V 125. The corresponding figures for married women are 52 for social class I and 132 for social class V.

SHOCK TREATMENT IN PSYCHIATRY

The last decade has seen remarkable progress in the physical treatment of the psychoses. A short time ago it was only the increasingly rare cases of general paralysis that offered us the opportunity of effective intervention and cure. Out-patient departments were combed for hopeful cases of neurosis, where the healing art in the form of psychotherapy might be brought to bear with some prospect of success. Even the most recent case of schizophrenia or affective psychosis received only a symptomatic and expectant form of treatment, relying exclusively on the vis medicatrix naturae. The situation is very different to-day. Acute psychoses of recent onset now present the most favourable clinical material we have; and the much wider experience of neurosis in all its forms which has been forced on us by the war has convinced many previous enthusiasts that neurosis, whether inborn disposition or environmentally determined habit, is more often than not an extremely refractory therapeutic problem.

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[1] *J. Hyg.*, Camb., 1942, 41, 463.

A recent manual by Drs. Jessner and Ryan[1] marks this change of attitude, and describes the therapeutic techniques by which it has been brought about. Insulin treatment of schizophrenia and convulsive treatment of depression have obviously come to stay, at least until still more effective measures have been devised. Their efficacy has been and continues to be energetically debated; but the statistical evidence which has been accumulating now for more than seven years approaches more and more nearly to unanimity in their favour. It is now time that every physician concerned with the treatment of psychotic patients should be familiar with their indications, technique, and complications; and this book provides a valuable step towards a more general education in this direction. Treatment is worth while, and it is essential that it should be properly planned. The expectation of life for a schizophrenic of twenty-five years is about thirty years, which if spent in hospital will cost the community about £1,700. The annual incidence of schizophrenia is large enough (over 2,000 in 1932 in England and Wales), and the prospects offered by treatment are favourable enough, to make any adequate acute treatment centre a communally profitable enterprise. On the other hand, the results obtained by haphazard playing around with insulin and convulsion cannot be compared with those obtained by system and planning.

The usefulness of these physical methods of treatment emphasizes the kinship of psychotic with general medical illness. We are not deterred by fear of relapses from treating tuberculosis, diabetes, and cardiac disorder by the best methods we know, and the same attitude should be more general in psychiatry. There should be the same degree of discrimination and clinical judgment in the prescription of treatment in psychiatry as in general medicine. As it is there is a tendency to regard convulsive therapy as a cure-all, or something that must be tried in every case. The wide introduction of the simple, foolproof, and inexpensive electrical apparatus into psychiatric hospitals and out-patient departments all over the country is both the welcome sign and the cause of increased therapeutic interest; it is likely that as a result many patients will be spared months and even years of misery and illness. But therapeutic enthusiasm can be uncritical. Not so long ago[2] we stressed the need for agreement upon both diagnostic and prognostic standards, and for statistical analysis. Until this agreement has been secured we must beware against being misled by "clinical impressions." The method is being employed for the treatment of such refractory material as the chronic obsessional, and, because the proper facilities are lacking, for the early schizophrenic. This latter use instead of insulin is, except in the rarest cases, really disastrous; for it induces a fallacious feeling of well-directed effort, when, at best it secures only some symptomatic improvement, more usually wastes valuable time, and not infrequently does actual harm. The administration of convulsion therapy often clears up depressive symptoms in a variety of syndromes—organic, schizophrenic, and reactive—as well as in the typical endogenous and involutional melancholias. On the other hand, it is rather ineffective in the treatment of thought disorder, paranoid symptoms, and depersonalization. In so far as these symptoms depend on a fundamental depression, they may clear up too; but if separately determined they are likely to be but little affected. Nevertheless, while convulsive treatment is being more and more actively employed, insulin treatment is being relatively neglected. The reason for this is probably nothing more than the great difference in administrative and technical difficulty of the two methods. But the tendency is to be regretted. For the depressive, for whom convulsive treatment can do so much, is likely to recover eventually, treatment or no treatment; while the schizophrenic, if he is deprived of insulin treatment in the earliest months of the illness, faces a high probability of progressive deterioration and life-long asylum care. It is to be hoped that the very practical manual of treatment by Jessner and Ryan will do something to remedy this undesirable state of affairs.

PROGNOSIS IN REGIONAL ENTERITIS

Diseases of the small intestine present problems not easy to unravel. In an article in this *Journal* in 1913 T. K. Dalziel,[1] describing nine cases of "chronic interstitial enteritis," ended with the words: "I can only regret that the aetiology of the condition remains in obscurity, but I trust that ere long further consideration will clear up the difficulty." In 1933—twenty years later—P. W. Brown in America suggested the title "regional enteritis" for this same condition, which a year before Crohn had described and to which his name has since been widely given. Now, almost thirty years later, Brown, summarizing with C. J. Donald[2] a total of 178 cases already seen at the Mayo Clinic, is still forced to write: "We deplore the fact that we have no knowledge of the aetiology of the disease." But we at least now have many accurate and detailed reports of its symptomatology and pathology. Briefly stated, the condition is characterized by abdominal pain, diarrhoea, fever, anaemia, development of fistula, loss of weight, nausea, and vomiting. Many cases resemble, and are operated upon for, acute intestinal obstruction, which may often in fact occur. Other cases are mistaken for acute or chronic appendicitis, ulcerative colitis, ileo-caecal tuberculosis, actinomycosis, or nervous diarrhoea. In some patients a mass develops in the right iliac fossa, though this is in fact a late occurrence. Earlier, the intestine is thickened and oedematous, with rigidity, adhesions, abscess formation, or fistula. The mesentery is thickened and shows hyperplastic glands; N. C. Tanner,[3] writing recently in this *Journal*, emphasizes these changes as of particular importance in both treatment and perhaps causation.

From Brown's series of cases a number of interesting conclusions can be drawn, though he is unable to throw much fresh light upon the condition. In prognosis, with which he is specially concerned, he stresses once more the seriousness of the condition, which tends to progress by remissions and exacerbations, and to spread both up and down the intestine from its point of origin. In 92% of Brown's cases this was in the terminal ileum (ileitis), but it may be at any point in the small intestine. As the disease progresses, increasing nutritional defect may arise and in advanced cases gross failure of absorption occur. At present we do not know how to prevent the condition, and the only effective treatment is surgical. No medical treatment is more than palliative, though the value of a high protein diet with additional vitamins is undoubted both before and especially after operation. Brown stresses the need for adequate supplementary supplies of the vitamin B complex.

The results of treatment depend upon several factors—one of which at least would appear to be the thoroughness of the operation. The more radical the excision of the inflamed intestine and the diseased mesentery, the more hopeful appears to be the prospect. When further resections are necessary after the first attempt the mortality is high, and Brown records only 14 of 23 patients so treated as surviving. Short-circuiting alone may dramatically relieve—and even appear to cure—the condition for a time, and in an acute phase this is often all that can be done. In the more chronic stage, however, immediate resection may be possible or a deliberate two-stage operation be performed. Brown's figures suggest that a two-stage is better than a one-stage operation. Colp, Garlock, and Ginzburg,[4] however, reporting 40 cases treated by ileocolostomy with exclusion, record no operative mortality and recession of the disease in the excluded loop in a high percentage; at the same time they emphasize the importance of dividing or excluding the ileum well above the apparently diseased area, because the proximal few feet of gut above the lesion may be involved even though appearing to be normal. In Brown's opinion short-circuiting alone offers success in less than 50% of cases, and he notes that the necropsy records at the Mayo Clinic reveal no instance of healed chronic regional enteritis. At the time of his report, only 14 out of 45 short-circuited patients were well, and half of these had in fact been in bad health within a few years of the operation. In his opinion such patients should be kept under observation, and even when the patient is in apparent good health it is wiser to resect the gut rather than wait until an exacerbation of the disease makes this both more dangerous and more imperative.

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[1] *Shock Treatment in Psychiatry: A Manual.* By Lucie Jessner, M.D., and V. Gerard Ryan, M.D. William Heinemann. (17s. 6d.)
[2] *British Medical Journal*, 1940, 2, 526.

[1] *British Medical Journal*, 1913, 2, 1068.
[2] *Amer. J. digest Dis.*, 1942, 9, 87.
[3] *British Medical Journal*, 1942, 1, 739.

The continuance of anaemia, failure to gain weight, and diarrhoea are ominous signs, especially after operation, though persistent diarrhoea is a frequent sequel of ileocolostomy and not alone of serious significance. The importance of careful and, if necessary, repeated radiological examination in obscure cases presenting symptoms such as these needs little emphasis, and has been recently mentioned in an account of two cases by Pratt and Simpson,[5] who also recommend the adoption of a two-stage operation in treatment. In over 70% of Brown's series positive evidence of disease was given by *x*-ray examination—the great majority by means of the barium enema. If the condition begins, however, above the ileum, even a careful barium meal examination is likely to miss it at first, but fortunately less than 10% of cases arise at any site other than the lower ileum.

Bearing, therefore, the possibility of the disease in mind, and with the aid of skilled radiography, early diagnosis should be more common; combined with this, radical and determined surgery may legitimately be expected to improve the prognosis and the, at present, high mortality, which was approximately 10% in Brown's 178 cases.

A GREAT EPIDEMIOLOGIST

Those who had the privilege of Dr. Wade Hampton Frost's friendship will need no reminder of the pain his premature death caused. A still wider circle who have read a most judicious and well-edited selection of his papers[6] will realize that the world has lost a great investigator and teacher. These papers mirror the evolution of epidemiological science in a sagacious, critical mind; the image is sharp because Frost had command of an admirably clear and scholarly prose style.

The earlier papers are models of descriptive epidemiology; sound and accurate official reports. Few become first-rate epidemiologists who have not had the discipline of reporting to superiors apt to prefer literal accuracy to scientific imagination; Frost had had the additional advantage of experience in country practice. Epidemiology is indeed the study of groups, not individuals, but it is well to know something of the characteristics of the individuals merged into groups. The papers on typhoid fever in Williamson and septic sore throat in Baltimore belong to this period, which ends with the elaborate report on poliomyelitis in Iowa. Frost was conscious of the difficulty of a complete enumeration of group characters, because of the protean clinical manifestations of the disease, and soon to face the difficulties in an even worse form. The next group of papers had their origin in the apocalyptic events of 1918-19, the great influenzas. He was faced by problems which could not be solved by analysis of official and ostensibly exhaustive data. One may register deaths on a nation-wide scale, but hardly illnesses, at least with enough particularity to satisfy a critical mind. So one has recourse to sampling, to the intensive study of selected groups. This involved a more elaborate statistical technique than exhaustive enumeration, and Frost steadily widened his biometric knowledge. He had the good fortune to be associated at Johns Hopkins (from 1919 to his death) with such biometricians as Lowell J. Reed and the late Raymond Pearl and, without ceasing to be primarily an epidemiologist, gave proper weight to statistical considerations. It is not that his papers became more statistical in the sense of including more tables of figures—actually the later papers have fewer tables—but they become more quantitative in the best sense of the word; the numerical analyses *tell* more. This increased power of handling data quantitatively is seen when he returns to the relatively simple problem of diphtheria in Baltimore—absolutely complex but without the horrifying complexity of influenza. The deduction of a *measure* of decreasing incidence in a partly immunized population is skilful and yet simple. Similarly, the paper on familial aggregation of infectious diseases is an excellent appraisement of a method suggested by Chapin.

In his last years Frost turned to the epidemiology of long-term infections, particularly of pulmonary tuberculosis, having perceived the importance of an actuarial method of analysis. A comparison of these papers with those of very good writers a generation earlier will enable the reader to appreciate the immense improvement of technique which the method of sampling, properly controlled, has made possible. It may be said—undoubtedly Frost himself would have said—that none of these papers chronicles a dramatic revelation like that of Frost's great hero, Dr. John Snow. The problem of poliomyelitis is still not completely solved; that of influenza still challenges us. Yet the oft-misused adjective "great" is fairly applicable to Frost's achievements. By precept and example he raised the level of epidemiology as a branch of medical science, bringing it into a position to command the respect of contemporaries. His loss must be felt for years, but he built so well that the school he founded at Baltimore will surely continue to be one of the focal points of epidemiological education.

LOW PHOSPHORUS DIET AND EXPERIMENTAL RICKETS

Rickets may be the bane of the paediatrician and social welfare worker, but by the interest which it has aroused among biochemists it has added considerably to our knowledge of biological processes and not least of the part played by phosphorus, an element which makes its presence felt in many biochemical dramas. In order to describe the physiological significance of an indispensable nutrient, observations must be made on suitable animals restricted to diets extremely deficient in the element to be studied but adequate in other respects. While this method has been often employed with lime and other minerals it has not hitherto been effectively used for phosphorus. It is true that the cereal rachitogenic diets introduced by Sherman, McCollum, and others produce a phosphorus deficiency in the growing animal owing to the fact that much of this element is present as phytin, which varies greatly in its digestibility. This, however, introduces a factor of uncertainty, and in a recent series of papers[1, 2, 3, 4, 5] from different laboratories in the U.S.A. some attention has been paid to the preparation of diets containing a very small amount of total phosphorus, approximating to an absolute deficiency. These diets with and without an associated vitamin D deficiency have been used in experimental work on rats and puppies and have yielded conflicting but interesting results.

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[4] *Amer. J. digest. Dis.*, 1942, 9, 64.

[5] *British Medical Journal*, 1942, , 634

[6] *Papers of Wade Hampton Frost, M.D.: A Contribution to Epidemiological Method.* Edited by Kenneth F. Maxcy, M.D. New York: The Commonwealth Fund; London: Oxford University Press (\$3.00 or 16s. 6d.)

Within a few weeks progressive deterioration in the general health of the animals (rats) was apparent. The coats became rough and greasy, muscular activity was diminished, and ultimately walking, standing, and even breathing became more difficult and painful; examination of the skeleton revealed extreme rarefaction. In the earlier phases the metabolic and clinical manifestations of rickets were produced when vitamin D was absent from the diet. The results of adding this vitamin to the food varied with different workers. Schneider and Steenbock[1] found that rickets was prevented in rats, but Zucker and his colleagues,[4] while agreeing that there was no naked-eye evidence of rickets, observed that a supplement of vitamin D was incapable of maintaining the normal mineral composition of the bone. In puppies, on the other hand, Freeman and McLean[5] found that on a low-phosphorus diet florid rickets was produced whether or not the vitamin was given. It is obvious that there is a species difference. Zucker, however, stresses the fact that the absence of anatomical signs of rickets does not necessarily indicate normal ossification. This, of course, is of great interest in the ever-recurring discussion on the criteria of rickets in the infant. It is generally agreed that the *x* ray is more effective than clinical examination in detecting mild degrees of the disorder. The question arises as to the desirability of using biochemical tests such as an increase in plasma phosphatase as a diagnostic indication even when there is neither clinical nor radiographic evidence. Freeman and McLean[5] studied the distribution of phosphatase by histological methods. From their sections there appears little doubt that osteoid tissue is devoid of phosphatase, which is found in abundance wherever osteoblasts are abundant. There is clearly room for further work on these lines, especially to determine whether there is any relation between the bone phosphatase and the concentration of this ferment in the plasma.

Some interesting facts are available with reference to the interchange of phosphorus between bone and soft tissues. According to Schneider and Steenbock,[1] the addition of vitamin D to a low-phosphorus diet, while preventing rickets and causing an increase in serum phosphorus, led to a complete inhibition of growth. They suggest that the anti-rachitogenic effect is due to the stimulating effect of vitamin D on phosphorus utilization in the skeleton, thereby depriving the soft tissues of their quota of this element. Day and McCollum,[3] on the other hand, found that, despite an actual loss of phosphorus from the body, growth continued for some weeks. As the percentage content of phosphorus in the non-osseous tissues remains constant, it would appear that, contrary to the conclusion of the other workers, phosphorus is diverted from the bone to the soft tissues even when there is an absolute deficiency. This utilization of bone phosphorus is, however, very inefficient, as a great loss of body phosphorus occurs. Curiously, the faeces accounted for practically all the phosphorus loss, whereas three-quarters of the ingested calcium was voided in the urine. These results may be considered with the finding that in puppies with low-phosphorus rickets there was actually a hypercalcaemia. In spite of the increase in serum calcium the calcium–phosphorus product was reduced, indicating a slight undersaturation of the serum with calcium phosphate. It is easy, therefore, to understand why there is little calcification and why, with adequate absorption of lime, there is excessive urinary output.

So far, low-phosphorus diets have been exploited only for the study of mineral deficiencies allied to rickets. There still remains the exploration of such fields as parathyroid activity, the problem of phosphorylation in connexion with carbohydrate metabolism, and the absorption and excretion of lead and other substances.

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[1] *J. biol. Chem.*, 1939, **128**, 159

[2] *J Nutrit.*, 1939, **17**, 601.

[3] *J. biol. Chem.*, 1939, **130**, 269.

[4] *J. Nutrit.*, 1941, **22**, 139.

[5] *Arch Pathol*, 1941, **32**, 387.

A WORD TO CORRESPONDENTS

Once again readers are urged to keep check on their pens. The paper situation is very difficult, and we see no prospect of an adequate supply. In March last our meagre ration suffered a drastic cut, which leaves the *Journal* with little more than 50 pages a week for all the purposes of a professional organ of information and opinion serving 41,000 members at home and abroad. Advertisements are cut down to a bare minimum; the size of type has been reduced to the limit of comfort if not of legibility; and rigorous economy of space is exercised in every direction. Meanwhile, the inflow of articles and letters has grown apace. It is natural that members should want to express themselves on urgent questions of the day, and one of the *Journal*'s functions is to give them the means for doing so. But the growing restriction on paper supplies makes it impossible to print more than a small proportion of the many letters received or to acknowledge and return those that cannot appear. Correspondence on medical planning, on a State Medical Service, and on certification has far exceeded the space available, and still the letters come by every post. We do not like to disappoint those who commit their thoughts to writing in the rare leisure of a busy life, and we ask them to accept this collective apology. So long as there is not nearly enough paper to go round, letters (and articles, too) must be fewer and briefer.

Prof. D. Keilin, F.R.S. (Quick Professor of Biology in the University of Cambridge), and Sir Henry H. Dale, P.R.S. (retiring Director of the National Institute for Medical Research) have been appointed members of the Medical Research Council in succession to Prof. L. J. Witts, F.R.C.P., and Prof. C. R. Harington, F.R.S., who retired in rotation on Sept. 30. Sir Charles Glen MacAndrew, M.P., has been appointed a member of the Council in succession to the Rt. Hon. James Gray Stuart, M.P.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

LOUSE-BORNE TYPHUS FEVER

BY

Sir J. W. D. MEGAW, M.B., D.Sc., I.M.S.(ret.)

When the names "typhus" and "typhus fever" are used without qualification in this article they refer to louse-borne typhus, which is the chief member of a family called "the typhus group of fevers." The other typhus fevers are closely related to the louse-borne disease in being caused by rickettsial bodies, in having the same type of clinical features, and in producing similar pathological changes in the body. They differ sharply in being primarily diseases of lower animals; their viruses are transmitted to man as a secondary incident through fleas, ticks, or mites which are parasites of the infected animals. Because of this essential difference these fevers cannot give rise to epidemics such as readily occur in louse-borne typhus, which is directly transmitted from man to man by a human parasite, the louse. The non-epidemic, or "zootic," typhus fevers are of minor importance as war diseases, but they sometimes cause trouble by being mistaken for the human louse-borne disease, from which they may be indistinguishable by the methods of diagnosis available to isolated medical men.

Louse-borne typhus has a number of synonyms, including typhus fever, epidemic typhus, exanthematic typhus, louse typhus, historic typhus, and classical typhus. It should be noted that when German writers use the name "typhus" without special qualification they refer to typhus abdominalis, or typhoid fever; so also they use the names "pseudo-typhus" and "paratyphus" with reference to typhoid.

Definition.—Louse-borne typhus is a disease caused by *Rickettsia prowazeki*, which is conveyed from man to man by human lice. In most of the cases there is high fever lasting from 10 to 16 days, with early and pronounced nervous symptoms and a characteristic rash. The disease often occurs in epidemics, but it may be endemic or sporadic. Mild attacks which do not conform to the classical type are so frequent and also so important that a detailed definition based on the "typical" form of the disease would be misleading rather than helpful.

History and Distribution

History.—About a hundred years ago typhoid fever and relapsing fever were first recognized as distinct diseases; previously, "typhus fever" or one of the scores of synonymous names served as a designation for any severe epidemic fever other than those that could be recognized by their special characteristics. Since the middle of the fourteenth century there have been many accounts of epidemics of fevers of these kinds in Europe, occurring chiefly in times of war or famine. In some of these accounts typhus can be recognized; others paint a confused picture made up of a mixture of typhus and relapsing fever or of typhus and typhoid. Since 1844 typhus has been recognized as a clear-cut entity, so that Murchison's description in 1862 of epidemics of the disease can hardly be improved on at the present time. The contagious nature of typhus was widely accepted, but vague ideas prevailed about the cause of the disease: for example, Murchison held that a poison was generated spontaneously in the body as a result of overcrowding and bad ventilation. In 1909 C. Nicolle produced the disease in a chimpanzee by inoculating the blood of an infected person; he also transmitted the infection from this animal to other monkeys by lice. The causal organisms were rather vaguely described by Ricketts and Wilder in 1910; Prowazek studied them closely; and in 1916 Da Rocha Lima described them accurately and called them *Rickettsia prowazeki*. The first agglutination test was carried out by Wilson in 1910: he found that the serum of infected persons agglutinated certain bacteria of the coli group which he had isolated from typhus patients, but he pointed out that the serum response did not prove that the organisms were the cause of the disease. In 1916 Weil and Felix, using a different bacillus, *Proteus* X 19, described the reaction which goes by their names. Recent work has been concerned chiefly with the prevention of the disease, especially by protective inoculation.

Distribution.—The disease is cosmopolitan; it is apt to break out in louse-infested communities in many parts of the world in which cool weather conditions prevail at some season of the year. In tropical countries, for some unexplained reason, typhus is decidedly uncommon except at high altitudes. On the whole it is a cold-weather disease, and although epidemics may occur in hot weather it would appear that cold or cool weather is a necessary preliminary to the widespread transmission of infection. More cases occur in the later part of the cold season and the early hot season than at other times, but there have been many exceptions to this rule. Some countries have remained remarkably free from the disease in spite of the conditions being apparently suitable for the spread of infection; for example, no great epidemics have been reported from India, even from crowded louse-infested communities in which great epidemics of relapsing fever occur at intervals. In the countries of Western Europe, in Canada, and in the United States of America the disease is now rare in times of peace; evidently the reduction in the degree of louse infestation of these countries has brought about conditions in which transmission does not readily occur. Epidemics have been reported in recent years from Poland, Russia, Ukraine, Rumania, French North Africa, South Africa, Korea, Manchuria, North China, and Asia Minor. Cases have also occurred in Mexico, Bolivia, Peru, and the high altitudes of Colombia. Official reports for May and June, 1942, show that severe and widespread epidemics were then raging in Algeria, Tunisia, and French Morocco, and that outbreaks were occurring in many localities in Spain, Hungary, Rumania, and Bulgaria; cases were also reported from Shanghai, Iraq, Iran, Turkey, and Lyons in France. No official reports are now available from Russia or countries in German occupation, but there is plenty of evidence that the disease is causing great anxiety even in Germany itself, where, in spite of elaborate precautions, many groups of cases have occurred among the soldiers engaged in guarding prisoners of war. In one instance 23 of 25 persons employed at a camp near Berlin were attacked.

In the eastern countries of Europe there is a return to the conditions which caused devastating epidemics during and after the war of 1914-18. These conditions were the existence of infection, great movements of population, malnutrition, overcrowding, lack of facilities for personal cleanliness, and louse infestation. In these circumstances typhus fever must be imposing a severe strain on the German and Russian efforts to keep it under control.

In this country the disease still smoulders in some places, and so long as louse infestation is allowed to persist there is need for constant vigilance by the medical profession and the public health services. Persons of all ages and of both sexes are equally susceptible, but attacks in young children are usually mild and so are often missed. So also in endemic areas, adults who have had previous attacks are likely to get the disease in a mild form, and thus infection may persist without being detected.

The Virus

The rickettsiae of the disease have been isolated from the blood of patients during the febrile stage, also in some cases during the last two or three days of the incubation period; the virus usually disappears with or just before the fall in the temperature, but occasionally persists for a day or two in early convalescence. Infection is conveyed from man to man by human lice, chiefly, if not entirely, by the body louse. The louse cannot transmit infection till 5 to 10 days after biting an infected person; it then remains infective for the rest of its life. The rickettsiae are scanty in the human body, but multiply exceedingly in infected lice, chiefly in the cells of the gut. They are small organisms resembling bacilli or cocci:

they stain well with Giemsa's reagent and are Gram-negative. They do not grow in ordinary culture media, but only in the presence of living cells: for example, in tissue cultures or in the yolk sacs of developing chick embryos. In the latter they multiply rapidly, so that suspensions of the yolk sacs may be heavily loaded with rickettsiae a few days after inoculation. Monkeys are susceptible to infection: the virus can be maintained in guinea-pigs for an indefinite number of transfers by intraperitoneal inoculation, but the disease is seldom fatal to the animals and seldom causes scrotal swelling such as results from inoculation with the rickettsiae of flea-borne typhus. White mice are susceptible to inoculation by the tracheal route; the animals get severe pneumonia, and enormous numbers of rickettsiae are found in the consolidated lungs.

The virus is normally transmitted through the skin from infected lice. The exact mechanism of transmission is doubtful; some workers believe that the organisms are not introduced into the body in the act of biting, but rather by the entry of infected faeces or of fluids from the crushed bodies of the insects through the site of the puncture or through scratches. The faeces of infected lice contain enormous numbers of rickettsiae, which can survive for a long time in the dried faeces. It is therefore possible that infection may occasionally be conveyed through contact with the faeces or through the inhalation of dust particles resulting from the drying of the faeces. Some German workers have recently recorded cases in which they held that transmission by the lice themselves could be excluded. These observers emphasize the need for disinfection of the skin and clothing of the patients rather than mere disinfestation by methods which fail to kill the rickettsiae. Another matter of importance to medical attendants is that the blood of the patient is infective, so that if accidentally smeared on the fingers when making blood films it may cause infection. A case has recently been recorded in which the disease was caused by the transfusion of blood from a donor who happened to be in the incubation period of the disease three days before the onset of his attack.

Immunity.—An attack confers immunity, which is complete for a considerable time but gradually wears off, so that a second attack may occur; this is usually much milder than the original illness. Mild or unapparent attacks in persons with partial immunity are believed to be important sources of infection in endemic areas.

Pathology.—The characteristic lesions are tiny nodules in the walls of small blood vessels, especially of the brain, skin, and kidneys: the nodules are made up chiefly of large and small mononuclear leucocytes and of partly necrosed endothelial cells of the blood vessels. Necrosis of the vessel walls at the sites of the nodules is the chief cause of haemorrhages and petechial eruptions. The nodules also cause interference with the blood supply of the brain, heart, and other organs, and so are probably responsible for many of the chief features of the disease.

Clinical Features

Most of the cases seen in severe epidemics conform to a fairly uniform type, though there are wide variations in severity. Sporadic attacks and cases in endemic areas, especially when they occur in children, are often so mild that they are very likely to be missed by medical men whose mental picture of typhus is based on descriptions of "typical" cases. The figures given in parentheses in the following account are based on reports of epidemics; they are not applicable to mild outbreaks. For a detailed account of the symptomatology the textbooks must be consulted.

Incubation Period.—This is usually 8 to 12 days; the extreme ranges are 5 to 23 days. As a rule the longer the incubation period the milder is the attack.

Signs and Symptoms

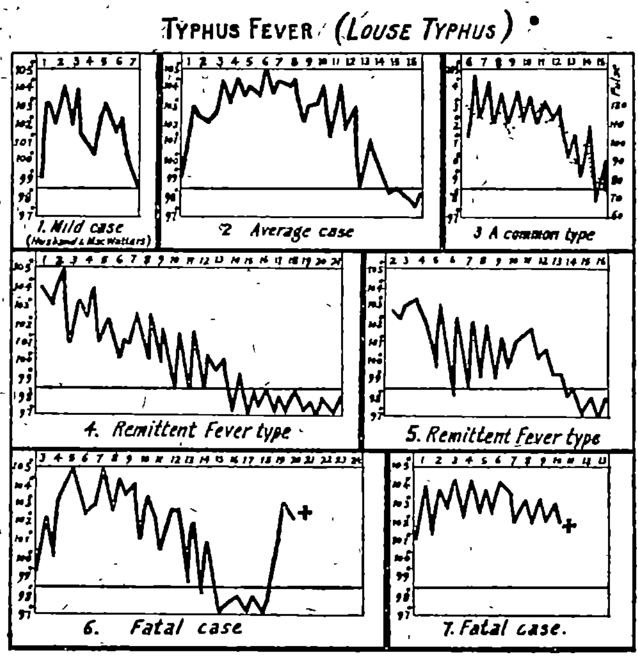
The chief features of cases seen in adults during severe epidemics are: The onset is usually sudden or rapid, with chill, shivering, or rigor (60 to 80%), severe frontal headache (90%), and pains in the back and limbs. Vomiting frequently occurs (25 to 50%). There is often suffusion of the face with swelling of the eyelids and injection of the conjunctivae. At first drowsiness or mental confusion is present, succeeded by stupor or delirium in many of the severe cases. Insomnia is frequent (50%). The temperature rises rapidly, reaching its maximum of 103° to 105° F. within two or three days and then remaining high, with daily remissions of 1 to 3 degrees for 8 to 12 days. Occasionally the temperature falls to normal for a few hours before the end of the first week; but, apart from this pseudo-crisis, the fever runs an uninterrupted course in most cases. The throat is often red (30 to 75%), the tongue and mucous membranes of the upper air passages are usually dry, and the latter may be distressingly irritated. Bronchitis is frequent (80 to 90%). Meningism is not uncommon. The spleen is sometimes palpable.

The rash is often the first diagnostic feature; in some outbreaks it has been reported as being absent in about 10% of the cases. In pigmented skins it can only be detected when it is pronounced. It appears suddenly, as a rule between the third and fifth days; in rare cases it is seen on the second day, and it may be delayed till the eighth or ninth day. Often it is preceded by a faint mottling of the skin, then pink or bluish-red macules appear on the sides of the chest, back, and shoulders, rapidly extending to the rest of the trunk and often to the arms and legs. The spots are seldom raised; at first they disappear on pressure, but soon cease to do so; at the same time their colour changes to deep red and then to brown. In severe cases there is often a petechial haemorrhagic point at the centre of each spot; this is surrounded by a brownish mottling. After a few days the spots begin to fade, but brown staining may persist for some days or even weeks. The spots may be few and difficult to detect; usually they are numerous, and in severe cases they may be very profuse. Exceptionally, the eruption is maculo-papular or papular; in severe cases it may consist of purpuric patches of varying size. The distribution of the rash is important in diagnosis. The trunk, especially the sides of the chest or back, is the favourite site; there is extension to the arms and legs in about three-fourths of the cases, but the face is affected in only a few patients (about 4%). The palms and soles are very rarely involved (about 2%). In some recent outbreaks extension to the face, palms, and soles has been relatively frequent.

The pulse soon becomes feeble, it may be slow in proportion to the temperature; the blood pressure falls, so that systolic readings of 80 to 100 are usual. Occasionally there is leucopenia, but a moderate degree of leucocytosis is usual; very high counts of 20,000 or more occur only in very severe cases. The blood tends to become concentrated; the haemoglobin readings and red blood cell counts may be abnormally high even when blood destruction is progressing. Febrile albuminuria is usual; true nephritis is infrequent, but has been reported as fairly common in some epidemics. Red blood cells in varying numbers are found in the centrifugalized urine; in severe cases there may be obvious haematuria. The leucocytes of the cerebrospinal fluid are slightly increased in mild cases—considerably so in severe attacks, in which a good deal of albumin may also be present.

The most striking feature of the disease is the rapidly progressing deterioration in the mental and physical condition; before the end of the first week the patient is often in the "typhoid state," with great prostration, low muttering delirium or coma, tremor of the tongue and tendons, and absence of response to external stimuli. Active noisy delirium and great restlessness may occur: in this condition there is an added strain to the already enfeebled heart. The breathing is usually hurried even when pneumonia does not occur; the heart sounds are feeble, especially the first sound, which may be inaudible. Even in relatively mild attacks mental disturbance and physical weakness are conspicuous features; their early onset and rapid progress are in contrast to what happens in typhoid fever. Meteorism is unusual in typhus patients. In recovering patients improvement usually sets in rapidly or suddenly; the temperature falls by rapid lysis or by crisis about the twelfth to the sixteenth day and at the same time the mental condition improves and the appetite returns. At this stage special care is needed because the patient feels so much better that he is tempted to take liberties while his heart is still very feeble. In some cases the mental condition does not clear up till some days or even weeks after the fall of the temperature: slow cerebration, deafness, and tremors of the muscles are the chief symptoms in such cases.

Most of the deaths occur between the tenth and the seventeenth day; it has been stated that the eleventh day is especially critical, but in some epidemics more patients have died after than before the fall in the temperature. A few of the types of temperature curve that may occur are shown in the accompanying chart.



Mild Attacks.—These are far more common than would be gathered from descriptions of the disease that are based on experience of severe epidemics: in many outbreaks severe attacks are quite exceptional. Cases in children and sporadic attacks are often so mild that they are not recognized. In surveys of suspected areas ambulatory cases or even unapparent attacks are sometimes discovered by the Weil-Felix test. The mildest cases that are likely to be recognized in ordinary conditions are those resembling an attack of influenza: the patient has fever, with pains in the back and joints, redness of the throat, headache, and lassitude. There may or may not be a rash. The fever lasts a week to 10 days, the rise and fall in the temperature are often gradual, and apart from a positive Weil-Felix reaction no reliable diagnostic indication may be present. In some outbreaks the cases are more characteristic; they have a general resemblance to the severe attacks seen in epidemics, but the signs and symptoms are all of a milder type, the temperature does not rise so high, and the fever lasts from 10 to 13 days. Complications are rare and convalescence is rapid. Even in groups of cases in which moderately severe attacks occur, the case-fatality rate may be negligible except in elderly patients. In the absence of overcrowding, malnutrition, and very heavy louse infestation the average severity of the disease is by no means great. Brill's disease appears to be a mild form of louse-borne typhus. Although this disease was first described by Brill of New York as long ago as 1897 its true nature has only recently been discovered. Zinsser has shown that the virus is of the same type as that of louse-borne typhus and that more than 95% of the patients had originally come from places in Europe in which typhus fever was endemic. This suggests that the disease may be a late recrudescence of infection which has lain dormant for years in the patients. Although 500 cases have been reported from New York since 1910 there is no record of infection having been transmitted to contacts. Cases of the same kind must occur in other countries, including, in all probability, the United Kingdom. Clinically the disease is mild typhus fever, but it can occur in the absence of louse infestation.

Fulminating Attacks.—At the other end of the scale are the virulent and rapidly fatal attacks. These occur in severe epidemics and usually in elderly persons debilitated by malnutrition. The patient may die within 3 or 4 days of the onset—sometimes before the rash has time to appear, but more often after the precocious appearance of a haemorrhagic eruption. Clinically the attack resembles one of haemorrhagic small-pox.

Complications.—The most important complication is bronchopneumonia, which occurs in 10 to 20% of cases in epidemics and is often the apparent cause of death. Thrombosis of the femoral vein is not uncommon. Arterial thrombosis occurs in 1 to 5% of cases; it may cause loss of the toes or even of one or both feet. Secondary streptococcal infections are fairly common; otitis media has been reported in as many as 10% of cases in severe epidemics, parotitis in 2 to 4%, occasionally with suppuration of the gland. Bed-sores are frequent in severe cases, especially when nursing arrangements are defective.

Sequelae.—In mild cases convalescence is rapid and there are no sequelae, but after severe attacks the patient slowly regains strength and mental alertness. Weakness, slowing of the mental process, tremors of the hands, and partial deafness may persist for some days or weeks. True relapses are practically unknown, but sometimes there is an irregular rise of temperature for some days after the crisis.

Prognosis

The case-fatality rate varies greatly with age; it is almost negligible in children and is seldom more than 5% below the age of 20. It rises slowly till about the age of 40, when it is from 10 to 15%. It then rises somewhat steeply, reaching about 50% at the age of 50. Few patients of 60 and over recover. These figures refer to severe epidemics, but the risk to life always depends largely on the age of the patient. Persons debilitated by starvation bear the disease badly, and the virulence of the infection is a most important factor. Deaths are far more numerous in severe epidemics occurring in half-starved and crowded communities composed chiefly of adults: in such conditions the death rate may be as high as 40 or even 50%. In outbreaks in endemic areas the average rate may be as low as 5 to 10% if all the mild cases are taken into account. Unfavourable features in individual cases are early onset of delirium or coma, haemorrhagic rash or other haemorrhages, leucocytosis in excess of 20,000, bronchopneumonia, and thrombosis of the large veins.

(*The concluding part will appear in our next issue.*)

POST-WAR HOSPITAL SERVICES

By arrangement with the Minister of Health the Nuffield Provincial Hospitals Trust has appointed Prof. J. A. Ryle and Dr. A. E. Quine to carry out a survey of hospital services in the North-East of England (Northumberland, Durham, and Cleveland). This will be conducted on the same lines as the surveys now being carried out by officers appointed by the Minister of Health in the London area and in the North-West. This is part of an arrangement under which the Nuffield Trust, with the concurrence of the County Councils Association, the Association of Municipal Corporations, and the British Hospitals Association, has agreed to assist the Ministry by organizing surveys of hospital services in various parts of the country. The areas to be surveyed and the officers to be appointed will be agreed between the Minister and the Trust. The object is to obtain expert advice on the hospital resources and needs of the areas so as to provide a factual basis on which the Government's post-war hospital policy, which was announced by the Minister of Health in the House of Commons on Oct. 9, 1941, can be worked out. The policy, briefly, is to place a duty on the major local authorities, in collaboration with voluntary bodies, to provide a service which will ensure that "appropriate treatment will be readily available to every person in need of it."

Prof. J. C. Drummond, D.Sc., Scientific Adviser to the Ministry of Food, will deliver the Harben Lectures for 1942 on "Problems of Wartime Nutrition" at the Royal Institute of Public Health and Hygiene, 28, Portland Place, W., on Mon., Tues., and Wed., Oct. 26, 27, and 28, at 3 p.m. In his first lecture he will discuss "The Background to the Study of Nutrition in Wartime"; in the second "Deficiency Conditions to be guarded against in Wartime"; and in the third "Measures taken to maintain a Good Nutritional Condition of the People in Wartime." Admission to the lectures is free, and seats may be reserved on application to the acting secretary of the institute.

WOMAN-POWER AND MATERNITY

The Minister of Health, who presided over the National Conference on Maternity and Child Welfare which was held recently at the B.M.A. House, London, said that the confinements which have taken place in the emergency maternity homes set up under the evacuation scheme number 57,000, and additional homes are kept in reserve in case of need. Only normal cases are attended in these homes, but each home is linked with a hospital for abnormal cases, and the service of obstetric specialists is available if required. At more than 60 hostels women may spend a period before entering a maternity home and again after leaving it. The Minister appealed for women to take up midwifery or to return to it if already qualified. Although there are 65,000 registered midwives, only 15,000 notified their intention to practise last year. In the later proceedings of the Conference the question of the pregnant woman in industry loomed large. There appeared to be general agreement that the armed Forces are not the place for expectant mothers or for mothers with very small children. It is the rule that expectant mothers must leave the Services as soon as possible after the third month of pregnancy. If their record has been satisfactory their certificate is endorsed "suitable for re-enrolment," but no woman is actually enrolled or re-enrolled until 6 months after confinement, and even then it is thought better, if she must be employed, that she should take a civil job rather than re-enter one of the Services.

The question of the pregnant woman in industry is much less easy of solution. Several of those who addressed the Conference spoke of the difficulty of inducing the pregnant woman to report her pregnancy. She is apt to think that there is no reason why her work at the factory should be suspended during the early part of the period, and, of course, the factory doctor cannot inform the management of a woman's pregnancy without her consent. It is also true that most ordinary factory jobs can be done by women in the early stages of pregnancy, but if the work involves the handling of lead or mercury, with the risk of industrial poisoning, or requires the woman to carry heavy weights or to climb heights, pregnancy even in the early stages should be a bar. Pregnant women also should not be allowed on night shifts. Otherwise the length of time the pregnant woman remains at work depends upon her economic conditions and the amount of consideration she is fortunate enough to receive. Dr. Margaret White, who addressed the Conference on this subject, said that in her experience most women worked up to the end of the seventh month. It is worth recalling what Germany and Japan did in this respect, at all events before the war. In Germany no employer was allowed to dismiss a woman 6 weeks before or 6 weeks after her confinement. Time off for breast-feeding and rooms for nursing mothers were provided. The law also ordained less tiring work to be given to pregnant women. In Japan employers were not allowed to let women continue at work for 4 weeks before or 6 weeks after their confinement, and for the time lost a woman received up to 60% of her wages. In this country there is no legislation safeguarding the pregnant woman, probably because female industrial labour has not been so common here as in some other countries. Dr. Letitia Fairfield told the Conference that in her experience the gynaecological disabilities encountered among women in the Services were not nearly so many as were supposed. Any major troubles—fortunately rare—were dealt with at Service or E.M.S. hospitals under specialists, while minor disabilities such as dysmenorrhoea or menopausal conditions were treated either by medical officers in the Service (of whom in the R.A.M.C. and the R.A.F. Medical Service a considerable number are women) or by selected specialists at the hospitals. Women's Services, Dr. Fairfield thought, were well cared for in these respects, but in organizing arrangements for her own Service she had been impressed by the need for better provision for dealing with minor gynaecological conditions among civilian women.

RECENT NUTRITION STUDIES

The report of the Governing Body of the Lister Institute for 1942 is a brief survey of the scientific work done during the year. Special interest attaches to the work of the Division of Nutrition, which is located at Cambridge. Here Dr. Harriette Chick and others have been investigating the biological value of the proteins contained in wheat flours, more especially in national wheatmeal (85%), which is milled to contain as much as possible of the aleurone layer and embryo (or germ) of the grain, and as little as possible of the bran. The biological value of the mixture of proteins in national wheatmeal (as judged by experiments on young rats, taking the weight increase per gramme of protein ingested) was found to be about 15% higher, and that of the proteins in wholemeal (100%) about 20% higher, than that of the proteins of white flour (73 to 75%). The digestibility of the protein in the three types of flour was found to be rather lower in national wheatmeal and in wholemeal, but this is more than compensated for by the higher biological value of their proteins.

Some work has also been done on B_2 vitamins in different types of flour. The highest concentration of riboflavin was found in the germ; that of "middlings" and bran was intermediate; and that of white flour (endosperm) lowest. The contents in white, national wheatmeal, and wholemeal flours were in the order of 1 : 3 : 4. The amount of riboflavin present in wholemeal and national wheatmeal is only about one-half or one-quarter that present in such foods as meat, milk, and eggs, but breads made from these flours may provide an important source of this vitamin, owing to the relatively large amount of bread that is eaten. In its content of B vitamins, as in the biological value of its proteins, national wheatmeal has been found intermediate between wholemeal and white flours, though nearer to the former.

An interesting experiment has been made with dried yeast as a supplement to milk in a rural school community. The dried yeast was prepared from cultivated *Torula utilis* and was well tolerated, digestive disturbances being reported in only three cases. During ten weeks 79 children received, with the school milk, a biscuit daily for five days containing 10 grammes of the cultivated dried yeast, and an equal number received a similar biscuit containing no yeast. The children who received the yeast showed an average weight increase of 1.7 lb., while the control group showed only 1.2 lb. A smaller number of children completed a five-months trial during which the increase in weight of those who received the yeast biscuit was 4.4 lb., while those in the control group showed an average increase of only 3.1 lb.

The influence of intermittent consumption of vitamin C on the development of scurvy has also been studied, and on the basis of experiments on guinea-pigs the conclusion is drawn that in the case of a man a quantity of the order of 100 mg. of ascorbic acid consumed at intervals of several days or even weeks would offer protection against scurvy. This consideration has a bearing on the consumption of vitamin C during winter and early spring, when the urban population has largely to depend on the potato for a continuous but moderate supply of vitamin C. The additional occasional intake of high quantities of ascorbic acid present in those vegetables and fruit which are rich in it acts, in all probability, as a safeguard if and when the consumption of vitamin C through the medium of the potato is not quite adequate.

In addition to these nutrition studies the workers under the auspices of the Institute have been engaged in various serological, biochemical, and endocrinological investigations. Two only can be mentioned here. The technique of typing paratyphoid B bacilli with the Vi bacteriophage has been developed and is being successfully applied in the epidemiological investigation of outbreaks of the disease. In the endocrinological field the effects of male and female sex hormones and their co-operative activity with thyroid and adrenal cortical hormones have been studied, and a study has also been made on the effect of ageing on the weights of endocrine and certain other vital organs.

Reports of Societies

DEFICIENCY DISEASES

The third scientific meeting of the Scottish Group of the Nutrition Society was held at Gleneagles, Perthshire, on August 26, when papers were read on the signs and symptoms of deficiency diseases.

Vitamin B

Prof. V. P. Sydenstricker (U.S.A.), describing the clinical patterns associated with deficiency of the B group of vitamins, pointed out that the requirements for certain of the B group of vitamins depended on the composition of the diet, and that synergistic reactions probably further conditioned the requirements. Vague malaise, weakness, lassitude, nervous irritability, mild depression, muscle pains, anorexia, and consciousness of disturbed gastro-intestinal motility were early symptoms in all group B deficiencies. Later, physical signs developed into fairly definite patterns. All symptoms and signs resulting from dysfunction or degenerative changes of the peripheral nerves and heart were attributed to thiamine deficiency. Certain dermatoses and lesions of the mucous membranes and symptoms referable to the cerebral cortex and mid-brain were thought to depend on depletion of nicotinic acid. Other changes in the skin and mucosae and a variety of disorders of the visual apparatus responded to treatment with riboflavin. In addition to these there were certain dermatoses and ocular disturbances which responded only to treatment with the entire B group. The lecture was illustrated by an excellent collection of coloured lantern slides.

Dr. John Yudkin (Cambridge) reviewed the diagnostic criteria of vitamin deficiency in relation to recognized diseases of unknown aetiology and obscure signs and symptoms. He pointed out that the available tests could be divided into those which demonstrated the existence of deficiency and those which showed that deficiency was the cause of the condition. There were four stages in diagnosis: (*a*) indirect evidence of deficiency, (*b*) direct evidence of deficiency, (*c*) the presence of signs to be expected in deficiency, and (*d*) the cure of the condition by correction of the deficiency.

Vitamin A

Dr. J. R. Mutch (Aberdeen) observed that, although vitamin A appeared to be related to the regeneration of the visual purple, neither the extent nor the rate of dark-adaptation, in his studies, bore any close relation to the vitamin A content of the diet. Since the introduction of wartime restrictions on diet there had been no increase in the amount of night blindness, while chronic blepharo-conjunctivitis and corneal ulceration had decreased in frequency. On the other hand, more infants had shown severe photophobia, which readily cleared up on improvement of feeding and treatment with cod-liver oil and ultra-violet light. Mr. J. Gerrie (Aberdeen) described the value of vitamin A in the treatment of nasal sinusitis of children, a condition which seemed to be increasing at present. The older treatment of weekly antral lavage was unsatisfactory, for in 60% of the cases suppuration recurred after the condition had apparently cleared up. Vitamin A given to cases with suppuration did not seem to influence the infective process, but appeared to be effective in the pre-suppurative stage. A number of non-suppurative cases in which the typical thickening of the antral lining had been confirmed by *x*-ray examination were given vitamin A by mouth or by intramuscular injection, and after one to six months, only about 20% showed suppuration, while 80% of a group of similar control cases treated without vitamin went on to suppuration.

Vitamin D

Prof. Noah Morris (Glasgow), discussing vitamin D deficiency, said that the classical type of rickets with its marked skeletal deformities had almost entirely disappeared in this country, but had left in its place a form of disease which was possibly more dangerous because it was not obvious. Formerly, the earliest manifestations of rickets were thought to appear about the fifth month, but now it was known that rickets might occur in the foetus if the mother was suffering from calcium and vitamin D starvation. He pointed out that while osteomalacia was most commonly associated with pregnancy and lactation, it might also be produced where there was insufficient intake or poor absorption of lime. The non-pregnancy type might often involve the spine alone and was apt to be diagnosed as rheumatism. Tetany might occur, and there was often weakness and stiffness, especially in the adductor muscles of the thighs.

Other Deficiencies

Dr. A. Lyall (Aberdeen), in a paper on calcium and phosphorus deficiency and hypoproteinaemia, pointed out that primary nutritional disturbances of these types were rare. Nutritional hypoproteinaemia was infrequent, but might be associated with anorexia or pregnancy and sometimes with imbalance of chloride and fluid. Prof. L. S. P. Davidson (Edinburgh) reported an investigation he had carried out in Edinburgh on the haemoglobin values in infants, children, and pregnant women, and compared the results with those found in a similar investigation in Aberdeen a few years ago. Prof. H. Dryerre (Edinburgh) gave an interesting lecture on deficiency diseases encountered in veterinary practice.

Correspondence

The Purpuric Type of Cerebrospinal Fever

Sir,—I was most interested to read Dr. I. S. Fox's medical memorandum on fulminating purpura and adrenal haemorrhage (Aug. 22, p. 218), and in particular his comment, in which he states that the accepted view appears to be that these cases "are due to a massive bacteriaemia, and Maclagan and Cooke (1916) suggest a selective action by the meningococcus."

In the *Journal* in June, 1907, I described fulminating cases of cerebrospinal fever with purpura, and the purpura in one case was so extensive that the portion of the body covered with large purpuric blotches was greater than the rest of the body. In this case there was practically no neck rigidity and Kernig's sign was absent. The meningococcus was recovered from the spinal fluid and the patient (a child) died in 22 hours from the onset. This case was seen by me at Purdysburn Fever Hospital, Belfast, where I saw about 350 cases of the disease (1906-8). Purpuric rashes were more common in the earlier stages of the epidemic, being present in 24 of the first 75 cases seen by me.

That there *is* a purpuric type of the disease I have no doubt; and in an article in the *Practitioner* for June, 1915, this type of the disease was mentioned and described by me; in this article one of my conclusions regarding cerebrospinal fever was that acute toxaemia may be caused by meningococci, and that patients suffering from acute toxaemia during an epidemic of cerebrospinal fever should be bacteriologically examined to see if meningococci were present.

At the post-mortem examination of purpuric cases in the epidemic, in addition to the skin condition, haemorrhages were observed on the peritoneal surfaces of the intestines, bladder, kidneys (including the suprarenals), on the heart, and occasionally the pleura. In the abdomen mesenteric glands were very frequently found enlarged and inflamed and the Peyer's patches and solitary follicles affected. In no cases seen post mortem were signs of disease found in the brain and meninges without intestinal involvement being noted, though intestinal signs were observed without any indication of disease in the brain and meninges. These findings, along with the fact that toxaemic cases without cerebrospinal fever had been observed, prompted the suggestion that the title "cerebrospinal" applied to the disease was misleading, and they also suggested the possibility of the intestinal tract being one of the portals of entry of the meningococcus, for in post-mortem examination of some fulminating cases no meningeal signs were evident.

Readers are referred to the articles mentioned. That in the *Practitioner* contains detailed observations regarding several hundred cases of cerebrospinal fever and a note on what I believe was the first case of cerebrospinal fever to receive treatment by Flexner's serum on this side of the Atlantic. I have still in my possession one of the original vials of this serum, unopened, taken from Flexner's original and famous horse.—I am, etc.,

Glossop ERNEST H. M. MILLIGAN.

Lister Technique for Emergency Surgery

SIR,—I agree with Prof. R. J. Willan (Sept. 5, p. 291) that the revival of the Lister technique would be good for emergency operations, but I would add—for all accidents. There seems to be something wrong with the technique of aseptic surgery, judging by some articles in the *Journal* recently on hospital infection of operation wounds. My experience of the Lister technique dates back to the 80's of last century when I was a student under, and afterwards H.S. to, the late Sir Hector C. Cameron, Lister's assistant when the latter was experimenting with antiseptics. During that time I never saw an operation wound suppurate, and we had no stitch abscesses, which seem to be quite common to-day. Accidents did better than they do now. I remember three cases in particular: a compound comminuted fracture of both bones of the forearm with a wound opening into the carpo-metacarpal joint of the thumb; a compound dislocation at the knee with the trochanter protruding through the skin and covered with mud and horse-dung; and a scalp wound extending from behind one ear, over the vertex to behind the other. All these healed without any suppuration.

One of the most important things in Lister's technique, according to a French surgeon, was his "extreme and minute care in dressing wounds." In this my chief copied Lister; for those wounds he did not dress himself he allowed no one but his H.S. to dress. In another hospital where I was H.S. the technique was supposed to be "antiseptic," but the regular routine was for one nurse to go in front of the surgeon to undo the dressings and another to do them up afterwards. Needless to say that nearly every wound suppurated.

Recently, as examiner for an accident insurance company, I have been astonished at the number of septic wounds I have seen. Perhaps the present-day teaching that antiseptics "soil" wounds has something to do with it. When I told a young lady doctor recently how Lister used to pour crude carbolic acid into compound fractures, she exclaimed: "That would cause gangrene; we were taught never to use carbolic acid because it would cause gangrene." Here is a conundrum. Lister saved his patients by using carbolic acid seventy years ago, and to-day it causes gangrene. Why? The crude carbolic was probably about 5% of pure phenol.—I am, etc.,

Birmingham ROBERT ANDERSON.

Group Psychotherapy

SIR,—The most striking feature of Dr. Maxwell Jones's interesting article (Sept. 5, p. 276) is its emphasis upon the low morale so blatantly displayed by present-day "neurotics." During the last war mental conflict was mainly between repressed self-preservation urges and the conscious ideals of courage and "doing-one's-bit" creditably. In the interval between the two wars the process of debunking has been carried to such a pitch that a large section of democracy has come to regard the idea of self-sacrifice as ridiculous if not hypocritical. A reversal thus apparently has taken place, and it is now the moral and herd instinct tendencies which are repressed, while the conscious self-centred urges are shamelessly acclaimed. Conversation with shopkeepers and managers of multiple stores has revealed to me, in a way direct contact failed to do, the prevalent ignorance as to what is involved in this war. I gathered from the above sources of information that any difficulty in getting wished-for commodities is frequently met by their clients with the remark, "We should be as well off under Hitler." No wonder that so many seek to "dodge the column." The group of patients reported upon by Dr. Maxwell Jones is peculiarized neither by having "a very circumscribed outlook" nor by being largely preoccupied with its domestic situation, but rather by having a vegetative lability which can be used as a means of escape from responsibility. Even so, these patients are at no pains to hide from themselves or others their dislike for serving their country. In such an atmosphere psychotherapy is indeed "conducted under rather difficult conditions." Dr. Maxwell Jones's triumph is to have realized that what these so-called neurotics need is education. Both the methods he suggests are admirable, but should not be confined to E.M.S. neurosis centres or special clinics.

The question, however, arises as to how far the medical profession is justified in a deliberate attempt to inculcate moral principles. The question might be asked in the House. The psychotherapist in the last war felt himself on safe ground when showing a "shell-shock soldier" that courage was compatible with fear and that the latter should be overcome but not repressed. In this war it has become rather embarrassing to explain to so-called neurotics that courage and self-sacrifice are anything other than avoidable foolishness. Hence the plan for group education, as set out by Dr. Maxwell Jones, is a most promising one.—I am, etc.,

Caldecote. A. E. CARVER.

Circulatory Overloading after Rapid Intravenous Injections

SIR,—It is possible that the most interesting article on circulatory overloading following rapid intravenous injections by Drs. E. P. Sharpey-Schafer and John Wallace (Sept. 12, p. 304) may result in some clinicians belittling the dangers of too rapid infusions in patients who are not "convalescent without cardiovascular disease." The authors do not in any way suggest that the reaction of ill people, possibly actually undergoing an operation, would be similar to that of their experimental subjects; nevertheless there would seem the risk of such being inferred.

Less than two weeks before the publication of this article a patient of mine, aged 46, with a chronic lung abscess, died from pulmonary oedema 2 hours after lobectomy. The operation, which was associated with moderate blood loss, lasted approximately 2¼ hours, during which a pint of normal saline and 3½ pints of blood were given. He was in excellent condition at the end of the operation, but as soon as he was returned to bed became cyanosed, and respirations were "bubbly" as a result of the accumulation of thin, blood-stained, watery fluid in the air passages. In spite of repeated aspiration of this fluid he died 2 hours after the end of the operation. At necropsy the right side of the heart was bloated with blood and the lungs and air passages filled with great quantities of blood-stained oedema fluid.

Instead of a convalescent subject with a normal cardiovascular system we were dealing with a middle-aged man who had suffered the chronic toxic effects of a lung abscess for 12 months, and who was receiving operative trauma at the time of the infusion. Under such conditions the dangers of too rapid intravenous injections are only too real.—I am, etc.,

St Albans. OSWALD S. TUBBS.

Hereditary Factor in Cardiovascular Disease

SIR,—Dr. Edwin Goodall (Sept. 12, p. 322) has raised a most important point, and one urgently requiring attention, when he stresses the importance of studying the hereditary incidence of hypertensive disorders and "replacing impressions by reliable family histories on a uniform basis." The tendency has often been to place the blame for hypertension on mental or physical stress, diet, tobacco, or alcohol, and to neglect the hereditary aspect of this condition.

Weitz, in a most interesting address before the Deutsche Gesellschaft für Kreislaufforschung at Bad Nauheim in 1936,[1] described in great detail his investigations over a lengthy period into the histories of patients suffering from hypertensive disorders—not only their pedigrees, but the details of their personal lives which might be considered likely to influence their blood pressures. His conclusion was that, apart from dietary influences in certain cases, the main causal element was that of heredity. Campbell[2] states that in 30 cases of inherited heart disease associated with arteriosclerosis, obesity, and hyperpiesia, investigated by Ryle and himself, 24 gave a history of the father or mother being also affected, while in 6 cases the parents were unaffected but the sibs of the patients suffered from the same disorder. This would appear to show that, while usually dominant, the condition may also be inherited as a recessive trait.

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[1] *Verhandl. der Dtsch. Gesellsch. fur Kreislaufforschung*, 1936, 9, 11.

[2] In Blacker's *Chances of Morbid Inheritance*, London, 1934, p. 245.

Allen[3] affirms that heredity is more important than all other factors in the aetiology of arteriosclerosis. He points out on the one hand the individual with healthy forebears, from the cardiovascular point of view, who in spite of severe stresses and strains reaches old age with healthy arteries, and on the other hand the young patient with advanced arteriosclerosis, perhaps associated with diabetes, in whose case the only contributory factor is a poor eugenic background.

For several years I have collected pedigrees of patients with hypertensive disorders, and find in these strong confirmatory evidence for the hereditary causation of the circulatory diseases. One such pedigree, with detailed notes on individual members, I have recently published in the *Eugenics Review*.[4]

I feel most strongly with Dr. Goodall that the whole question of the inheritance of hypertensive disorders is of such immense importance that it merits detailed investigation by as many observers as possible, both in hospitals and in private practice, and the correlation of their findings by geneticists and statisticians.—I am, etc.,

Coningsby, Lincoln. J. W. McFEETERS.

Failure of Splenectomy in Purpura Haemorrhagica

SIR,—I hope your readers will not be unduly influenced by the levity, probably inadvertent, with which Prof. Witts in his paper on ulcers of the leg in purpura haemorrhagica (Sept. 12, p. 309) decides on removal of the spleen. As the platelets numbered only 19,000 and 20,000 respectively, "splenectomy was advised." In one case no benefit was obtained, and in the other an excellent recovery was made. In the later case it is too early to say that this is permanent, for a period of improvement in purpura haemorrhagica is often followed by the recurrence of the disease in all its aspects notwithstanding splenectomy.

It is now some 17 years (*Lancet*, 1925, **1**, 323) since the late G. A. Sutherland and I introduced splenectomy into this island as a treatment for purpura haemorrhagica, and enough experience has been gained to state that splenectomy has a very limited role in the treatment of that condition. In my later experience splenectomy is only justified (1) in severe cases which fail to respond to dietetic and antitoxic measures designed to eradicate foci of infection, and (2) in fulminating cases where death is threatened from exsanguination by external haemorrhage. The temporary benefit seen after splenectomy would appear to be due to the removal of a depot or concentration in the spleen of the factor which has the faculty of increasing the permeability of the capillaries to the extravasation of erythrocytes which manifests itself as purpura and ecchymosis.

When splenectomy was first applied in purpura haemorrhagica it was thought that the condition was due to an essential thrombocytopenia, but further experience does not bear out this theory. Lack of circulating platelets is found in practically all conditions in which purpura is seen—e.g., the specific fevers, diphtheria, nephritis, etc. In these conditions a toxic effect on the capillary wall seems a reasonable pathological explanation, and the scantiness of the circulating platelets may be explained by the numbers immobilized in plugging the lesions in the capillaries. Where the primary condition is not recognized, an essential failure in platelet production is postulated in the term "essential thrombocytopenia," but this is no more than an expression of our ignorance, and there is no evidence whatsoever that it is a disease *sui generis*, as is implied by Prof. Witts in his introduction. Splenectomy does not remove the cause of the loss of circulating platelets except for a brief period in chronic cases. In mild cases I have had successful results by purely medical measures designed to raise the general standard of health.

The failure of splenectomy in purpura haemorrhagica is well illustrated in a post-operative history of some 17 years in all three cases in our original paper. Apart from a brief period of under two years immediately after the operation, during which clinical manifestations were scanty or absent, these patients could and can at any time be diagnosed as victims of purpura haemorrhagica (and of splenectomy). The female histories are almost identical, with menorrhagia, metrorrhagia, epistaxis, purpura, and anaemia. During this period one has undergone an emergency abdominal operation for severe ovarian haemorrhage. (This has also occurred in another case under my care splenectomized at Bradford in 1928.) In recent months the third case in our original communication has given cause for great but unfounded anxiety. She reported herself as pregnant. Despite twenty years' history of haemorrhages and purpura she went to labour and gave birth to a fine boy with a total loss of only 3 oz. of blood notwithstanding a platelet count of only 50,000 per c.mm. throughout the whole gestation. The baby was born with purpura on the tip of his nose and on the palate, and the platelet count was only 40,000 on the 14th day of life: since then no further purpura has occurred and the platelets are normal at 260,000 per c.mm.

I fear I have trespassed beyond the normal confines of a letter, but I think it is important to mitigate the mischief which might be caused when splenectomy is undertaken from a chair of medicine with no higher grounds stated than lack of platelets, a feature which the operation more often than not fails to alter in severe cases. I quite realize that Prof. Witts was experimenting in his two cases, but his reason for the operation is too baldly stated and too casual in its implication to pass unchallenged.—I am, etc.,

London, W.1. BRUCE WILLIAMSON, M.D., F.R.C.P.

Single-handed Anaesthesia and Operation

SIR,—Dr. W. Brian Gough (Sept. 5, p. 295) has raised the question of single-handed operating and anaesthetizing. In the present state of medical public opinion it is bad policy for a doctor to attempt both. Leaving policy on one side for the moment, and regarding merely the facts, we do find that when matters are suitably arranged the patient is his own best anaesthetist, requiring only that amount of help which any person capable of watching or hearing air bubbling through ether is competent to give. That means in practice anybody provided he is not both blind and deaf. It is a well-known fact, though much neglected, that the secret of safe anaesthesia is an open airway. The procedure then for the would-be combined operator and anaesthetist is as follows: (1) get the patient under; (2) introduce a tube into the trachea and fix it and connect up with the suitable apparatus.

It would be tedious to describe this suitable apparatus, but it may be said that it has the following advantages. It is very simple. It is inexpensive (£3 13s. 6d.). It is automatic in action. It is more accurate than the most skilled anaesthetist, for the dose is exactly regulated to the operative procedure by a mechanism that has been perfected over many millions of years—namely, the patient's own respiratory centre. It can be and is generally used with oxygen from a cylinder, but is quite independent of that oxygen. This is a very important point. If the definition of the anaesthetist which afforded a source of never-failing amusement to one of the greatest of living surgeons—namely, "that person who sits at the head of the table more than half asleep while the patient on the table is more than half awake"—has any measure of truth in it, and it has some, then the said anaesthetist may not notice when the oxygen cylinder of a Boyle or a McKesson has run out. In such a case the oversight, even if short-lived, might be fatal. With the apparatus in question it wouldn't matter, for the patient would still be getting as much O_2 as the rest of us. If oxygen from a cylinder is being used, the lungs can be flooded with oxygen in two seconds by merely turning the tap of the oxygen cylinder—a manœuvre which also stops the anaesthetic. By pinching the tube on the exhaust valve 16 times a minute oxygen pressure in the lungs can be varied as required without danger of rupturing the air vesicles. By immersing this same tube in water, pressure in a collapsed lung can be raised to any desired height. Anaesthesia with it is so simple, so safe, so automatic, that one anaesthetist provided with six watchers could quite easily superintend as many operations in a theatre arranged for that number. Ether, $CHCl_3$, gas and O_2, and CO_2 have been given by means of it.

After what I have said it might seem that here at last is the secret of immortality, but this is not so. The human heart, one of the most wonderful things in creation, wears out at last, and occasionally that moment comes when under the influence of an anaesthetic. The apparatus puts the patient in the best possible position to carry on a bit longer. It has one disadvantage—it does not anticipate the wishes of the surgeon but rapidly overtakes them.—I am, etc.,

Manchester. E. FALKNER HILL.

Bee Stings

SIR,—Dr. R. Drummond (Sept. 19, p. 352) need not be surprised. His desperate run may have saved his life, as it is possible that violent exercise after being stung is a prophylactic against anaphylaxis.

A recent personal experience suggests this explanation. On the hottest day of August this year I was attacked by bees near an apiary on Exmoor, and directly afterwards pushed and dragged a bicycle through dense heather for over a mile, a very sweaty job. Except for slight itching, the 10 or 12 stings on face, ears, and scalp caused no symptoms. Yet a few years ago I suffered from severe symptoms of anaphylaxis after half that number of stings, as described in a letter to the *Journal* (Aug. 26, 1939, p. 471) to which Dr. Jex-Blake refers. On this occasion I suggested non-specific sensitization as a possible cause of the reaction, as I had been given injections of immunogen for pneumonia a few weeks previously.

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[3] *Nelson's Loose-Leaf Living Medicine*, 1924, **4**, 531.
[4] *Eugen. Rev.*, 1941, **33**, 73.

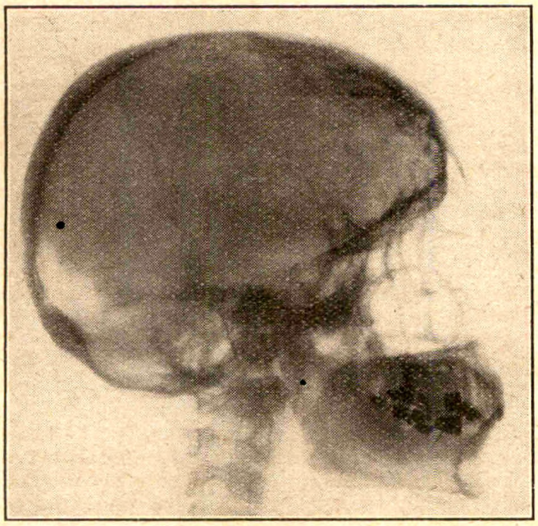
A shrewd old "beeman" once got badly stung looking through a hive of mine. I offered to drive him home, but he refused, saying that he would walk it off and that he would be better for a good sweat. Now sweating usually *accompanies* anaphylactic shock; hence is it not more likely that any good effects of exercise are due either to increased lymph flow or to the presence in the circulation, as the result of muscular activity, of a chemical substance antagonistic to bee venom? Here, perhaps, although in the reverse direction, may be an explanation of the effect of bee venom in the treatment of muscular rheumatism, an effect vaguely attributed to "protein shock."—I am, etc.,

Exeter. R. FORTESCUE-FOULKES.

Hyperostosis Frontalis Interna

SIR,—Dr. C. T. Andrews's interesting publication (Aug. 15, p. 185), and the discussion which followed, prompt me to report a case recently seen by myself which presented, together with the typical radiological appearances of the disease (*vide* photograph), unusual attacks, and I should be grateful for an opinion as to the mechanism of their causation.

The patient, again a woman, 44 years of age, had a fall on the back of her head in March, 1940. Symptoms appeared for the first time three weeks later, five days after a minor gynaecological operation under a general anaesthetic. They consisted of inability to get up owing to severe disturbance of equilibrium (tendency to fall backwards) and a dragging sensation at the back of the head. After rest in bed for two weeks, when pressure and a cramp-like sensation was felt in the occipital and temporal regions of the head, attacks of tinnitus, nausea, vomiting, diarrhoea, cold perspiration, and "deadness" of hands, feet, and nose occurred, which lasted for several hours and recurred at first three times a week. With rest they became gradually less severe and less frequent. During these attacks hyperacuity of hearing and oversensitiveness to light were noticed. Pressure in the head, giddiness, and occasional vomiting persisted until the end of 1941, and impairment of general health, muscular weakness, and ill-defined sensations in the head are still present.



Apart from a definite obesity of the girdle region and the thighs, nothing abnormal was found on clinical examination. Menstruation was regular, but lasted for two and a half days only instead of the customary four days before the present illness. Low body temperature. Blood pressure 130/80. No abnormal constituents in the urine. B.M.R., −18%. Blood-sugar tolerance curves: fasting 90 mg. %, 160 mg. % half an hour, 170 mg. % one hour, 120 mg. % one and a half hours, 80 mg. % two hours after ingestion of 50 g. of glucose. Serum calcium 12 mg. %. Haemoglobin 84%, R.B.C. 4,480,000; blood platelets 313,000; bleeding time 3 minutes; coagulation time 5 minutes; differential leucocyte count: 2% eosinophils, 57% polymorphs, 35% lymphocytes, 5% monocytes. The *x*-ray film of the skull shows hyperostotic changes in the frontal and perhaps in the parietal and sphenoidal bones. The outer table is not involved. The diploe of the entire vault appears thickened. The frontal sinuses are large and there is marked over-pneumatization of the mastoid cells.

As in most cases of hyperostosis frontalis, symptoms are not directly attributable to local pressure of the newly formed bone. The symptomatology of this disease is often so ill defined that it is usually diagnosed as hysteria. A frequent occurrence is that symptoms appear only after cranial injury (cf. Knies and Le Fever, *Ann. intern. Med.*, 1941, **14**, 1858). An interesting question which has arisen in the present case and which may apply to similar cases is whether an accident insurance is liable to pay compensation for the post-traumatic impairment of health.

Dr. J. MacKay Crawford (Aug. 29, p. 261) is right in pointing out that Dr. Andrews's case has a *lowered* glucose tolerance (the glucose tolerance *curve* being abnormally high).

As to the causation of the condition, most authors regard, contrary to Prof. Henry Cohen's view (Sept. 5, p. 292), a dyspituitarism as one of the causative factors. The reason for this is that anterior pituitary function is intimately linked with cranial architecture, so much so that cranial dysplasia can be regarded as a pathognomonic manifestation of pituitary dysfunction. Lack of pneumatization, thin external and internal tables, and sclerosed diploe are signs of primary hypoantuitarism, while over-pneumatization, expansion, and increased vascularization of the diploe occur with primary hyperfunction of the anterior lobe (cf. Mortimer, Levene, and Rowe, *Radiology*, 1937, **29**, 135). Secondary functional deficiency of the anterior lobe manifests itself in sclerosis of the diploe either in a normal or over-pneumatized skull according to the primary state of pituitary function. Hyperostosis frontalis interna can probably be regarded as a special form of this cranial dysplasia.

Dr. Andrews has reviewed the literature and stressed the possible relation between the anterior pituitary lobe and the parathyroid glands. The cranial changes in acromegaly and pituitary dwarfism point to the significance of the eosinophil cells of the anterior pituitary lobe (growth-promoting factor) for cranial development, and Hemphill and Stengel (*J. ment. Sci.*, 1940, **86**, 341) have found an eosinophil adenoma in one case of hyperostosis frontalis interna.—I am, etc.,

London, W.1. H. UCKO.

Sunlight Eruptions after Medication for Gonorrhoea

SIR,—Referring to the article by Capts. R. G. Park and W. M. Platts (Sept. 12, p. 308) on sunlight eruptions in patients with gonorrhoea treated with sulphonamides, the following observations are probably worth mention. In Vienna in the late 'twenties intravenous injection of acridine and its derivates had been widely used for the treatment of gonorrhoea. A considerable percentage of patients treated in that way showed photosensitivity—namely, an erythema on the parts exposed to the sun, followed by a deep dark pigmentation. Occasionally the pigmentation affected the mucous membrane of the lips. Following the recommendation of French dermatologists, resorcin tablets (0.25 gramme) were given after the injection as a preventive with good results.—I am, etc.,

Bacup. A. FESSLER.

"Constipation" in Breast-fed Babies

SIR,—Prof. Charles McNeil in his alphabet of breast-feeding (Sept. 5, p. 271) perpetuates an old error. He clearly believes that a breast-fed baby ought to have a daily bowel action. Under the heading of "constipation" he writes: "One type of constipation fairly common in breast-fed babies is of special character and seldom described in books. There is no bowel movement for two or three days, and then the passage of a large soft healthy motion. General health and digestion are excellent. The cause is anal spasm . . . the remedy is to pass the little finger covered with vaseline into the anal canal. . . ." Thus an imaginary pathology ("spasm") is invented to explain a non-existent disease ("constipation").

Large numbers of perfectly healthy breast-fed babies will only have a bowel action every two, or three, or even four days. As Prof. McNeil says, these babies thrive and their stools, though infrequent, are soft and healthy. Why then need we suppose that there is anything the matter? Why must they conform to our adult standard of a daily action? Our duty in these cases is to allay maternal anxiety and prevent the giving of aperients. I repeat, there is nothing whatever the matter with these babies, and they should be left alone. The regular daily habit will establish itself later on.—I am, etc.,

Crowthorne, Berks. E. F. Chapman.

Nomenclature of Night Blindness

Sir,—I hope you will permit me to comment as briefly as possible on the very interesting discussion between Mr. Francis E. Preston and Dr. J. Price Williams on this subject.

In vol. 14, p. 776, of Kuhn's edition of Galen these two sentences occur: "Amaurosis—a complete obstruction of vision without visible cause. To suffer from nyctalopia means that the patients see somewhat dimly (amauroteron) by day, more clearly in twilight, and at night more clearly still: or, conversely, poorly by day, and in the evening or at night not at all." This passage seems to be the source of the definitions of hemeralopia, nyctalopia, and amaurosis quoted by Mr. Preston, though it will be noted that, whereas Galen describes amaurosis as a complete obstruction of vision, Neame and Williamson-Noble call it a serious defect of vision. Nyctalopia and hemeralopia we must, I think, abandon. If even for Galen nyctalopia means both to see better by night than by day and to see better by day than by night, and if hemeralopia is equally paradoxical, then there is no help in them.

As for differentiating complete from partial blindness, the trouble is that in Greek as in English "blindness," "deafness," "baldness," and the like are not absolute terms, except by further qualification, or by convention, as in Galen's definition of amaurosis, they permit of gradations. A deaf man may be anything from hard of hearing to as deaf as a post; a blind man may be as blind as a bat or an owl: he may be gravel-blind or stone-blind; a bald man as bald as a coot or as a billiard ball. "Amauros" originally meant "dim," "obscure," and "amaurosis" meant "dimness of sight." It is, however, probable that in ancient Greek the meaning of the word tended to move in the direction of total loss of vision, just as the classical "amauros" (dim) has become in modern Greek "mauros" (black); though we see that even after defining "amaurosis" as complete obstruction of vision Galen in the next breath speaks of patients seeing "somewhat dimly" (amauroteron) by day. At any rate in modern medical terminology it is fair to say that "amaurosis" is the strongest candidate for the representation of total blindness from any cause. "Amauria" and "amauroma" are also, it is true, genuine though rare words, but it seems illogical and arbitrary to take three words of the same root and make "amaurosis" mean total blindness without visible cause, "amauria" total blindness, and "amauroma" partial blindness. For partial vision we have already the adequate and exact term "amblyopia"—vision which has lost its edge and is blunted but which still exists.

With regard to Dr. Price Williams's criticism that the termination "oma" denotes something concrete or objective, this is usually but not invariably true, whether in ancient Greek or modern terminology. This very word "amauroma," for example, occurs, I see, in a medical writer of the 3rd century B.C. with the meaning "dullness of vision"; and the modern glaucoma, whatever its aetiology, is rather a pathological process than a concrete object, though it must be admitted that to Galen a glaucoma meant an actual cataract.

Regarding Mr. Preston's objection to "amaurosis," when Galen defined "amaurosis" as complete loss of vision without visible cause he had just finished enumerating a list of gross ocular defects—wounds, ulceration, leukoma, staphyloma, scarring, etc., all obvious causes of total blindness. That still left him with a good deal of blindness to account for—optic atrophies, detached retina, embolism of the central artery, and so on. The first class he would designate by the name of the primary cause; the second he had to lump under the common denomination of "amaurosis." But, as Mr. Preston hints in his second letter, the ophthalmoscope has been invented since Galen's time, and there can now be few cases of complete or partial blindness without visible or at any rate ascertainable cause. "Amaurosis," in fact, in the Galenic sense has become an unnecessary term, and "nyctalopia" and "hemeralopia" are in process of becoming tobacco amblyopia or retinitis pigmentosa or vitamin A deficiency.

I suggest that we use "amaurosis" to mean complete loss of vision, without qualification of cause, and "amblyopia" to mean partial loss of vision. "Nyctamaurosis" would then mean complete loss of vision at night, if we ever needed such a term, and "nyctamblyopia" partial loss at night. Functional and orgainic are terms somewhat blown upon at the moment, but I would regard such a condition as retinitis pigmentosa as an organic, and vitamin A deficiency as a functional, nyctamblyopia.

When I saw Mr. Preston's original communication I wondered whether the resources of the English language were adequate to the need and thought of "night blindness" and "night purblindness," but if the *Shorter Oxford English Dictionary* is correct English is as ambiguous as Greek, for the first meaning of "purblindness" is "total blindness" and the second "partial blindness."—I am, etc.,

Barrow-in-Furness. John Ware.

Loneliness in Infancy

Sir,—Your excellent article on "Loneliness in Infancy" (Sept. 19, p. 345) should do much to draw attention to a line of treatment productive of good results.

Children taken from raided areas into hospital are in need of coddling, friendship, and protection. I know of children who for want of it during such strenuous days have literally turned their faces to the wall. It was not until others, infants and toddlers, behaved in the same way that we began to probe into the reason. Possibly there may be "loneliness in adults," and more than we realize, for we all know the story of the soldier who was so terribly wounded, saying, when his mother came, "Oh, nurse, how like my mother's touch!"—I am, etc.,

Eastbourne. A. H. Macdonald.

The Guild Spirit

Sir,—The late G. K. Chesterton, that profound philosopher-historian, would have been horrified and grieved at the idea of a State Medical Service. Chesterton always upheld the guild method, as opposed to wage slavery, whether under State capitalism or private capitalism. Every doctor to-day ought to read his essay "On the Bad Word for Guild" in his book of essays called *All is Grist*, first published in 1931. In this essay he specifically quotes the medical profession, saying:

> "Now the Guild method is no more mediaeval than it is modern, in so far as it is a principle apart from time. The best proof is that it does still exist in a practical profession with which we are all acquainted. The doctor, the ordinary general practitioner, whom most of us know and to whom many of us owe our lives, is a typical example of the member of a Guild. He is not a Socialist official; he is not a State servant; he is an example of private enterprise. That is to say, he owns his own lancet and stethoscope; he has to buy his own practice; he does in a certain degree compete with the men of his own trade. But he is forbidden to compete with them by certain methods; he is forbidden to drive another doctor out of his practice by certain expedients of self-assertion or self-advertisement; he has to observe towards his fellow-doctor a certain respect and consideration. He has to do this because he has joined a Guild or confraternity, which exists for the maintenance of the members of his profession as a whole. Its definite and deliberate policy is to keep all the doctors in existence, as far as possible, and *prevent* one of them destroying all the rest. Once it is admitted that a man may use any methods of advancement and advertisement, the chances are that about twenty honest doctors will be swallowed up by one quack. We know this is what has happened in journalism and in commerce, and in any number of other things."

Surely half the discontent in the profession to-day comes from the fact that doctors are confusing their quarrels with each other (mostly due to injured vanity) into quarrelling with the system under which they work. And every secretary of a Division must know that if only doctors would attend Division meetings more often and honestly air their views and grievances, instead of sitting on their bottoms telling all and sundry how lousy the B.M.A. is, the world would be a happier place.—I am, etc.,

William McKim,
Coxwold, York. Hon. Sec., York Division.

The Profession Votes

Sir,—With its usual lack of logic and its usual perversity our profession has voted for changes in our organization which will have the worst features of State medicine and private practice. Our fundamental error in sounding medical opinion now about changes in our profession is that the men in the Services, who have not been consulted, are men whose practices are melting away or who have never had practices. They will, therefore, be in the position after the war of "have nots," and will hold opposite views to us who are "haves."

No attempt has been made to divert more medical man-power into industrial districts and away from fashionable watering-places; indeed, the size of the staff of our provincial hospitals is decided, not by the district's needs, but by the capacity of the wealthy patients to support the consultants. The anomaly of half the profession overworking and the other half (in peace-time) underworking has not been corrected. While we have signified our willingness to attend our rich patients for 9s. 9d. a year, or whatever we can screw out of the Government, thereby voting for a complete State Medical Service, we have not got rid of the inefficiency due to cut-throat competition. We have voted for group practice, but not that imposed by the Government. Anyone who has, as I have, tried to get a town full of "rugged individualists" to combine will know that group practice will never come of itself. My Division voted for health centres, but not ones provided by the Government, hoping that a health centre would grow out of the ground, for I am sure that we doctors will never pay the £1,000 or £2,000 per head which such a centre will cost. In fact, the mess for which our profession has voted is truly laughable. But the first election after the war will give us a Socialist Government, which, if it continues in power for 5 years, will nationalize us whether we want it or not.—I am, etc.,

Colchester. M. E. LAMPARD.

Medical Planning

Sir,—I, like most other medical men, have followed the discussion which has been going on for some time in the *Journal* on the subject of proposed changes in the conduct of medical practice in this country. It would be interesting if the B.M.A. could publish at this stage a history of the rise of this demand for change, which seems to have descended upon the profession with some suddenness, despite the many preoccupations its members have at the present time. Assuming that changes have to take place, let me say at once that I am in favour of a State Medical Service and not of adaptations of the present system or intermediate schemes which dwell in no man's land. I believe that should a plan of the latter type be adopted it will simply be a matter of time before the full State service comes along.

In my view a State Medical Service means precisely what the words imply. All medical practice outside institutions would be included in it, and all hospitals of whatever type would also be in it. There would be one portal of entry into the profession, implying the abolition of the various types of examination which at present give access to the *Medical Register*. So far as possible, a period of six—preferably twelve—months would be spent by the newly qualified man in hospital posts. Thereafter he would be posted as assistant to a health centre (it seems that the idea of health centres has made a universal appeal to the profession). After a year he would be eligible for promotion to the position of principal at the same or a similar centre. His work would continue along these lines, in many cases, for the rest of his professional career, punctuated with periods of postgraduate study. In other cases within a variable period—say four years as a minimum and eight years as a maximum—the doctor would be entitled to apply for junior posts in various types of hospital or special practice—e.g., public health. Thus a man wishing to take up work in tuberculosis would, if his application was successful, be posted to a tuberculosis dispensary or sanatorium, and similarly for pure medicine, surgery, or any of the specialties. If after a probationary period he showed aptitude for the special work, his appointment to that type of work would be confirmed and he would thereafter gradually accumulate the experience and skill which would enable him to become what is called, at the present time, a "consultant" or "specialist."

It will be observed that under this scheme it would be impossible for any medical man to take up a specialty before having served for a period varying from four to eight years in the practice of general medicine. This is a reform which is urgently necessary in this country.

The plan is essentially democratic in principle for the reason that all entrants to the profession would have a relatively equal chance of advancement (when I use the word "advancement" I am not thinking in terms of finance at all). The Cabinet Minister has ordinarily to serve an apprenticeship as a back bencher. The most famous occupant of a university chair would have served his time in a health centre as a general practitioner. Who will say that this method of professional progression would not be an incalculable gain? Some might go further and say that just as a specialist in the Navy has, between his spells of employment in his own sphere, to return for a period to sea, so the specialists envisaged in this scheme might be returned for short periods to general practice in a health centre. Such a scheme would go far to prevent the growth of the caste system in medicine, and would help on the one hand to keep up the standard of general practice, and on the other to induce a proper feeling of humility in the consultant mind, a feeling always induced by contact with the problems of general practice.

I am aware that in this scheme, as in any other, there are many points of detail to be thrashed out; but in its broad essentials it possesses a unity and simplicity which may commend itself to many who are able to consider the problem in a detached way—a way incidentally not given to many.—I am, etc.,

Wrexham. D. LIVINGSTONE POW, F.R.C.S.Ed.

Goodwill and Compensation

Sir,—Dr. C. G. Jones (Sept. 5, p. 293), in that part of his letter dealing with "goodwill," compensation, and relative sacrifices, gives us the false analogy *par excellence*. The purpose of this war is now reasonably clear, but it has not yet emerged that those who make the supreme sacrifice do so in the cause of State (or any other) medical service. Nor do they give their lives to provide a world made safe for injustice. In other words, Dr. Jones's argument condoning non-compensation, though it will unquestionably be approved by the lay bodies who will determine these matters, is entirely irrelevant.

The question of compensation for loss of "goodwill" can be dealt with, in principle, fairly simply. "Goodwill" is not only by far the most expensive but the most indispensable asset of the general practitioner. It is, in fact, a *sine qua non*, and if it is to have a cash value that value is presumably substantial. Assessment of "goodwill" as a cash value is either right or wrong. If right, then it appears that the destruction of such an asset by authority in any change-over to a State Medical Service should carry just compensation. If wrong, then it appears that the large body of practitioners who have had to pay heavily to acquire a practice have already been very seriously victimized, if not actually defrauded. In this case the community, having approved and encouraged this business for so long, cannot in plain justice destroy without compensation this fundamental asset. Communal cynicism of such flagrancy as that may or may not have been proper to the pre-war period, but in the name of all that we are fighting for let us kill it at, or better still before, its rebirth into the post-war world.—I am, etc.,

Birmingham. W. SUMMERS.

Salaried Service and Competition

Sir,—I think a majority of doctors will agree with Dr. Lennox Johnston's observations (Sept. 5, p. 294). The unhealthy competition in general practice from considerations of personal gain, local prestige, and fears for an uncertain future should be eliminated. The time and energy expended in over-visiting and over-prescribing—admitted by doctors, patients, and pharmacists—could be usefully diverted to real medical and scientific work. "Free choice" savours of a pandering to the whims and idiosyncrasies of doctors and patients, and would, in my opinion, perpetuate the humbugging element now present in practice.—I am, etc.,

Luton. W. D. HOSKINS.

A Nutrition Council

SIR,—Your admirable leader on this subject (Sept. 26, p. 370) suggests some psychological difficulties which—as we medical people are all psychologists nowadays—might be discussed in a medical journal. You write: "It seems obvious that the work should not be undertaken by any Government Department which has as its head a Minister who, whatever else he is, is first and foremost a politician." That would not only seem, but be, obvious in a rational world; but we do not live in a rational world. Those of us who were brought up on Walter Bagehot's *English Constitution* recall his wise remark: "The experiment of conducting the administration of a public department by an independent unsheltered authority has often been tried, and always failed." Any department the success or failure of which has not the potentiality of making or breaking a political career will have little influence on administration. If we try to circumvent this difficulty by setting up a council of elderly notables one has a different difficulty. The publicity value of scientific skill or administrative skill within the field of nutrition is very small. The council, to have prestige value, must be "eminent"; its real work must be done by the obscurely competent. But if the members are eminent they would lose no face by *nominally* subordinate association with, say, the Medical Research Council. Only those with little dignity stand on it. There would be a clear saving in administrative expenditure; each new official organization means new staff, new offices, new competition.

These seem to me arguments in favour of Viscount Dawson's contention.—I am, etc.,

MAJOR GREENWOOD.

Medico-Legal

A FATAL ANAESTHETIC

Anaesthetists do not often appear in court to answer charges of negligence, and so their legal pitfalls are not illuminated by much case law. A recent judgment[1] of Mr. Justice Lewis at Winchester is therefore particularly valuable. A married woman had to undergo an operation for the removal of gallstones. The surgeon and the anaesthetist decided in consultation that anaesthesia should be induced by an epidural nerve block with decicaine. This was the first occasion on which the anaesthetist had used decicaine for this block, but the surgeon had previously used it more than once to produce splanchnic and other blocks. The anaesthetist told a sister that decicaine would be used, and instructed her to prepare the solution. This sister had the highest qualifications, had been in charge of the theatre for six years, and everyone relied on her. She had been in charge on previous occasions when decicaine had been used in the ordinary strength of 0.1%. On this occasion, however, believing that she was carrying out the anaesthetist's oral instructions, she prepared a solution of 1%, and the patient died of the overdose. On behalf of the woman's estate and as a dependant (for he was a cripple), the husband sued the anaesthetist for damages. Defending counsel were instructed by Messrs. Hempsons, Ltd., solicitors to the Medical Defence Union. At the trial the anaesthetist and the sister gave conflicting accounts of his instructions to her. His evidence was: "I said 0.1%, the solution of decicaine the same as Mr. M. [the surgeon] uses for the splanchnic nerve block." The sister, on the other hand, agreed that the anaesthetist spoke of decicaine, and that he said it was the same as Mr. M. used for splanchnic nerve block, but declared he had said 1% and not 0.1%. She added that she had thought 1% was an unusually large dose, but had no doubt that she was carrying out the anaesthetist's instructions. She produced the solution in a bottle, and the evidence again conflicted on how nearly she approached the anaesthetist with the bottle. He was busy preparing the apparatus; the sister said she came to within a yard of him and the doctor said she did not come nearer than three yards; he did not examine the bottle. They agreed that the sister said, "Decicaine; is that right?" and that the anaesthetist replied that it was; the sister, however, said she heard "1% decicaine," and the doctor said he heard "0.1% decicaine."

The learned judge said that the real question was whether the anaesthetist owed a duty to do more than state clearly to a responsible and efficient sister the anaesthetic he required. All who take part in an operation, he said, work as a team. If a sister is inexperienced, it is no doubt right for the surgeon and the anaesthetist to take care to see that she is carrying out, or is competent to carry out, the duties assigned to her; and they might have to do more for themselves in the way of supervision than they would if she were experienced. When, however, they are served by a sister upon whom every reliance can be placed, it is sufficient to say, as the anaesthetist said in this case: "I want the solution such as Mr. M. uses for a particular form of nerve block: splanchnic nerve block." The anaesthetist had given his evidence in such a low voice that the judge could well imagine the sister not hearing distinctly what he said. He could not find that in the circumstances either the anaesthetist or the sister had been negligent; an unfortunate mistake had been made. He therefore gave judgment in favour of the anaesthetist, whose counsel did not ask for costs.

The principle that a surgeon or anaesthetist may in some circumstances rely on a subordinate was recognized by the Court of Appeal in Mahon *v.* Osborne[2]—the "Manchester swab case." A swab was left in a patient's abdomen through a miscount by a nurse: Lord Justice Scott said that the surgeon has to keep in his mind the risk of error by a nurse, but on the other hand he should not be deprived of all support from the count; the jury can find negligence only if he has fallen short of the standard of reasonable care. This present application of the rule may give some reassurance to surgeons and anaesthetists.

A DANGEROUS WORD

Much trouble is caused to the courts and much disappointment to surviving relatives by testators who make their own wills without legal advice. One common pitfall is the use of the word "children," which bars illegitimate children unless they are fully named. The word "money" is even more dangerous. Countless testators must have used it on half-sheets of notepaper and stationers' will forms with lamentable results. A wealthy lady died recently leaving investments worth nearly £33,000, a bank account, some dividends, rents, and income-tax rebate due, household goods, and some valuable freehold property. She made a will on a form purchased from law stationers, without legal aid, and used the phrase: "I direct that all monies of which I die possessed of [*sic*] shall be shared by my nephews and nieces now living"—listing fourteen people, one of whom was a sister. The judge called upon to disentangle this will held that "monies" covered only the dividends received or accrued, the cash at the bank, the rents due and the tax rebate, not the investments, the freeholds, or the household goods.

His decision was taken to the Court of Appeal and the Master of the Rolls upheld it.[3] The court is bound by a rule which, although it was formulated in 1725,[4] is too firmly established for the court to alter. It lays down that the word "money" in a will must be construed in what is called its "strict" sense unless the context permits it to be given an extended meaning. The Master of the Rolls described the rule as a blot on our jurisprudence, and said that one of its anomalies is that the "strict sense" of "money" is a sense that has been invented by the courts themselves partly in order to mitigate the rigour of a rule confining "money" to actual cash. The special category known as "money in the strict sense" includes money in no strict sense, such as moneys on drawing account at the bank. The category, however, is closed, and the Master of the Rolls could not extend it in the absence of a context in the will permitting him to do so. He observed that since 1725 the habit of investment has spread so widely that millions of persons now possess securities which they commonly refer to as their "money." It would, he thought, be a grave national misfortune if such persons were to make home-made wills referring to their "money" and thus die intestate so far as their savings were concerned. Nevertheless, the court had overlooked in 1923 and 1929 two opportunities of restating the rule, and he did not think that it would now be justified in saying that the rule no longer bound it. The other Lords Justices shared his regret at being bound by this authority. Parliament has made every effort to induce citizens to invest all their spare income in various forms of Government loans, and the thorough patriot may not be able to afford legal assistance in making a will. Many poor testators cannot afford it in peacetime. The legislature ought in fairness to pass an Act amending the present obsolete construction of "money" in a will.

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[1] Fussell *v.* Beddard, July 14.

[2] (1939) 2 K.B. 14.

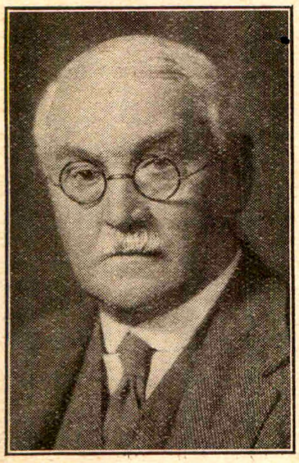
[3] *Re* Morgan, (1942) 2 All E.R. 30.

[4] Shelmer's case, (1725) Gilb. Ch. 200.

Obituary

EDWARD FAWCETT, M.D., F.R.S.

Prof. Edward Fawcett, F.R.S., the eminent anatomist, died suddenly while walking in Park Street, Bristol, on September 23. For over 40 years he was an outstanding figure in the Bristol Medical School, to which he brought the great anatomical tradition from Edinburgh.



Born on May 18, 1867, the son of Thomas Fawcett, B.A., he was educated at Blencow Grammar School, Cumberland, and studied medicine at the University of Edinburgh, graduating M.B., C.M. in 1889 and M.D. (with gold medal for his thesis) in 1906. He was a demonstrator of anatomy at the Edinburgh School of Medicine during his two final years, and then taught for three years in the dissecting room at the Yorkshire College, Leeds, until 1893, when he was appointed to the chair of anatomy at University College, Bristol. After the creation of the University of Bristol in 1909 he continued his work as professor of anatomy and dean of the Faculty of Medicine, and held both offices until his retirement in 1934, when he was made Emeritus Professor. He represented Bristol University on the General Medical Council for ten years, and was Long Fox Lecturer at Bristol in 1910. He gave the Arris and Gale Lecture before the Royal College of Surgeons of England in 1912.

Prof. Fawcett was president of the Anatomical Society of Great Britain and Ireland in 1927-9 and its treasurer for eleven years. At the International Medical Congress of 1909 in Budapest he was honorary president of the Anatomical Section. His services as examiner in anatomy were much in demand; he had examined for the Natural Sciences Tripos at Cambridge, and for the medical degrees of the Universities of Oxford, Aberdeen, Durham, London, Leeds, Manchester, Liverpool, and Birmingham, Queen's University, Belfast, and the National University of Ireland. He was elected F.R.S. in 1923 in recognition of his contributions on anatomical and embryological subjects, more particularly concerning the development of the human skeleton and of the mammalian cranium. He wrote no book but published many papers in the *Journal of Anatomy*. Prof. Fawcett was deeply interested in ecclesiastical architecture and served as president of the Bristol and Gloucestershire Archaeological Society a few years ago. His son is Mr. Alan Wordsworth Fawcett, F.R.C.S., surgeon to the Sheffield Royal Infirmary.

[The photograph reproduced is by Elliott and Fry, Ltd.]

ERNEST LLOYD JONES, M.D.

We regret to announce the death of Dr. Ernest Lloyd Jones, senior consulting physician, Addenbrooke's Hospital, Cambridge, which occurred on Sept. 16, in his 80th year. Dr. Lloyd Jones was born at Bowdon, Cheshire, and was educated at the Manchester Grammar School. Obtaining a Clothworkers' Scholarship he came up to Downing College, Cambridge, in 1882, taking the Natural Sciences Tripos in 1885. He won the Senior Science Scholarship at St. Bartholomew's Hospital in 1886, in due time becoming house-physician there, having qualified M.B., B.Ch. in 1888. He took his M.D. degree in 1891. In 1894 he won a research scholarship of the British Medical Association. Returning to Cambridge he became demonstrator of pathology under Prof. Roy, and also pathologist to Addenbrooke's Hospital. Although in active practice until some eighteen months of his death, Dr. Lloyd Jones retired from the honorary staff of Addenbrooke's as senior physician in 1927. For many years he had also been on the visiting staff of Papworth Village Settlement, being a member, and latterly chairman, of the committee of management. In the last war Dr. Lloyd Jones served as a major on the staff of the First Eastern General Hospital, and was also inspector of tetanus cases in the Eastern Command. He was president of the Cambs and Hunts Branch of the British Medical Association in 1925-6, and a past-president of the Cambridge Medical Society. In 1901 he married Constance Mary Brooke. They have one daughter. His medical works include *Chlorosis, the Special Anaemias of Young Women, its Causes, Pathology, and Treatment.*

A fellow of the Geological Society, and of the Cambridge Philosophical Society, Dr. Lloyd Jones was writing at the time of his death a book on foraminifera, on which subject he was an acknowledged authority. As a young man he explored the Hoyle's Mouth and Coygan Caves in South Wales, and had presented several fossil specimens to the museums of geology and archaeology at Cambridge. He had a wide range of interests, with an intimate knowledge of many aspects of Nature collected on rambles on seashore and countryside. The cries and habits of birds were always an absorbing interest of his, and his delight in caring for individual animals and plants was an inspiration in itself. He had a real concern for his patients and put his professional service above all thoughts of remuneration, and frequently, and especially during the last few years of failing strength, without any consideration for his own health. Many a one has been braced and comforted by his cheery stories. He had a most kindly and gentle nature, and his patients, both in private and hospital practice, looked upon him as a real friend. It can truly be said of him that he was a beloved physician. H. B. R.

JAMES R. KERR, Ch.M.

The death of Dr. J. R. Kerr, C.B.E., of Southport on Sept. 21 marks the end of a distinguished and honourable career. Ten years after taking his degree in the University of Glasgow and holding resident appointments in the Western Infirmary and the Royal Hospital for Sick Children he went to France, and under the French Red Cross he became surgeon-in-chief to the Hôpital de l'Alliance at Yvetot. This was the opportunity for which he had been preparing, and his work earned him a fine reputation. From this service he came home to take charge of the special orthopaedic hospital maintained by Messrs. Pilkington Brothers at St. Helens. Here Kerr applied himself to the study and practice of rehabilitation. He was in the van in this country in this work. His contribution to it has perhaps hardly been recognized, but the hospital at St. Helens achieved a reputation under his charge, and was visited by many interested in rehabilitation after industrial accidents as well as after war injuries. When the British Medical Association met at Glasgow in 1922 he was secretary of the Section of Industrial Diseases and Forensic Medicine. He served as chairman of the St. Helens Division in 1922-3 and at the time of his death was chairman of the Southport Division. In practice in Southport, Kerr joined the staff of the infirmary as surgeon, and at the beginning of the present war was appointed also to the staff of the Emergency Hospital, where he had charge of beds. His colleagues and many friends will miss his robust company and his loyal friendship. K. W. M.

The special hospital at St. Helens, to which Kerr returned after his strenuous two years at Yvetot during the last war, was a true rehabilitation centre, where injured workmen and military casualties were treated from the time of their injury until their return to work. The results obtained in this way were so good that the hospital was continued for several years after the war. It was one of the first hospitals directly connected with industry in which active surgical work and rehabilitation were carried on to their logical termination, and the influence of Kerr was seen in every detail of the hospital's work. He transferred to Southport almost 20 years ago, and as a member of the surgical staff of the Southport Infirmary devoted himself with the same whole-heartedness, to the great benefit of the staff and of the people of the district. He always continued his interest in the work which he initiated at St. Helens, and during the present war he had been very active in carrying out a similar line of treatment in the very large

Southport E.M.S. Hospital. He will be remembered by all who knew him for his extreme kindness, his capability, the assiduity with which he carried out his work, and the many contributions which he made to the literature of the surgery of industrial injuries. In the present war he had suffered the loss of one of his three sons, a second son is a prisoner of war, and a third is now an active member of the surgical team of one of the large hospitals in the Middle East. To them and to his widow will be extended the sympathy of all who knew him. T. P. McM.

PROF. DAVID WATERSTON

Prof. D. R. Dow, M.D., University College, Dundee, sends the following appreciation:

The death of Prof. David Waterston removed one of the distinguished anatomists of the Edinburgh School, and a familiar figure for the past 28 years in the life of the University of St. Andrews. As successor to Musgrove he became the second occupant of the Bute chair of anatomy, and his tenure of office has been a memorable one. At the time of his appointment in 1914 the number of entrants to the Faculty of Medicine in our University was comparatively small, but he forecast that there would be a substantial increase, that our medical school would play a more important part in medical education, and his ability and influence have undoubtedly contributed to this. Under his direction the department of anatomy has undergone progressive development. He felt that the work should be carried out in an environment as pleasing as possible, and free from the horrors which haunt the mind of the beginner, and thus to-day there stands in St. Andrews a monument to his aim—a dissecting room of modern design and picturesque appearance.

Waterston was a man of wide interests, but he was first and foremost an anatomist, extending his study not only to the human but to the comparative, and science has benefited from his industry in these fields. His own career, as one would expect, was influenced by Sir William Turner. One could not fail to be impressed by his precision in expression, his critical attitude to any scientific statement, and his powers of observation always keen and astute, his eager mind stretching out after more and more facts. His numerous researches include papers on general anatomy, anthropology, and embryology. He possessed a fine collection of microscopical sections of early human embryos which enabled him to model in wax many specimens which, after careful and painstaking examination, have lightened the field of human embryology. Mounted in album form, photographs of these serial sections have found a place in many laboratories of this country. Much of his technical skill was directed to making the science of anatomy a living one, and we have testimony to this in his volume *Anatomy in the Living Model*. I spent much time with him when he prepared the orthogonal projections of the head and neck and abdomen which formed a large part of this publication, and it is almost unnecessary for me to testify to the care and precision with which this work was done. He was also one of the contributors to Cunningham's *Textbook of Anatomy*, in which he presented a lucid and up-to-date description of the digestive system. As joint editor of the *Edinburgh Stereoscopic Atlas of Anatomy*, the vision of many students has been enlightened as they reviewed in rapid succession photographs of his own handiwork.

In addition to such specialized study he retained a keen interest in clinical medicine, and found scope for his ingenious mind in the problems which presented themselves in the work of the James Mackenzie Institute. He looked forward with enthusiasm to the arrival in St. Andrews of Sir James Mackenzie, and for many years each enjoyed the privilege of work and friendship with the other. After his death the Institute found in Waterston a staunch and able leader, while as one of its research workers he conducted experiments on himself in order to elucidate the mechanism of pain—a contribution of the highest value. Generations of students of the Universities of Edinburgh, London, and St. Andrews will remember with appreciation how the teaching of anatomy was enhanced by the freshly dissected specimens which accompanied each demonstration and by the blackboard, on which Prof. Waterston had ample scope for his artistic talent. The entrant medical will reflect on the warmth of the reception and introduction to University life given by the Adviser of Studies. Outside the sphere of work as a Regent he was kind, hospitable, and interested. To those who were associated with him in his work, his distinctive personality and influence were a source of continual interest, encouragement, and stimulus. To junior members of his staff he was invariably courteous, and never too busy to listen to their problems or to help them by advice.

Dr. **WILLIAM BRUCE WISHART**, for many years a well-known Halifax practitioner, died on September 4 in Edinburgh. He graduated M.B., Ch.B.Ed. in 1904 and went to Halifax five years later, after holding house appointments at the North Staffs Infirmary and Stoke-on-Trent Eye Hospital. His connexion with the Halifax Royal Infirmary began as house-surgeon, and he was later appointed honorary surgeon, retiring from the active staff in 1938. During the last war he served with the R.A.M.C. in France and Belgium. Dr. Wishart joined the B.M.A. in 1907 and was chairman of the Halifax Division in 1926–7.

The announcement of the death of Mr. **ALWYNE T. COMPTON**, F.R.C.S., will be received with profound regret by his many friends and colleagues at the German Hospital, Dalston, and by his former pupils at King's College, University of London. Born in 1874, he received his medical education at St. Bartholomew's, qualified in 1901, and obtained the F.R.C.S. in the following year. On the outbreak of the present war, although he had retired from practice, he generously offered his services once more at the hospital at Dalston where he had acted with distinction for many years. The return to active work was unfortunately attended by the occurrence of a stroke which left him for the remainder of his life with a partial paralysis. Recently his house in Devonshire was bombed by enemy action, and owing to a fall afterwards his hip was fractured. He died on Sept. 9 in his old hospital, where he will long be remembered as an honoured and faithful servant in the cause of his profession. In addition to his surgical work, Compton's anatomical and pathological knowledge was very extensive. His case notes mostly contained illuminating drawings. His anatomical teaching at King's College was held in high esteem. From his father, who was a well-known landscape-painter, he doubtless derived his skill as a draughtsman.

Mr. R. W. Crawford Treasure, whose death was reported in the *Journal* of Sept. 12 (p. 326), saw service in France in the last war, only going to India in 1916 after being invalided from the Army.

Universities and Colleges

UNIVERSITY OF GLASGOW

The Dean of the Faculty of Medicine gives notice that, at the desire of the Secretary of State for Scotland, the University of Glasgow has decided not to accept, for the duration of the war, students wishing to enter upon the course for the Diploma in Public Health.

The Services

The D.S.C. has been awarded to Temp. Surg. Lieuts. H. S. A. Corfield, K. C. Jeffery, and R. D. Robinson, R.N.V.R.

CASUALTIES IN THE MEDICAL SERVICES

Lieut. **HEDLEY DOUGLAS VENNING**, R.A.M.C., was killed in action in the Middle East in Sept. He was born on March 2, 1916, and studied at Guy's Hospital, qualifying M.R.C.S., L.R.C.P. in 1939, and graduating M.B., B.S.Lond. in 1940. He had held house posts at Torbay Hospital, Torquay, and, later, an assistantship in Chester. He entered the R.A.M.C. as a temp. lieut. in Aug., 1941. He leaves a widow.

Prisoners of War.—Lieut. D. Christison, R.A.M.C., Capt. D. Foskett, R.A.M.C., Major D. A. Macpherson, R.A.M.C., Capt. R. G. Main, R.A.M.C., Capt. C. L. Malhotra, I.M.S.

Missing.—Surg. Lieut. H. E. D. Gale, R.N.V.R., Capt. J. S. McConnachie, R.A.M.C., Lieut. W. H. McDonald, R.A.M.C., Lieut. K. W. Todd, R.A.M.C.

DEATHS IN THE SERVICES

Lieut.-Col. **WILFRID EDWARD BRIERLEY**, I.M.S. (ret.), died at Kitamaiyu, Ruiru, Kenya Colony, on Sept. 11, aged 61. He was born on Jan. 17, 1881, and was educated at the University of Manchester, graduating M.B., Ch.B.Vict. in 1904. He also studied at King's College and the London Hospital, taking the M.R.C.S., L.R.C.P. in 1905, and the F.R.C.S. two years later. He entered the I.M.S. as lieut. in 1908, became lieut.-col. after twenty years' service, and retired in 1933.

No. 36

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 12.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included) (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	62	4	21	—	2	128	7	23	1	7
Deaths ..		1	1				1	1		
Diphtheria ..	855	49	202	46	18	820	48	234	21	24
Deaths ..	17	—	2	—	—	17	—	5	—	1
Dysentery ..	146	13	64	—	3	66	6	49	—	—
Deaths ..			—	—	—			—	—	—
Encephalitis lethargica, acute ..	1	—	1	—	—	3	—	—	—	—
Deaths ..		1	—				—	—		
Enteric (typhoid and paratyphoid) fever						46	15	8	7	8
Deaths ..						2	2	—	—	—
Erysipelas		—	54	8	1		—	42	4	6
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				156						
Deaths	73	6	12	10	6	41	4	19	27	5
Measles	2,644	221	124	9	25	944	30	12	45	2
Deaths ..	1	—	3	—	1	3	—	—	2	—
Ophthalmia neonatorum	76	5	6		—	71	5	12		—
Deaths ..										
Paratyphoid fever .	7	2	1	1	—	182	8	10	—	—
Deaths ..	—	—	—	—	—	2	—	—	—	—
Pneumonia, influenzal*	319	20	4	3	4	407	12	3	1	4
Deaths (from influenza)	3	—	—	—	—	3	14	2	1	6
Pneumonia, primary ..			124	12				144	12	
Deaths		—		7	5		—		5	—
Polio-encephalitis, acute	2	—	—			3	—	—		
Deaths		—					—			
Poliomyelitis, acute ..	20	—	2	15	1	29	1	6	2	1
Deaths ..		—	—				—	—		
Puerperal fever ..	—	1	15	4	—	1	1	17	4	—
Deaths ..										
Puerperal pyrexia ..	125	6	14		1	116	8	19		2
Deaths ..										
Relapsing fever ..	—	—			—	1	—			—
Deaths ..										
Scarlet fever	1,618	83	318	36	47	956	34	184	39	10
Deaths ..	—	—	—	—	—	1	—	—	—	—
Small-pox ..	—	—	—		—	—	—	—		—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever	30	—	1	11	1					
Deaths	1	—	—	—	—					
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,074	99	63	112	4	3,029	238	185	40	2
Deaths	3	1	—	1	—	18	2	3	3	1
Deaths (0–1 year) .	313	32	53	30	17	300	28	57	48	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births) .	3,403	459	480	161	97	3,080	481	527	205	115
Annual death rate (per 1,000 persons living)			10·8	10·7	†			11·5	13·6	†
Live births . ..	5,890	702	809	385	259	4,846	432	811	379	225
Annual rate per 1,000 persons living ..			16·7	25·7	†			16·5	25·2	†
Stillbirths	226	17	37			150	6	32		
Rate per 1,000 total births (including stillborn)			44					38		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* rises occurred during the week in the incidence of scarlet fever 146 cases, diphtheria 68, dysentery 34, and typhoid 23, and decreases for measles 380, whooping-cough 123, puerperal infections 73, and acute pneumonia 60.

Within the counties the notifications of diphtheria, acute pneumonia, and whooping-cough showed only slight variations from last week's totals, the only marked change being in Staffordshire, where 26 fewer cases of whooping-cough were reported.

Scarlet fever notifications rose because of an increase of 57 cases in Yorks West Riding, of 40 in Lancashire, and of 27 in Essex; in London the notifications dropped by 33. In Yorks West Riding the recent outbreak has been particularly severe in Goole M.B., where hospital accommodation has been strained and patients have had to be sent to neighbouring hospitals.

The incidence of measles declined for the tenth consecutive week. In Leicester, however, there was an increase of 53 cases due to an outbreak in Coalville U.D. 57 cases. The Durham notifications also rose by 41, due to an outbreak in Crook and Willington U.D. 55 cases. The largest decreases were recorded in Yorks West Riding 130, Essex 74, London 74.

An outbreak of typhoid in Bedfordshire, Biggleswade R.D., involved 18 persons and resulted in the largest weekly total recorded for this disease since last October.

No new outbreak of dysentery occurred during the week. The rise in notifications was due to an increase in those outbreaks which began last week. The chief centres of infection were: Oxfordshire 41 (Bullingdon R.D. 5, Oxford C.B. 8), Lancashire 21 (Warrington R.D. 14, Manchester C.B. 6); Norfolk 16 (Norwich C.B. 12); London 13 (Woolwich 7); Surrey 12 (Epsom and Ewell M.B. 7).

In *Scotland* the incidence of infectious diseases showed little change from last week, although acute primary pneumonia and scarlet fever rose by 18 and 43 cases. A small rise in scarlet fever was fairly general throughout the country, but the excess of pneumonia was mainly confined to Glasgow.

In *Eire* there was a rise in the incidence of poliomyelitis. During the past two weeks 25 cases have been notified, 10 of which were reported from Dublin.

Small-pox

A report has been issued by the Medical Officer of Health for Glasgow on the recent outbreak of small-pox. Altogether 36 persons contracted the disease and 8 died: 11 of the cases were due to direct infection on the ship, and 25 cases occurred in the general population.

No satisfactory explanation can be given for the spread of the infection among the civilians in different districts of the city. The report emphasizes the success of vaccination in preventing a major epidemic and makes strong recommendations concerning the vaccination of crews and passengers travelling from the East.

Quarterly Returns

England and Wales.—The returns for the June quarter show that, despite three years of war, an improvement was effected on the general peacetime trend of the vital statistics. The birth rate was 16.2 per 1,000, which, with the exception of 1940, when the rate was the same, was the highest birth rate in any second quarter since 1932, when it was 16.5. The infant mortality was 47 per 1,000 live births, 7 below the average of the ten preceding second quarters. The stillbirths were 3.3% of the total births registered. The general death rate was 11.3 per 1,000—the lowest rate for this quarter since 1933—compared with a rate of 13.6 in 1941. The natural increase—excess of births over deaths—was 50,723, compared with 43,777, 46,980, and 7,228 for the corresponding quarters of 1939-41.

Northern Ireland.—A favourable experience was enjoyed by Northern Ireland during the second quarter of the year.

The births corresponded to a rate of 24.7 per 1,000, compared with 21.7 for the average of the second quarters of the five preceding years. The infant mortality was 71 per 1,000 births, or 1 below the five-year average. The general death rate was 13.2 per 1,000; this rate was 4.7 below that for the corresponding quarter of 1941 and 1.4 below the average rate for the second quarters of the five preceding years. The death rate from tuberculosis was 1.01 per 1,000, which, although 0.11 below the rate for the June quarter of 1941, was 0.03 above the five-year average.

Returns for the Week Ending September 19

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,882, whooping-cough 1,150, diphtheria 878, measles 2,998, acute pneumonia 401, cerebrospinal fever 72, acute poliomyelitis 29, dysentery 184, paratyphoid 8, typhoid 13.

Medical News

At a meeting of the Royal Sanitary Institute to be held at Hallam Municipal Hospital, West Bromwich, on Saturday, Oct. 10, at 11 a.m., Dr. W. S. Walton will read a paper on "Some Practical Health Problems of To-day from the Medical Officer of Health's Standpoint."

A memorandum issued by the Greek Government states that according to the Red Cross about 40,000 persons, including a high proportion of children, in Athens and the Piraeus died of famine and diseases caused by malnutrition between Oct. 1, 1941, and Jan. 26, 1942. The quality of such food as is available is low through lack of fats. Each daily ration contained only 500 calories against the 2,500 issued by feeding centres in the previous winter. The situation in other cities such as Salonika, Patras, and Volo, as well as in the islands of Chios and Syra, is equally tragic.

Sulphanilamide powder (4 oz.) and powder dredgers are to be issued to first-aid points for use where there is difficulty in removing a casualty to a first-aid post or hospital. Ministry of Health Circular No. 2664 states that a thin, uniform coating of the powder should be shaken on the surface of the wound and a dressing applied. Hydrogen peroxide is to be issued to first-aid posts and gas-cleansing stations for the treatment of lewisite burns.

Doctors wishing to engage dispensers who are subject to the Employment of Women (Control of Engagement) Orders must notify the Central Pharmaceutical War Committee, 17, Bloomsbury Square, W.C.1, which is the approved agency for the Ministry of Labour under the Orders, giving full particulars of the vacancy to be filled.

The 114th annual meeting of the Medical Charitable Society for the West Riding of the County of York was held at Leeds under the presidency of Dr. T. Wardrop Griffith. The society was founded in 1828, and since that time it has distributed £111,155 among the applicants for help. For the ensuing year, forty-two grants, totalling £1,868, were made. It was reported that a form of covenant had been circulated to the members, who were urged to enter into it. The result of this would be that the society could recover income tax on such subscriptions. It was decided that a part of the extra income resulting from this would be distributed as a Christmas gift to each recipient of a grant.

Dr. Austin William Byrne, expert in public health, Egyptian Government, has been appointed a C.B.E. (Civil Division). The citation in the *London Gazette* states that since the beginning of the war Dr. Byrne has co-operated with the medical services of the British Army in Egypt and has been particularly helpful in co-ordinating the services of the Egyptian Government hospitals in connexion with facilities for the treatment of prisoners of war, which, without his help, would have been an insurmountable problem.

Mr. Robert Brough, registrar of the Glasgow University General Council and acting secretary of the University Court, has retired after nearly 40 years' service to the University. The General Council is organizing a testimonial to him, and subscriptions (limited to 5s.) should be sent to the Clerk, Mr. David M. Hutchison, M.A., LL B., 82, West Regent Street, Glasgow, C.2.

The September quarterly number of *Medicine Today and To-morrow* is mainly devoted to "The Socialist Programme for Health," which takes the form of a statement of policy in the light of the Medical Planning Commission's interim report. Copies may be had (price 6d.) from 176, Kew Road, Richmond, Surrey.

We have received from Dr. J Tyler Fox (treasurer of the British Branch of the International League against Epilepsy (The Homestead, Lingfield, Surrey) a copy of the last issue of the periodical *Epilepsia*, dated July, 1941, and printed in America by the Graphic Press, Newton, Massachusetts. Present conditions in Europe make it impossible to edit and publish the journal in Denmark.

At the first meeting recently of the Colonial Research Committee Lord Cranborne said that the two functions of the committee were to advise on schemes for assistance from the £500,000 a year provided under the Colonial Development and Welfare Act for "research and inquiry," and to survey "the whole range of research in Colonial studies." Among the members of the committee are Prof. A. V. Hill, Sir Edward Mellanby, and Dr. W. W. C. Topley.

Mr. Bowdler Henry has been appointed honorary consulting oral surgeon and consultant adviser to the Royal Netherlands Army, the Fighting French Forces, the medical section of the Czechoslovak Red Cross, the Central Committee, Polish Red Cross, and the Royal Norwegian Ministry of Social Welfare.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEPHONE NO.—B.M.A. and *B.M J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Aspirin for Asthma

Dr. K. TEMPLE BROWN writes: A. K. describes dramatic success with homoeopathic doses of aspirin in asthma. I feel it only right to record the experience of a colleague of mine, equally dramatic. He has suffered from bronchial asthma for years and used to tolerate aspirin, but a few years ago took 15 grains for a cold and within a quarter of an hour was in the grip of the worst bronchial spasm he had ever known, requiring morphine and oxygen inhalations. He tells me that his is not an isolated case and that phenacetin produces the same effect. Other readers of the *Journal* may be glad of this warning. I know of no pharmacological explanation of A. K.'s findings—but faith moveth mountains. Certainly, I know of asthmatics unrelieved by ephedrine but relieved by "special ephedrine," which consisted of calc. carbonate. Apart from that, it seems likely that in his patient aspirin's sedative action depresses a psychogenic factor in the aetiology of her bronchial spasm.

Dr. M. W. BROWDY (London, W.) writes in reply to A K. (Sept. 19, p. 356): Asthma is often of psychological origin: a somatic symptom in a neurotic syndrome. Hence aspirin may give relief in two ways: by suggestion and mild sedation.

Dr. J. E. O'LOGHLEN writes in reply to A. K.: The effect of aspirin in asthma is due to a lowering of surface blood tension. Incidentally 20% of asthmatics are very sensitive to aspirin; 50% of all asthmatics respond favourably to any indifferent treatment.

Desert Sores

Col. C. RICHARDSON-WHITE (Merthyr Vale, Glam.) writes: Is the desert sore our old friend the veldt sore which we treated in the Boer War and the septic sore of 1914-18 in Egypt, Sinai, and Palestine? I commanded a C.C.S. throughout the last war, nearly all the time in the East. During the advance on Gaza and afterwards hundreds had septic sores and filled the hospitals, thus depleting the front line. At a field laboratory at Gaza one of the officers discovered that the film on these sores had a diphtheritic appearance. He tried for Klebs-Loeffler bacillus and found it, together with the *Streptococcus pyogenes*. Orders were issued to all medical units to apply for antidiphtheritic serum, and to inject 3,000 units in all cases of septic sores. The result was like a miracle. All the cases responded and were soon cured.

Income Tax

Appointment

W. is assessed under Schedule E in respect of a salary of £306 from an appointment as works M.O. Can he claim to have the salary included in his Schedule D assessment?

⁂ There is no legal claim, but it is a common and well-established practice of the Inland Revenue Department to adopt that procedure if requested to do so by the taxpayer. We suggest that W. apply accordingly to the local inspector of taxes.

Married Woman

B. is married and has one child under 16 years of age and a dependent widowed mother. Her husband is interned and has at present no income of his own. She has been assessed as assistant M.O.H. as a single person (with £80 personal allowance only) and no deduction has been made for professional subscriptions or domestic help.

⁂ On the basis that B. is "living with" her husband in intention, although temporarily apart for reasons beyond their control, the husband should strictly be assessed in respect of B.'s earnings. But whether he or she be assessed, the allowances due are

£140 (for married persons) and £80 "wife's earned income allowance," as well as £50 for the child and £25 for the dependent relative. A declaration of income and claim to these allowances is, however, necessary by the husband We suggest that B. explain the circumstances to the local inspector of taxes and ask him for a copy of the appropriate form of claim No allowance is due for domestic expenses; professional subscriptions are allowable only if membership of the association in question is a condition of the appointment.

Commencement of Liability from Employment

M. G. qualified in July, 1940. He earned, £200 between that date and April, 1941, and another £200 in the year to April, 1942, including one month's earnings from his present employment (at £600 per annum) in March, 1942. How should his liability be calculated?

⁂ On the above facts the appointment is a new source of income, and he is liable on the basis of the earnings of the current year for the part of 1941-2 and the whole of 1942-3. The deductions made for tax for the year commencing November, 1942, will be in respect of the income for the year commencing April, 1942. If the appointment should terminate, M. G. should at once inform the inspector of taxes, but it is unlikely to do so at such a time as will leave him in the position of having paid more tax than was due on his earnings.

Assistant's Board and Lodging

T. C. is "employed as an assistant at a salary of £500 per annum, all found; by this the agreement means that my employer pays £2 12s. 6d. per week board and lodging for me" Is he assessable, or is his employer assessable on this sum?

⁂ His employer is clearly entitled to treat the payment of the weekly amount as deductible for income tax purposes. As regards T. C., *prima facie* he is *not* liable, as benefits are not taxable unless they are received in money or in a form convertible into money. The only contention which could be raised in favour of his liability is that if he has contracted with his landlady to pay her £2 12s. 6d. a week and his principal pays it for him, then the principal is in law and substance paying him money by discharging his debt It may be desirable therefore to see that the contract for the board and lodging is between the employer and the landlady and not between T. C and the landlady.

LETTERS, NOTES, ETC.

Fuel Economy

Prof. R. J. Willan writes: During the present emergency could not an appeal be made to all surgeons to refrain from the present wasteful practice of using running hot water when making their hands surgically clean. An equal result can be obtained by using two or three changes of hot water. Running hot water is a luxury but is *not* a necessity. A surgical team of, say, four persons, scrubbing up their hands for an operation for the requisite ten minutes, can consume and waste an unjustifiable amount of fuel.

Bleeding from Tooth Sockets

C R.-W. writes: With regard to bleeding from tooth sockets, what is wrong with the old-fashioned friars' balsam (tinct. benz. co.)? It is a bit messy, I suppose, but always efficient. A plug of cotton-wool soaked in this quickly does the trick. I have never found it to fail.

External Styptics

Dr. C. Charnock Smith (Hastings) writes: May I suggest as useful styptics, which can be easily carried in one's bag for use in the case of bleeding tooth sockets, epistaxis, and haemorrhage from a fungating malignant growth, the following to be used locally: adrenaline chloride 1 in 1,000; "stypven"; turpentine; stick of nitrate of silver; and liq. ferri perchlor fort. or gossypium ferri perchlor. *B P.C.* used dry.

Treatment of Scabies

Dr. J. E. O'Loghlen (London, W.1) writes: For the past 20 years I have always treated scabies with the application of sodium hyposulphite and hydrochloric acid. It is most effective, being cheap, clean, and convenient. I think it was first introduced in France by Leblanc-Dutheil (Nantes). Some 12 years later it was used by Demjanovic at the State Dermatological Institute, Moscow, and later in Germany at the Skin Clinic, Düsseldorf. The technique is as follows. Two solutions are used: (1) sodium hyposulphite 200 parts to 1,000 water; (2) a 5% solution of hydrochloric acid. The whole body is rubbed with solution No. 1, which is applied with a piece of cotton-wool and allowed to dry for a few minutes When dry, solution No. 2 is applied in the same way. The patient is then instructed to put on a shirt without drying the body and goes to bed. Next morning solution No. 1 is applied as before. This treatment is carried out for 2 successive days; very rarely is it necessary to continue treatment on the third day. Having finished the treatment the patient puts on clean underwear and returns to work. There is no necessity for any applications of ointments or soap. The underclothing is not damaged, the skin is not irritated, the solution has no odour, and the itching stops at once. This treatment has been carried out in many thousands of cases, and is particularly suitable in the treatment of large numbers—schools, military barracks, etc. Solution No. 1 is sometimes used more concentrated—1 to 3—but the strength of solution No. 2 is always 5%.

Army Discharge

"Devonian" writes: From a rural community of approximately 2,000 over 60 men have entered various Services since the outbreak of war, all being medically examined by the same medical board. To date 11 have been returned to civilian life "unfit for any form of military service." All had been graded A1. I have seen their "papers." One, having no previous medical history of note, discharged with bronchiectasis, now has an arduous day as a milk roundsman. Another, an agricultural labourer, was discharged with duodenal ulcer; he has not sought advice or assistance for his complaint during the 12 months he has been at home. A general carpenter sent back with "rheumatism" has not missed a day's work since his return, and spends most of his time outdoors on the roofs of Government buildings! Discharged "because he could not wear Army boots," a general labourer walks at least 4 miles a day and earns not less than £5 per week An Army driver was sent home "because he had attacks of giddiness when driving trucks"; he now handles charabancs and 8-wheeler cattle trucks. Similar cases could be detailed. Apparently no re-examination is possible. One only of the 11 has required medical attention, and that for an unrelated complaint After a week or so at home it would appear that the disability vanishes and the prospect of a lucrative job works magic as a permanent therapeutic power The men concerned all "wanted to get out," and one or two have admitted that they "kept at it until they were given their ticket." Is this how we win the war?

MEDICINE 100 YEARS AGO

Extracts from an article entitled "Sketches of American Physicians" by Nathaniel Chapman, M D., reprinted in the *Provincial Medical Journal* of October 1, 1842, from the *Medical Examiner*:

"Dr. Chapman was born in Fairfax county, Virginia, on the 28th of May, 1780, and has, therefore, nearly completed his sixty-second year. His paternal ancestor came to Virginia with the first colony, was a captain of cavalry in the British army, and, according to an authentic tradition in the family, was the youngest son of a cousin german of Sir Walter Raleigh. The family settled on the river Pomonkey, some twenty miles from Richmond; but the branch from which the doctor is descended migrated about a century and a half ago to Maryland, and fixed itself on an estate on the banks of the Potomac, nearly opposite Mount Vernon, which is still in their possession. The doctor's father, however, went to Virginia, upon his marriage, where he afterwards remained. Dr. Chapman received his early education at the Classical Academy of Alexandria, D.C., founded by General Washington, where he was six years. He subsequently spent a short time in two colleges, though not long enough to owe either any obligation. He came to Philadelphia in the autumn of 1797, to commence the study of medicine with the late Professor Rush, of whom he became a favourite pupil. . . .

"In 1801 he went abroad, and spent four years, chiefly at Edinburgh and London. He remained a year in London, the private pupil of Abernethy, and thence passed to Edinburgh. Edinburgh was then celebrated equally for her school of medicine and her literary and scientific society. Students of medicine resorted thither, as now to Paris, from all parts of the world. Nearly all our American physicians of the olden time—Morgan, Shippen, Kuhn, Rush, Wistar, and many others—received their education at Edinburgh. It may be supposed that Dr. Chapman made the most of his opportunities in the distinguished circle of the modern Athens. . . . Dr. Chapman returned to this country in 1804. . . . He was the physician and confidential friend of the Count de Survilliers (Joseph Bonaparte), during his long residence in Philadelphia and its vicinity. From the Count he gathered a large fund of interesting anecdote of the illustrious brother of the ex-king, and the men and scenes of his eventful times, from which the doctor occasionally draws . . . As a practitioner, Dr. Chapman is distinguished as much for the charm of his manner in the sick chamber as for skill and success in prescribing. His lively conversation and ever-ready joke are often more effective than anodyne or cordial Indeed, in cases of trifling importance, the doctor sometimes prescribes little else. In pleasant chit-chat, both patient and physician forget the object of the visit, and the doctor will depart and 'leave no sign' for pill or bolus"

⁂ The *Provincial Medical Journal* subsequently became the *British Medical Journal*.

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TUBERCULOSIS IN LONDON IN WARTIME

BY

W. ALLEN DALEY, M.D., F.R.C.P.
Medical Officer of Health, L.C.C.

AND

B. BENJAMIN, B.Sc., F.I.A., F.S.S.
Statistical Branch, L.C.C. Public Health Department

In order to assess the effect of war conditions upon the incidence of tuberculosis in London, a review of the notification records was undertaken. The results of such an analysis in respect of an urban area in which conditions immediately before the outbreak of hostilities were stable have helped to throw some light on the problem of controlling tuberculosis, and are recorded here in the hope that they will be of use to other workers in this field.

Pulmonary Tuberculosis

The general trend of pulmonary tuberculosis in London is indicated by Table I, which shows the numbers of formal primary notifications and the numbers of deaths since 1913, together with the corresponding rates.

TABLE I.—*Primary Notifications (a) of and Deaths from Pulmonary Tuberculosis in the Administrative County of London*

Year	Formal Primary Notifications		Deaths	
	No	Annual Rate per 1,000 Living	No	Annual Rate per 1,000 Living
1913	(b) 19,218	4·25	5,863	1·30
1914	(b) 16,467	3·64	6,331	1·40
1915	(b) 14,712	3·26	6,715	1·49
1916	(b) 13,547	3·01	6,364	1·41
1917	(b) 14,870	3·31	6,768	1·51
1918	(b) 15,670	3·50	6,920	1·55
1919	(b) 12,356	2·76	5,197	1·16
1920	9,202	2·06	4,675	1·04
1921–5	38,807	1·71	22,980	1·01
1926–30	34,353	1·53	20,247	0·90
1931–5	29,569	1·38	17,075	0·79
1936	5,176	1·25	2,849	0·69
1937	5,455	1·33	2,888	0·71
1938	5,200	1·28	2,590	0·64
1939	4,691	1·24	2,650 (d)	0·70
1940	4,326	1·32 (c)	2,687 (d)	0·87
1941	4,577	1·78 (c)	2,552 (d)	1·10

(a) Excluding posthumous cases. (b) Not checked for duplicates (c) Based on the civilian population only—i.e., civil notifications per 1,000 civilians (d) Excluding non-civilians from Sept. 3, 1939

It will be seen that the decline in incidence, which had been continuous since the war of 1914–18, was arrested at the beginning of the present war. Although it is not clearly shown by the table, the increase in mortality actually preceded the increase in the rate of occurrence of new cases. The rise in the notification rate was not appreciable until the latter part of 1940; the notification rate for the first half of 1940 was not substantially above the level of the same period in 1938. The impact of war was reflected first in the earlier deaths of those in whom tuberculosis had already developed. It was not until later that the strain of war began to produce a rise in newly diagnosed infections.

The analysis of new cases which was made for the years 1938–41 embraced not only formal primary notifications but also posthumous notifications. The distribution of these new cases by age and the estimated rates per 1,000 living are shown in Table II.

TABLE II.—*New Cases of Pulmonary Tuberculosis in London (A.C.), 1938-41*

Age Group	1938		1939		1940 (a)		1941 (a)		Increase in Rate for 1941 compared with 1938 %
	No.	Rate per 1,000	No.	Rate per 1,000	No.	Rate per 1,000	No	Rate per 1,000	
0–4	105	0·42	76	0·40	60	0·53	104	1·64	290
5–14	228	0·42	161	0·39	103	0·55	198	1·74	314
15–24	1,484	1·52	1,353	1·43	1,130	1·42	1,150	1·89	24
25–64	3,262		2,917		2,592		2,631		
65+	224		236		202		250		
Not stated	2		24		18		24		
Total	5,305	1·31	4,767	1·26	4,105	1·33	4,357	1·87	43

(a) Excluding non-civilians.

It should be stressed that the validity of the rates shown in Table II depends upon the accuracy of population estimates on which they are based, the details of which cannot be adequately set out here owing to restrictions on space, but there is no doubt that the increase in the incidence of respiratory tuberculosis between 1938 and 1941, especially among children, is greater than that which could be attributed to errors in these estimates. Possible changes in the character of the population are dealt with in the discussion at the end of this article.

For comparative purposes the age distribution of deaths during the same period is shown in Table III.

TABLE III.—*Deaths from Pulmonary Tuberculosis in London (A.C.), 1938-41 (see note d, Table I)*

Age Group	1938		1939		1940		1941		Increase in Rate for 1941 compared with 1938 %
	No.	Rate per 1,000	No.	Rate per 1,000	No.	Rate per 1,000	No.	Rate per 1,000	
0–4	30	0·12	15	0·08	22	0·19	41	0·65	442
5–14	25	0·05	16	0·04	24	0·13	25	0·22	340
15–24	459	0·77	447	0·83	454	0·95	432	1·16	51
25–64	1,863		1,922		1,965		1,827		
65+	213		250		222		227		
Total	2,590	0·64	2,650	0·70	2,687	0·87	2,552	1·10	72

The sex distribution of new cases of pulmonary tuberculosis, 1938–41, is shown in Table IV.

For the purpose of Table IV non-civilians have been included in order that the sex proportions in the total populations to which the new cases are related can be regarded as comparatively stable. If non-civilians were excluded account would have to be taken of the different effect on the male and female civil populations of the calling up of Service personnel. It should be borne in mind, however, that the very fact that recruitment during the period under review has affected males

TABLE IV.—*New Cases of Pulmonary Tuberculosis in London (A.C.), 1938-41 (including Non-Civilians)*

Year	0–14			15–24			25–64			65+			Age Group Total (a)		
	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F
1938	173	160	1·08	661	823	0·80	2,133	1,129	1·89	152	72	2·11	3,121	2,184	1·43
1939	111	126	0·88	654	699	0·94	1,913	1,004	1·91	170	66	2·58	2,868	1,899	1·51
1940	70	93	0·75	573	669	0·86	1,835	898	2·04	152	50	3·04	2,638	1,720	1·53
1941	164	138	1·19	621	722	0·86	2,001	880	2·27	188	64	2·94	2,987	1,815	1·65

(a) Including cases in which the age is not known

more than females implies that the search for new cases has been more intense among males than among females; this tends to produce a fictitious increase in the male-to-female ratio of new cases of respiratory tuberculosis.

When these considerations are taken into account it does not appear possible to draw from Table IV any sound conclusions as to the effect of the war upon the relative incidence of pulmonary tuberculosis among men and women respectively in the important 15–24 age group. At older ages it does appear clear that males have been more affected than females (as in the case of non-pulmonary tuberculosis, see Table VIII). With regard to ages under 15, the irregularity in the sex ratios is not greater than that which has been experienced in past years and, which might be expected having regard to the small numbers involved.

In the absence of precise information as to the sex components of the population of London it is not possible to carry the sex incidence analysis any further.

Non-pulmonary Tuberculosis

With regard to non-pulmonary tuberculosis, the background is given by the following figures, which tell the same story as does Table I for pulmonary tuberculosis.

TABLE V.—*Primary Notifications (a) of and Deaths from Non-pulmonary Tuberculosis in the Administrative County of London*

Year	Formal Primary Notifications		Deaths	
	No.	Annual Rate per 1,000 Living	No.	Annual Rate per 1,000 Living
1913	(b) 6,436	1·42	1,611	0·36
1914	(b) 3,862	0·85	1,666	0·37
1915	(b) 3,949	0·88	1,841	0·41
1916	(b) 4,084	0·91	1,641	0·36
1917	(b) 3,864	0·86	1,715	0·38
1918	(b) 3,517	0·79	1,526	0·34
1919	(b) 3,231	0·72	1,127	0·25
1920	2,461	0·55	1,070	0·24
1921–5	10,881	0·48	4,383	0·19
1926–30	8,971	0·40	3,080	0·14
1931–5	6,322	0·29	2,354	0·11
1936	1,056	0·26	363	0·09
1937	1,014	0·25	351	0·09
1938	982	0·24	347	0·09
1939	805	0·21	302 (d)	0·08
1940	653	0·20 (c)	318 (d)	0·10
1941	675	0·27 (c)	343 (d)	0·15

(a) Excluding posthumous cases. (b) Not checked for duplicates. (c) Based on the civil population only—i e, civil notifications per 1,000 civilians. (d) Excluding non-civilians from Sept. 3, 1939.

The age distribution of the new cases which have occurred since the beginning of the war is shown in Table VI, from which it is clear that the comparatively small rise in the notification rate for the population as a whole conceals very large increases in the rates for the younger age groups. These increases are much in excess of any variations attributable to margins of error in the estimation of basic populations.

TABLE VI.—*New Cases of Non-pulmonary Tuberculosis in London (A.C.), 1938-41*

Age Group	1938		1939		1940 (a)		1941 (a)		Increase in Rate for 1941 compared with 1938 %
	No.	Rate per 1,000	No.	Rate per 1,000	No	Rate per 1,000	No	Rate per 1,000	
0–2	87	0·55	71	0·58	52	0·76	84	2·21	302
3–4	55	0·61	41	0·59	44	0·98	45	1·77	190
5–14	253	0·47	200	0·48	146	0·78	148	1·30	177
15–24	272	0·20	217	0·17	162	0·16	172	0·20	—
25–64	346		302		249		211		
65+	40		26		24		40		
Not known	—		2		4		4		
Total	1,053	0·26	859	0·23	681	0·22	704	0·30	15

(a) Excluding non-civilians.

The death rates (per 1,000) from non-pulmonary tuberculosis in the same four years among children under 15 years of age were: 0.19, 0.17, 0.35, and 0.87 respectively—a progression which is in substantial agreement with the trend of new cases.

The distribution of new cases according to the site of the tuberculous lesion is shown in Table VII for both children and adults. The variations in the rates for the different sites are in the case of adults relatively small when normal yearly fluctuations are taken into account, except possibly in the case of meningitis. In respect of children, however, the changes in the rates are substantial. When all bones and joints are combined, the percentage increases in the rates for each site over the period 1938-41 are: all bones and joints, 184; abdomen, 141; peripheral glands, 215; meninges, 250; other sites, 269. Having regard to chance fluctuations, the difference between these percentages does not appear to be statistically significant, except in the case of tuberculosis of the abdomen, in which the increase seems to be significantly lower than for other sites.

As an indication that 1938 is a satisfactory base-year for the purpose of Table VII, the average site distribution of deaths from non-pulmonary tuberculosis during the immediate pre-war years is given below.

Percentage Distribution of Deaths from Non-pulmonary Tuberculosis in London (A.C.), 1931-8

Year	Bones and Joints	Intestines and Peritoneum	Central Nervous System	Other	Total
1931–8	15	10	41	34	100
1938	12	9	42	37	100

TABLE VII.—*New Cases (a) of Non-pulmonary Tuberculosis in London (A.C.), 1938-41: Distribution according to Site. Rates per 1,000 Living are shown in Parenthesis against the Numbers of Cases*

Age Group	Year	Site of Tuberculous Lesion								
		Spine	Hip	Knee	Other Bones and Joints	Abdomen	Peripheral Glands	Meninges	Other Sites (b)	Total
1. Under 15 years of age	1938	23 (0·029)	28 (0·035)	19 (0·024)	29 (0·037)	43 (0·054)	123 (0·156)	89 (0·113)	41 (0·052)	395 (0·501)
	1939	26 (0·043)	22 (0·036)	20 (0·033)	27 (0·044)	23 (0·038)	113 (0·186)	55 (0·091)	26 (0·043)	312 (0·514)
	1940	12 (0·040)	23 (0·077)	9 (0·030)	19 (0·064)	11 (0·037)	91 (0·304)	62 (0·207)	15 (0·050)	242 (0·809)
	1941	11 (0·062)	19 (0·107)	11 (0·062)	22 (0·124)	23 (0·130)	87 (0·491)	70 (0·396)	34 (0·192)	277 (1·564)
Increase in rate 1938–41 (%)		114	206	158	235	141	215	250	269	212
2. Over 15 years of age	1938	91 (0·028)	28 (0·009)	27 (0·008)	44 (0·013)	84 (0·026)	141 (0·043)	45 (0·014)	198 (0·060)	658 (0·201)
	1939	63 (0·020)	34 (0·011)	22 (0·007)	56 (0·017)	52 (0·016)	136 (0·043)	40 (0·013)	144 (0·045)	547 (0·172)
	(c) 1940	50 (0·018)	35 (0·013)	21 (0·008)	45 (0·016)	37 (0·013)	88 (0·032)	39 (0·014)	124 (0·044)	439 (0·158)
	(c) 1941	44 (0·020)	23 (0·011)	14 (0·007)	46 (0·021)	63 (0·029)	85 (0·040)	40 (0·019)	112 (0·052)	427 (0·199)
Increase in rate 1938–41 (%)		−29	22	−13	62	12	−7	36	−13	−1

(a) Primary notifications, including posthumous cases. (b) Includes miliary and genito-urinary. (c) Excluding non-civilians.

TABLE VIII.—*New Cases of Non-pulmonary Tuberculosis in London (A.C.), 1938-41 (including Non-civilians)*

Year	0–14			15–24			25–64			65+			Age Group Total (a)		
	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F
1938	223	172	1·30	144	128	1·13	154	192	0·80	12	28	0·43	533	520	1·03
1939	165	147	1·12	107	110	0·97	142	160	0·89	14	12	1·17	428	431	0·99
1940	117	125	0·94	80	94	0·85	142	120	1·18	10	14	0·71	353	353	1·00
1941	141	136	1·04	87	111	0·78	116	113	1·03	14	26	0·54	360	388	0·93

(a) Including cases in which the age is not known.

The sex distribution of new cases is shown in Table VIII, in which non-civilians have been included for reasons that have already been stated. The trend of the sex ratios indicates that at ages below 25, and particularly in the 15–24 age group, females have been more affected than males by the increased incidence. At the older ages it appears that males have been more affected than females.

Discussion

The experience of London, judged by the foregoing statistics, has been less favourable than in the country as a whole. Brief, and in some cases necessarily approximate, figures for England and Wales are given in Table IX.

TABLE IX.—*Tuberculosis Notification and Mortality Rates per 1,000 in England and Wales*

Year	Formal Notifications per 1,000		Deaths per 1,000 (b)	
	Pulmonary	Non-pulmonary	Pulmonary	Non-pulmonary
1938	0·92	0·31	0·53	0·10
1939	0·84	0·27	0·54	0·10
1940	0·87 (a)	0·25 (a)	0·59	0·11
1941	0·95 (a)	0·28 (a)	0·60	0·13
Increase 1938–41 (%)	3	−10	13	30

(a) Approximately, based on mid-1939 total population. (b) Excluding non-civilian deaths after Sept. 3, 1939.

Possible causes of this divergence are easier to suggest than to measure. Evacuation has probably had a selective effect upon the population. Some children who were ailing may have been kept back by their parents, and those who subsequent to evacuation showed signs of deterioration in health would probably have returned very soon. Among children actually attending school it has to be admitted that there is little evidence to support this suggestion in the clinical results of routine medical examinations carried out by school medical officers; the increased incidence of tuberculosis, particularly of the non-pulmonary form, was, however, greater in children of pre-school age, and many of the new cases among older children would not have attended school for some time prior to notification and would have missed routine examination. A probable effect of evacuation has been to increase the proportion of tuberculous persons in the population remaining. It would be expected that as they were ill they did not desire to leave home, and for the same reason (in many cases, also, their economic status would be low) it would be more difficult for them to find homes in reception areas. Inquiries made of representative boroughs reveal that at Dec. 31, 1940, the following proportions of persons on the Dispensary Register were actually living within their respective boroughs: Finsbury, 94.5%; Islington, approximately 90%; Stepney, about 75%; Greenwich, 92%; Paddington, 73%. The balance are those who had evacuated themselves temporarily. There is reason to believe that these proportions are higher than that which the total population at that date bore to the pre-war population.

The statistics must also reflect to some extent the progressive recruitment of fit persons to the Forces. This selection also has the effect of increasing the proportion "unfit" in the residual population. On the other hand, recruiting boards have discovered some cases of active tuberculosis which otherwise would not have been diagnosed until the disease became more advanced.

Account must be taken of the aerial bombardment of 1940–1, with its concomitant physical and psychological strain and temporary overcrowding. It would be interesting to compare the experience of London with that of other much-bombed towns, but the necessary statistics are not available to us.

Part of the increases in the numbers of notifications of and deaths from tuberculosis can be attributed to reduced resistance to the disease and increased numbers of new cases diagnosed among Londoners who are patients in mental hospitals. The increase in the rate of occurrence of new cases among mental patients between 1938 and 1941 amounted to 0.12 per 1,000 of the total population of the County of London, and therefore, out of the rise of 43% in incidence, 9% is attributable to increased notifications in respect of mental patients. The increase, as such, has, however, been exaggerated by the fact that during 1941 more extensive measures of diagnosis were instituted in the mental hospitals and that therefore some of the notifications in 1941 related to patients who had been tuberculous for some time. With regard to mortality there is evidence that the proportion of all deaths of mental patients which are associated with active tubercle appears to have risen. An investigation is being made to ascertain the extent of increased incidence of tuberculosis in mental hospitals.

Finally there is the important factor of increased employment. Since Dunkirk there has been no respite from the heavy demands of war industry. Hours of work have been long. Travelling conditions have often been bad. Moreover, in wartime many less healthy persons obtain employment who would not in peacetime successfully compete in the labour market. Many have taken up heavier types of employment; this, in the case of infected persons, might make all the difference between the quiescence and development of the disease. Generally, in considering the balance between input and output of energy of the human body it is possible that the prominence given to measures for improving nutrition has distracted attention from the output side of the equation.

The statistics of non-pulmonary tuberculosis throw light on the type of infection and on the efficacy of the sterilization or pasteurization of milk as a means of reducing the risk of infection. Most of the milk consumed in the Metropolis is pasteurized, and therefore the fact that abdominal infections have not increased in proportion to infections at other sites is of special significance. The disproportionate rise in non-abdominal infections indicates that while pasteurization has held back the spread of bovine infections the principal infecting source is human. In this respect the experience of Glasgow (*British Medical Journal*, 1941, **2**, 436) is similar.

The experience of London differs from that of Glasgow in two important respects: (1) The increase in the incidence of tuberculosis is greater in respect of children than in respect of adults; and (2) new cases of pulmonary tuberculosis increased more in adults than new cases of non-pulmonary disease. This fact, coupled with the evidence of site distribution for non-pulmonary forms of disease in children, suggests that contact and droplet infection has been an important feature in London It is difficult to assess the relative importance of decreased resistance to new or old-standing infections.

Summary

The effect of the conditions of war upon the trend of tuberculosis incidence in a densely populated and much-bombed urban area has been examined. The principal findings are:

1. As compared with 1938, there was in 1941 an increase of 43% in the rate of occurrence of new cases of pulmonary tuberculosis and of 15% in new cases of non-pulmonary tuberculosis. The pulmonary tuberculosis death rate increased over the same period by 72% and the non-pulmonary rate by 67%. These increases are much greater than for England and Wales as a whole.

2. The increase in the incidence of tuberculosis affected children much more than adults, particularly in the non-

pulmonary type, in which the increase was practically confined to the "under-fifteens" (except the increase of tuberculous meningitis, which extended to adult ages).

3. At ages over 25 males have been more affected than females. Below 25 it appears that, with the non-pulmonary type, females have been more affected than males, but with pulmonary tuberculosis at these younger ages there is no conclusive evidence that one sex has been more affected than the other.

4. The increase in non-pulmonary tuberculosis has occurred almost equally in all the principal sites, except in abdominal tuberculosis, in which the increase was significantly lower.

5. New cases of pulmonary tuberculosis increased more in adults than new cases of the non-pulmonary disease. This fact, coupled with the evidence of site distribution for non-pulmonary forms in children, suggests that contact and droplet infection has been an important feature in London.

6. There is evidence both that pasteurization of milk has held back the spread of bovine infections and that the principal infecting source is human.

7. Factors influencing the incidence of tuberculosis include changes in the age and sex distribution of the population as a result of evacuation and of recruitment to the Forces, the strain and overcrowding resulting from bombing, fatigue and lack of rest, restriction of diet, and, on the other hand, increased employment and financial resources for those formerly on the verge of poverty. In mental hospitals the increased incidence is greater than in the population as a whole

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WARTIME DERMATOLOGY

WITH A PLEA FOR ECONOMY

BY

R. WORKMAN CARSLAW, M.D.

Surgeon-Lieutenant, R.N.V.R., Assistant Physician for Diseases of the Skin, Victoria Infirmary, Glasgow

The treatment of diseases of the skin in peacetime is considered of little importance and of no urgency, as the sufferers are said never to be cured nor yet to die. In recent years, however, treatment has advanced considerably and so have teaching and hospital facilities. Only when the whole of the available working power of the country is mobilized is the crippling effect of diseases of the skin fully realized, and their treatment assumes added importance in wartime medicine (Vickers, 1940).

In the Services it was soon found that many man-hours could be lost through trivial skin complaints. At sea about 50% of the daily attendances at the sick bay are for skin complaints. This takes up time and space and medical stores, of which only a limited stock can be carried. Scabies has become rife in the large centres of population, and as a result its prevalence has increased in the Navy. Recent experience of dermatology in the Naval Medical Service has brought several facts forcibly to my attention, and these are expressed in the following notes.

Material

The survey covers a period of two and a half years, which began one month before the opening of hostilities. This period falls naturally into three parts—namely, six months at sea, eighteen months ashore, and a second period of six months at sea.

The first part is the experience of six months afloat in cold or extremely cold conditions with a personnel of approximately 500 men. During this time there was little contact with centres of population, and the food was good, with a reasonable amount of fresh fruit and vegetables. The accommodation was crowded and the hours of darkness long, but the general health remained good. The second part is the experience of the skin department of a large naval hospital at home. Here there was accommodation for 28 in-patients, and out-patients were seen by consultation. The cases were drawn from all three Services in the area and the ships based on the port. A small number of foreign invalids were received. The third part is the experience of six months afloat in tropical conditions with a personnel of approximately 1,600 men. Little contact was made with centres of population, and fresh food was intermittently available. The accommodation was satisfactory and the period of daylight 12 hours. The general health was also satisfactory.

Circumstances peculiar to the Service are found to be on both the credit and the debit side. The discipline enables the medical officer to obtain greater control over treatment, but the exigencies of the Service may interfere with it. The population is entirely male afloat, and largely so ashore, while children are not included. The standard of physical fitness is above the average of the general population. The nursing facilities are limited. The number of attendants is small, and their training is short judged by civil nursing standards. Accommodation is limited, and isolation difficult except in the hospitals. At sea, facilities for dispensing are often poor and replacement of medical stores is difficult; rapid changes in climatic conditions are encountered, and the laundry is often overtaxed. Ashore, the personnel are apt to move from one area to another without warning.

Restrictions imposed by War Conditions.—Economy in all things is of paramount importance in wartime. Loss of man-hours is a matter for grave concern, and those affected with skin lesions must continue their normal work wherever possible If it is necessary to take a patient off work his sick period must be kept to a minimum. Economy in various drugs is an essential part of the national economy, and where an alternative exists the inferior drug may have to be employed in the national interest. Where alternative treatments are possible, that which combines effectiveness with economy should be chosen without regard for the personal experience or preference of the medical officer or patient. The nursing staff is relatively reduced in number and the training period for probationers is shortened. The standard of physical fitness is lower than in peacetime. The necessity for black-out, with impaired ventilation and the wearing of gas masks, must have a deleterious effect on skin conditions.

The Cases

First Part.—During this period few skin cases were encountered. These consisted of a number of cases of impetigo and scabies and several cases of dermatitis of the hands, apparently due to change from civil to Service occupation.

Second Part.—During this period 1,149 cases were seen—652 as in-patients and 497 in consultation. There were a large variety of conditions, but only the more common ones are shown in Table I.

TABLE I.

Disease	In-patient	Out-patient	Total
Dermatitis from all causes	31·6%	30·7%	31%
Seborrhoeic dermatitis	8·5%	8%	8%
Occupational dermatitis	4%	7·6%	5·5%
Dermatitis medicamentosa	3·7%	1·5%	3%
Scabies	27%	9%	18%
Impetigo	16%	4%	10%
Mycosis*	8%	9%	8·4%

* Including tinea pedis, tinea cruris, and tinea circinata.

Third Part.—During this period 349 cases were treated. As these cases were seen afloat, they were kept under observation up till the time of writing—i.e., two months after the end of the period. Only those conditions with an incidence of over 5% are shown. They were: mycosis, 56%, scabies, 15%: miliaria rubra, 13.5%, and impetigo, 8%

Treatment

Four conditions make up 67.4% of the cases in Part 2, and four conditions make up 92.5% in Part 3. Three conditions are common to both—namely, scabies, impetigo, and mycosis—the remaining two being dermatitis from all causes and miliaria rubra. Briefly, the treatment used in those five conditions was as follows:

Scabies.—During Part 2 an emulsion of benzyl benzoate was employed. The formula and procedure for this emulsion were described in a previous paper (Carslaw and Swenarton, 1941). In Part 3 this emulsion was unobtainable, in the early months sulphur ointment (*B.P.*) being used, and later the benzyl benzoate mixture with soft soap and spirit. A course of treatment in each case consisted of three applications in three days, with a hot bath before treatment. Disinfestation of all clothing was carried out. The results are shown in Table II. The 4 cases which failed to respond to sulphur treatment responded later to a course of benzyl benzoate. The minimum time of observation after treatment has been 2 months.

Table II

Treatment	1 Course	2 Courses	Failures	Total
Benzyl benzoate mixture . .	27	4	—	31
Sulphur ointment	18	1	4	23

Impetigo.—The treatment for impetigo in Part 2—i.e., in the home climate—was sulphanilamide ointment followed by a brilliant-green stearate paste. This treatment was described in a previous paper (Carslaw and Swenarton, 1941), and proved successful. In the Tropics the paste was not stiff enough, and the sulphanilamide ointment was contraindicated because of the ointment base. The routine treatment in Part 3 was swabbing with lotio hydrarg. perchlor. 1 in 1,500, followed by the application of lotio calaminae. This treatment was carried out twice a day. Firm dry crusts were thus formed which on separation left a healed surface. By this means 27 cases were treated without a failure, and the patients were able to carry out their full duties. The cases of impetigo occurring in the Tropics were of a mild type.

Dermatitis.—This term is taken to cover allergic dermatitis, seborrhoeic dermatitis, dermatitis venenata, dermatitis medicamentosa, and occupational dermatitis. The treatment varied to a certain extent with the aetiology, but was chiefly influenced by the histology and the need for economy. The dermatitis might be exudative, inflammatory, parakeratotic, or lichenified, and the treatment was normally lotio plumbi (*B.P.*), ichthyol 10% in water, aqueous gentian violet 1%, lotio calaminae with tar, or tar 5% in zinc ointment. The ointment base was used only if there was considerable scaling.

Miliaria Rubra.—This condition was almost universal in the Tropics, and only the more severe cases could be given treatment. This consisted of lotio calaminae 2 parts, spirit 1 part, to which was added carbolic acid 1% and in some cases menthol 1%.

Mycosis.—Ingram (1942) recently drew attention to the increasing incidence of ringworm infection of groins and toes in the Services. This is borne out by the fact that there were 196 cases of ringworm infection in Part 3—i.e., 56% of all cases. Andrews (1938) states that it is not the fungicide but the method of application that is of importance, and gives a list of fungicides. When it was realized that mycotic infections would be numerous the fungicides carried in the ship were checked and a plan devised. The first cases were treated with tinct. iod. mitis for three days, followed by salicylic acid 5% in spirit for four days, this course being repeated as often as necessary. Salicylic acid 5% in spirit, increasing up to 20% for some cases, was next employed. The limited stock of chrysarobin ointment (*U.S.P.*) was brought into use, and later on gentian violet 1% in spirit was pressed into service. The last was found to be impracticable on account of the staining of clothing, and so thymol 5% in spirit was tried. As thymol proved unsatisfactory a return was made to tinct. iod. mitis twice a day without salicylic acid. Carbolic acid 1% in sulphur ointment (*B.P.*) was given a short trial, and mercuric iodide in spirit was used for 3 cases but was found to cause second-degree burning and destruction of tissue. Table III shows the results achieved with the various treatments. It must be remembered that the number of cases in each group was partly governed by the quantity of the drug carried.

Table III

Treatment	Duration of Treatment in Days			Failed	Total Cases
	1–7	8–14	15+		
	%	%	%	%	
Chrysarobin oint.	78	11	—	11	36
Tinc. iod. mitis . .	37	31	20	12	51
Gentian violet 1%	67	20	—	13	15
Tinc. iod. mitis and ac. salicylic. 5%	13	22	52	13	23
Ac. salicylic. 5–20%	26	26	15	33	39
Thymol	10·5	10·5	21	58	19
Ac. carbol. 1% and sulphur oint. . .	—	30	—	70	10
Mercuric iodide . .	100	—	—	0	3

It will be seen that chrysarobin ointment treatment was the most successful, followed by gentian violet 1% in spirit and then tinct. iod. mitis. A 5% solution of chrysarobin in water was found to be at least as efficacious as the ointment, but only 2 drachms of dry chrysarobin was available. The extent of the ringworm infection was remarkable, 75 cases having lesions on the body in addition to those on the feet or groins. In one case large patches of mycosis extended over almost the whole of the bathing-drawers area, and in another practically the entire back was covered by a single patch. The 58 cases of infection of the feet were controlled by the application of gentian violet lotion 1%, and occasionally Whitfield's ointment was applied if the dry scaling became marked. This treatment was found to be successful, and although it is not suggested that the cases were permanently cured, the men were able to continue with their work and were free from symptoms. The fungus was distributed on the body as follows: tinea cruris and circinata, 68 cases; tinea cruris only, 62; tinea pedis only, 40; tinea cruris and pedis, 11; tinea circinata only, 8; tinea cruris, circinata, and pedis, 6; tinea circinata and pedis, 1 case.

Discussion

I feel that the treatment of skin diseases has been too conservative, shrouded in mystery, and bogged in ointment. Textbooks of dermatology are of little use to the Service medical officer in wartime, as it is often totally impossible to carry out the treatment recommended; and, furthermore, a textbook for temperate climates is useless for the Tropics. I think the following are the salient points in Service wartime dermatology: (1) economy is of national importance; (2) the bulk of medical stores must be kept small; (3) simplicity and, where possible, standardization ease the burden of an overtaxed nursing staff; (4) early diagnosis and treatment saves loss of man-hours.

Two treatments described in this paper are contrary to the policy of economy advocated. Chrysarobin ointment was used, not the aqueous solution; and a mercury lotion was employed in the treatment of impetigo. The reason was that the ointment and the mercury were carried in the ship, though it would have been an economy if they had been replaced by the powder and a larger stock of aniline dyes.

Economy has been stressed recently in many articles in the medical press. Brain (1941) states: "No mention has been made of mercury because, although of value, it is more essential to the national economy in war industries." This statement was made in discussing the treatment of impetigo.

Ointments could, it is felt, be largely discarded, particularly in summer and in hot climates; mercury be replaced by aniline dyes; and starch poultices be put out of production. Dressings are often changed four-hourly, but this may retard healing, and a twice-daily dressing is normally sufficient and in many cases not even necessary. Dressings should always be as light as possible, no wool or lint being used. Brain (1941) states that an ointment in the treatment of impetigo is inadvisable, as a film of grease retains exudates and sweat, which encourage the growth of organisms and irritate the follicles. Both Conybeare (1940) and Brain stress that a dry intact stratum corneum is Nature's defence against skin infection. The saving in ointment means a conservation of the all-important fats. Those drugs which can be carried in a powder or crystalline form save space, as they are commonly used in weak aqueous solutions. In this connexion chrysarobin powder and gentian-violet crystals should always be carried in this form and never as an ointment or in solution. Crude coal-tar should be substituted for a prepared tar.

The best results are attained by the use of a comparatively small number of remedies (Conybeare, 1940), and simplicity saves the time of nursing and dispensing staffs. Early diagnosis, and therefore the early institution of treatment, means a smaller area to treat and a saving of stores and time lost.

In many ways life has been made more simple by the introduction of rationing in domestic life, and a plea is made that the treatment of skin conditions could and should be simplified to conform with the national war effort.

Summary

A survey is made of 1,498 skin cases seen in the Royal Navy in wartime.

It is shown that five conditions cause the majority of skin casualties in the Navy. The treatment used for those five conditions in two and a half years of wartime dermatology is very briefly described. Emphasis is placed on the treatment of mycosis—for which chrysarobin is recommended—as those cases were unusually severe and numerous.

The difference between the civil practice of dermatology and dermatology in the Service is mentioned and the added difficulties of war conditions are noted.

A plea is made for greater economy and simplicity in the treatment of skin conditions.

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LIGATURE OF INNOMINATE ARTERY FOR RIGHT SUBCLAVIAN ANEURYSM: END-RESULT

BY

Sir W. I. de C. WHEELER, M.Ch.(Hon.), F.A.C.S.(Hon.), F.R.C.S.I.
Temporary Surgeon Rear-Admiral

In the case of which the end-result is here recorded, the innominate artery was ligatured in Dublin in May, 1932, for right subclavian aneurysm. The patient died 8 years and 4 months later, in Sept., 1940, presumably from rupture of an aneurysmal sac. No details could be obtained. Death was sudden and unexpected.

Three previous cases have been reported from Dublin; these occurred in the days before aseptic surgery. Coppinger of the Mater Misericordiae Hospital was the first surgeon in Europe to tie successfully the innominate artery for subclavian aneurysm (1893). Sixteen months after operation "the aneurysm was represented only by a small movable and hard filbert-sized tumour." In this case the carotid artery was divided between two ligatures. Thomson of the Richmond Hospital lost a case from secondary haemorrhage on the forty-second day, and O'Grady of Mercer's Hospital reported a case in which the patient died of "apoplexy" on the day following operation. In this instance the carotid artery also was tied. Ligature of the innominate artery remains a rare procedure. Up to and including the year 1922 there were 57 cases on record with 19 recoveries (Ballance, 1921). Rundle (1937) adds 5 subsequent cases. I have been unable to obtain the figures for recent years, but, judging by the paucity of cases in the past, it may be assumed that the total number to date does not exceed the round figure of 70. It is not the purpose of this communication to discuss the merits or drawbacks of the various surgical procedures. Whatever operation is employed for aneurysm of the aorta or any of its main branches the life of the patient may be prolonged, but he remains in a condition of perpetual jeopardy, and seldom survives for many years. The longest survival period after ligature of the innominate artery which I could find in the records is 10 years (Smyth of New Orleans, quoted by Erichsen, 1895). After ligature of the subclavian and common carotid for innominate aneurysm a patient was alive 18 years after operation (Baldwin's case, mentioned by Rundle). I have had one case of abdominal aneurysm in which the patient lived for the same period after the introduction of Colt's wires. These cases are, however, the exception; the majority of "cures" and "successes" are recorded when only a few weeks or months have elapsed after operation. Guidance as to prognosis is difficult to obtain from published cases: exaggerated claims are made long before real results could be estimated. Post-mortem specimens obtained shortly after operation are not convincing evidence of "cure" unless death can be attributed to a condition neither directly nor indirectly concerned with the aneurysm. Even when this can be proved, it must be remembered that most of the patients who survived for many years eventually died of a secondary dilatation of the artery or a recurrence of the original aneursym. The fact is, operation is palliative only, although a few surprisingly good results are on record.

In the original report of the case under review it was pointed out that the ideal operation for subclavian aneurysm is proximal and distal ligature with excision of the sac. As there was an apparent "cure" after ligature of the innominate artery, a contemplated second-stage operation (i.e., an attempt to ligature the distal arteries and excise the sac) was abandoned.

History of the Case

The patient, approximately 35 years of age, was wounded in France in 1915. On examination in 1932 a portion of a bullet could be seen by *x* rays deep to the insertion of the right sterno-mastoid muscle. There was a pulsating swelling the size of a duck's egg above the right clavicle. The right recurrent laryngeal nerve was paralysed, but, apart from this, there was a striking absence of the more usual clinical signs. The radial pulse was not affected, the blood pressure was the same on both sides, there was no bruit, and expansile pulsation could not be detected. The Wassermann reaction was negative.

It was hoped that ligature of the subclavian artery behind the scalenus anticus muscle would be possible and that, later, distal ligature and excision of the sac could be accomplished. The clavicle was divided in two places so that the central portion with its pectoral attachments could be turned downwards on the chest (Moynihan). The aneurysm in this manner was laid bare and the bullet removed. The external and internal jugular veins were found obstructed and distended. The suprascapular and transversalis colli arteries were seen lying transversely across the tumour. The scalenus anticus muscle, as such, had disappeared and the phrenic nerve was not located. The sac clearly extended to the bifurcation of the innominate artery, and in consequence proximal ligature of the subclavian artery was impossible.

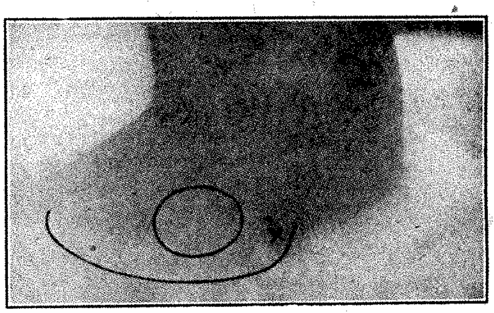

Fig. 1.—Subclavian aneurysm. The position of the tumour and the line of incision are shown. × marks the position of the bullet.

Fig. 2.—Subclavian aneurysm treated by ligature of the innominate artery. A, Transversalis colli artery. B, External jugular vein. C, Suprascapular artery. D, Divided sternum and sterno-clavicular joint retracted upwards. E, Hook retractor just above attachment of first rib to sternum. F, Innominate artery. Inset shows ligatures applied proximal and distal to thyroidea ima branch.

There was ample exposure for exploration in detail, but ligature of the innominate artery required more room if rough handling of the sac was to be avoided. The portion of the manubrium sterni which is closely related to the sterno-clavicular joint was cleared back and front and divided with a chisel. There was no interference with the first costal cartilage. The divided portion of the sternum carrying the sterno-clavicular joint and the inner portion of the clavicle was retracted upwards and to the left. The innominate artery was now seen clearly in its entire length (2 inches). The veins were not visible, the pleura caused no embarrassment, and the nerves remained hidden. The thyroidea ima branch was present. Two No. 2 catgut ligatures were passed round the main artery distal to this small branch (Figs. 1 and 2). They were tied slowly and gently to avoid, if possible, rupture of the coats. Pulsation in the aneurysm ceased and the radial pulse disappeared. Each pulsation of the artery now had the appearance of a sledge-hammer blow on the point of occlusion. For safety a third ligature was placed nearer the aorta. The thyroidea ima branch was ligatured with fine silk.

The divided clavicle and portion of sternum were replaced, the former being held in position by sutures through drill-holes in the bone. In three days the radial pulse reappeared, and in a week it was of normal volume. Six weeks later some faint pulsation could be felt in a very small swelling at the site of the original sac. Four months after operation there was no pulsation. Six years later the case was examined by Mr. R. A. Stoney of Dublin. He kindly reported that the patient appeared quite well. A small lump could be felt, but there was no pulsation or thrill.

Comment

Ligature of the innominate artery is not a difficult operation provided the exposure is adequate. Exploration, and the clearing of the deep surface of the manubrium sterni, are greatly facilitated by turning down the middle portion of the clavicle. In most cases I think this should be the first major step in the operation.

If ligature of the innominate is seen to be necessary a portion of the sternum should be divided and retracted upwards with the inner end of the clavicle. This can be accomplished without division of the first costal cartilage.

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CEREBROSPINAL FEVER

A REVIEW OF 500 CASES TREATED BY CHEMOTHERAPY WITHOUT INTRATHECAL SERUM

BY

G. EMRYS HARRIES, M.B.Lond., D.P.H.

Medical Superintendent, City Isolation Hospital, Canton, Cardiff; Lecturer in Infectious Diseases, Welsh National School of Medicine

For the purpose of comparison of the results of the various forms of treatment Table I gives the case-mortality figures for cerebrospinal fever patients admitted to this hospital during the last 10 years.

TABLE I

	Intrathecal Serum					Sulphanilamide and Intrathecal Serum	Sulphapyridine and Iatrathecal Serum	Sulphapyridine or Sulphathiazole without Intrathecal Serum		
	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Cases ..	2	4	5	15	14	15	53	322	158	59*
Deaths	2	1	3	5	6	2	11	29	13	3
% ..	100·0	25·0	60·0	33·33	42·87	13·33	20·75	9·03	8·22	5·1

* Only first 20 cases (1 death) are included in the present series.

Within a period of two years and two months (Jan., 1940, to Feb., 1942) 500 patients admitted to the Cardiff City Isolation Hospital suffering from cerebrospinal fever were treated by chemotherapy without intrathecal antimeningococcal serum. As this is one of the largest series of cases of cerebrospinal fever ever so treated, a brief analysis, together with a few observations, may be of general interest. The ages ranged from an infant of 6 weeks, who made a complete recovery (examined 12 months after discharge), to a fatal case in a person aged 70 years. All cases of cerebrospinal fever which were admitted during the period are included, even those that were moribund and died within a few minutes of admission. The total number of deaths was 43, furnishing a gross mortality rate for the whole series of 8.6%.

With a disease such as cerebrospinal fever, which has a fulminating form that often kills on the first day, a totally erroneous case-mortality rate is obtained if cases that end fatally within 24 hours of admission are excluded. Were such a procedure adopted in this series the case-mortality rate would have been recorded as only 4.8%.

Age and Sex Distribution

Table II gives the sex distribution and case-mortality rates of the various age groups.

TABLE II

Age Group	Males			Females			Total Cases		
	No.	Deaths	%	No.	Deaths	%	No.	Deaths	%
0–3 months	—	—	—	1	—	—	1	—	—
3–6 ,,	6	2	33·3	7	2	28·6	13	4	30·8
6–12 ,,	16	1	6·2	11	1	9·1	27	2	7·4
1–5 years	62	4	6·4	53	3	5·6	115	7	6·1
5–10 ,,	27	1	3·7	29	3	10·3	56	4	7·1
10–15 ,,	27	2	7·4	24	—	—	51	2	3·9
15–20 ,,	50	—	—	21	—	—	71	—	—
20–25 ,,	22	—	—	11	1	9·1	33	1	3·0
25–30 ,,	19	1	5·3	5	—	—	24	1	4·2
30–35 ,,	20	2	10·0	21	3	14·3	41	5	12·2
35–40 ,,	10	1	10·0	6	—	—	16	1	6·2
40–45 ,,	10	3	30·0	7	2	28·6	17	5	29·4
45–50 ,,	5	1	20·0	5	—	—	10	1	10·0
50–55 ,,	4	—	—	8	2	25·0	12	2	16·6
55–60 ,,	5	2	40·0	—	—	—	5	2	40·0
60–65 ,,	4	2	50·0	—	—	—	4	2	50·0
65–70 ,,	2	2	100·0	1	1	100·0	3	3	100·0
70–75 ,,	—	—	—	1	1	100·0	1	1	100·0
All Ages ..	289	24	8·3	211	19	9·0	500	43	8·6

It is noteworthy that in the favourable age group 10 to 30 years there were 179 cases with but 4 deaths, giving a case-mortality rate of only 2.2%. In the subgroup 15 to 25 years there were 104 cases with but 1 death—i.e., a case mortality of even less than 1% ; whereas among four patients of over 65 years there was no instance of recovery. From this will be seen the importance of furnishing the age distribution for any case-mortality figures for cerebrospinal fever. There were 44 non-civilians in this series, all of whom recovered, probably on account of their general fitness, favourable age-grouping, and early admission to hospital for treatment.

Proposed Classification

From my experience of cerebrospinal fever I believe the following classification covers all types of cases.

1. *The Meningococcal Septicaemic Type.*—(*a*) Acute, fulminating, exhibiting the Waterhouse-Friderichsen syndrome with adrenal haemorrhages, purpuric eruptions, pallor, and collapse ; such patients frequently die before development of meningitis. (*b*) Chronic meningococcaemia with intermittent periods of pyrexia, usually petechiae and arthritis, occasionally lesions resembling erythema nodosum, and rarely maculo-papular eruptions. This type of case may recover spontaneously or proceed to meningitic involvement unless adequately treated with chemotherapy.

2. *The Meningitic Type.*—(*a*) Acute ; (*b*) subacute ; (*c*) chronic (including the post-basic variety of Gee and Barlow in infants).

3. *The Encephalitic Type.*—Though every case of meningitis is essentially one of meningo-cortico-encephalitis, cases undoubtedly occur, fortunately rare, in which lesions are found deep in the nervous tissue. In fact, at necropsy on one of my cases meningococci could be demonstrated in the internal capsule. These cases are difficult of clinical recognition, but the

brain-stem appears often to be involved with signs of bulbar palsy, especially pharyngeal paralysis and severe respiratory distress, but at the onset no pulmonary lesions are detectable. This type of case is usually fatal.

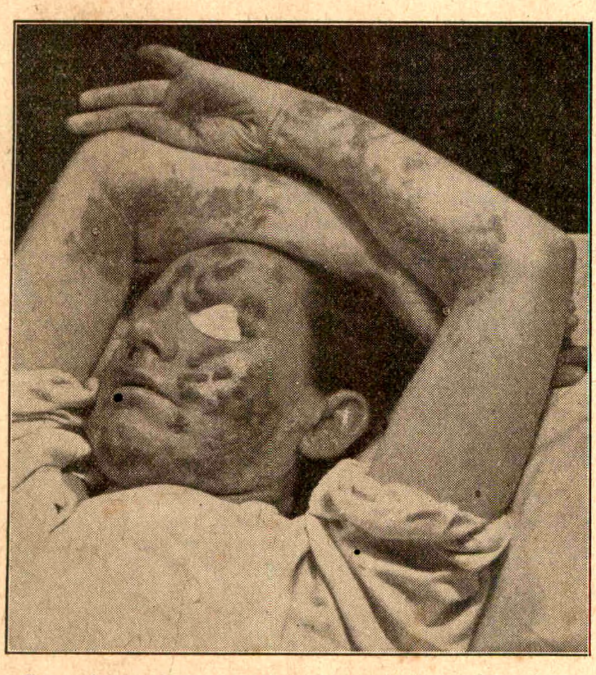
Special Diagnostic Features

It was observed that slight nuchal rigidity was a far more constant and early finding than Kernig's sign. Photophobia was conspicuous mainly by its absence. Contrary to the general impression regarding infants, a bulging anterior fontanelle was uncommon, but, rather, a depressed fontanelle was often present, being probably due to vomiting and consequent dehydration. The abdominal, knee, and plantar reflexes appeared to have no diagnostic significance except that the abdominal reflexes were almost invariably absent in those cases bordering on coma.

In only three instances did more than one case occur in the same household, but in one household there were 3 cases.

Eruptions and Complications

Purpuric eruptions, generally petechiae which appeared on the first or second day of disease, were present in 39% of cases, usually occurring in the more severe ones; but extensive purpuric eruptions were occasionally found in comparatively mild cases. Herpes—generally on the face, around the lips, though sometimes occurring in unusual situations, such as on the digits or palms of the hands—was present in 33% of the cases, usually towards the end of the first week of the disease. Unlike pneumonia, the presence of herpes was of no prognostic import. Both herpes and purpuric eruptions occurred in an additional 16% of the cases. The accompanying photograph shows an extensive herpetiform eruption in a woman aged 31, who had an attack of but moderate severity.



Severe herpes in a case of cerebrospinal fever of moderate severity: complete recovery.

The following were the main complications: Transient strabismus, 77; bronchopneumonia, 12 (usually confirmed post mortem); arthritis, 29 (mainly the larger joints); deafness, temporary and partial 11, total and permanent 7; transient albuminuria, 91; conjunctivitis or iridocyclitis, 17; transient paresis of arms, 3; temporary facial paralysis, 10; transient ptosis, 8; transient hemiplegia, 1; temporary mental derangement, persisting well into convalescence, 4; hydrocephalus, 5; dysphagia, due to severe neck retraction, 2; transient nystagmus, 2; orchitis, 1.

Differential Diagnosis

The following cases were erroneously admitted as suffering from cerebrospinal fever; Tuberculous meningitis, 25; pneumococcal meningitis, 8; aseptic meningitis, 10; influenzal meningitis, 2; subarachnoid haemorrhage, 9; poliomyelitis, 16; polio-encephalitis, 8; influenza, 58; lobar pneumonia, 8; bronchopneumonia, 14; miliary tuberculosis, 1; cerebral abscess, 1; cerebral tumour, 1; infective endocarditis, 1; frontal sinusitis, 1; tonsillitis, 14; otitis media, 2; bronchitis, 12; glandular fever, 1; tetanus, 1; rheumatic fever, 2; dysentery, 2; diphtheria, 1; pyelitis, 1; adenitis, 1; pleurisy, 3; gastritis, 1; measles and encephalitis, 1; whooping-cough and bronchopneumonia, 1; mastoiditis, 1; rubella and rheumatism, 1; paratyphoid B fever, 5; fractured base of skull, 1; uraemia, 3; catarrhal jaundice, 1; septic arthritis, 1; diphtheria, 2.

Conversely, cases notified as the following proved to be cerebrospinal fever: Polio-encephalitis, 1; poliomyelitis, 1; diphtheria, 2; typhoid fever, 1.

Chemotherapy

Sulphapyridine was employed in 471 cases and sulphathiazole in the remaining 29. Sulphathiazole appeared to be equally effective in promoting recovery and was less prone to produce nausea and vomiting.

Two grammes (4 tablets) was given by mouth on admission and repeated in 4 hours' time; then 1 g. 4-hourly for the next 72 hours; then 0.5 g. 6-hourly for a further 3 days. After the first 250 cases the dosage was increased to 2 g. 4-hourly for 4 doses and then 1 g. 4-hourly for 96 hours, followed by 0.5 g. 6-hourly for a further 3 days. The increased dosage was found to have a slight effect in diminishing recurrences and septic complications such as arthritis. Children under 12 years received half the adult dosage, and infants under 12 months a quarter. In all, 1,935 lumbar punctures were performed without any untoward effects—an average of 4 for each patient. No general anaesthetic was administered. Apart from relieving headache, the reduced intracranial pressure was considered less damaging to the nervous tissue. Incidentally, the cerebrospinal fluid furnished a satisfactory guide to the progress of the disease. No case was regarded as out of danger if the sugar had not returned to normal. Only 6 ventricular and 5 cisternal punctures were considered necessary. If the patient was comatose the tablets were crushed and given in nasal feeds. If vomiting occurred after ingestion of the drug or the patient were delirious and nasal feeding were difficult, the sodium salt of sulphapyridine was given in the earlier cases by intramuscular injections; but as sloughing often ensued in spite of care, this practice was discontinued and the sodium salt in equivalent doses was injected intravenously with three times its volume of normal saline. In severe cases, or if there were much dehydration, the sodium salt of sulphapyridine was given intravenously in about 0.5 to 1 litre or more of normal saline in 5% glucose solution by the vacoliter drip method.

Only one patient in the whole series received serum intrathecally. This was a woman aged 40 who had a fatal relapse after having been free from symptoms for 6 weeks after the cerebrospinal fluid had returned to normal. During her relapse chemotherapy appeared to have no effect, and no improvement followed the intrathecal serum, but there was slight temporary improvement after an intrathecal injection of her own blood serum. Two children, both aged 1 year, had second attacks after intervals of 2 months and 3 months respectively. In one instance the organism was of the same group in both attacks, but in the other case the organism could not be cultured on the first admission. The second attacks responded well to chemotherapy.

Fluids were pushed in all cases, as, to my mind, dehydration can contribute materially to a fatal issue. Furthermore, the giving of adequate fluids probably lessens the incidence of haematuria due to the depositions of acetyl derivatives in the kidneys. One patient who ultimately recovered and had been in coma for 10 days was given fluids by nasal feeds at 4-hourly intervals during that period.

Since extensive haemorrhages are not infrequently found in the adrenals, in the acute septicaemic cases, 5% glucose-saline (0.5 to 1 litre) was given intravenously as indicated above, as sodium chloride and glucose are advocated in case of adrenal damage (McCance, 1936). In addition such cases received synthetic cortical extract (desoxycorticosterone acetate) intramuscularly, and in order to combat toxaemia 30 to 60 c.cm. of meningococcal antitoxin was also given intravenously in the glucose-saline. Several patients whose pulses were imperceptible on admission made complete recoveries on these lines. In all, 56 patients received glucose-saline intravenously, 34 serum intravenously, and 44 cortical extract intramuscularly. It was generally unnecessary to cut down on a vein for intravenous therapy. This new method of treating the acute fulminating septicaemic type of case was first introduced in this hospital early in 1940, and was published (Harries, 1940) in March of that year.

Patients who developed such complications as arthritis or iridocyclitis in convalescence received a second course of chemotherapy. All patients were given glucose freely, and even in the mildest purpuric cases a little common salt was added to the diet. If bromides were given as sedatives the sodium salt was administered rather than the potassium salt. Two patients who had neck retraction of such a degree as to prevent deglutition were successfully treated by the injection of a few cubic centimetres of novocain into the post-cervical muscles (Harries, 1936).

Sulphonamide Reactions.—These in the main were not alarming. Skin eruptions developed in 26 cases, jaundice in 4, marked cyanosis in 14, and transient haematuria in 3. No case developed agranulocytosis. One child, however, died from suppression of urine, probably due to renal damage; but permission for necropsy was not obtained.

No person in attendance contracted the disease. No masks were worn, as I believe the wearing of these predisposes to nasopharyngeal congestion and catarrh, which probably lowers the resistance of the mucous membrane. It is likely that infection of a healthy nasopharynx produces a temporary carrier state, with subsequent immunity. The giving of small prophylactic doses of sulphonamides in suspected cases had no effect on the meningococci except that the organisms appeared to be rendered drugfast, and large doses administered later were then less effective.

Bacteriological Investigations.—Morphological meningococci were found in 465 cases, or 93%. Cultures were obtained in 214 cases; of these 93% belonged to Group 1 and 3.7% to Group 2, while 3.3% were inagglutinable. Clinically, the various strains seemed to be of equal virulence.

Summary

A series of 500 cerebrospinal fever cases is recorded, with a gross mortality rate of 8.6%.

An age-distribution table indicates the most favourable age group as 15 to 25 years, with 104 cases and a case-mortality rate of just under 1%.

A suggested classification of all forms of cerebrospinal fever is given.

A new treatment for the acute fulminating septicaemic type is described.

Of the strains of the meningococci cultured 93% belonged to Group 1.

My thanks are due to Dr. Allison, who confirmed our bacteriological findings and who typed the organisms; to Prof. Duguid and Dr. Boissard for post-mortem examinations; and to Drs. Murphy, T. Thomas, Herapath, Lennox, Evans, and Garfield, quondam resident medical officers at this hospital, for their assistance in the treatment of the cases.

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W. L. Downing (*J. Iowa State med. Soc.*, 1941, **31**, 538), who records 11 cases in persons aged from 24 to 67, 4 of which were fatal, states that acute pancreatic necrosis is still an unsolved disease. When the diagnosis is doubtful, early exploration should be performed to avoid overlooking perforated peptic ulcer or other emergencies. If acute pancreatitis is found, and disease of the biliary tract is present, cholecystotomy or choledochotomy, or occasionally cholecystectomy, is indicated. Operation should be avoided in the hyperacute type. If the diagnosis is certain, conservative measures should be used. Early operation is advisable in all patients with acute or chronic cholecystitis to avoid the complication of acute pancreatitis.

THE MANGLED FOREARM

TREATMENT IN A SKELETON SPLINT WITH FIXED SKELETAL TRACTION

BY

DAVID BROWN, M.Ch.(Orth.), F.R.C.S.Ed.
Honorary Orthopaedic Surgeon, Royal Infirmary, and Children's Hospital, Sunderland

In a compound fracture of the forearm, in which the bones are shattered and there are extensive lacerations, a complex problem in immobilization results. Given good fortune, an ordinary plaster may prove very satisfactory; yet one can remember several cases in which removal of a plaster became an urgent necessity to allow further surgical treatment. The result was that redisplacement of the bones took place and the sepsis gained nothing from the loss of immobilization.

I have found the following method very useful in these severe cases. The advantages are that there is no danger of circulatory failure due to a tight plaster and that the wounds can be fully inspected without disturbing the immobilization. The wound toilet needs no lengthy description except to emphasize the importance of excising all non-viable muscle and of providing a perfect drainage system if one feels that the wound is still contaminated even after excision.

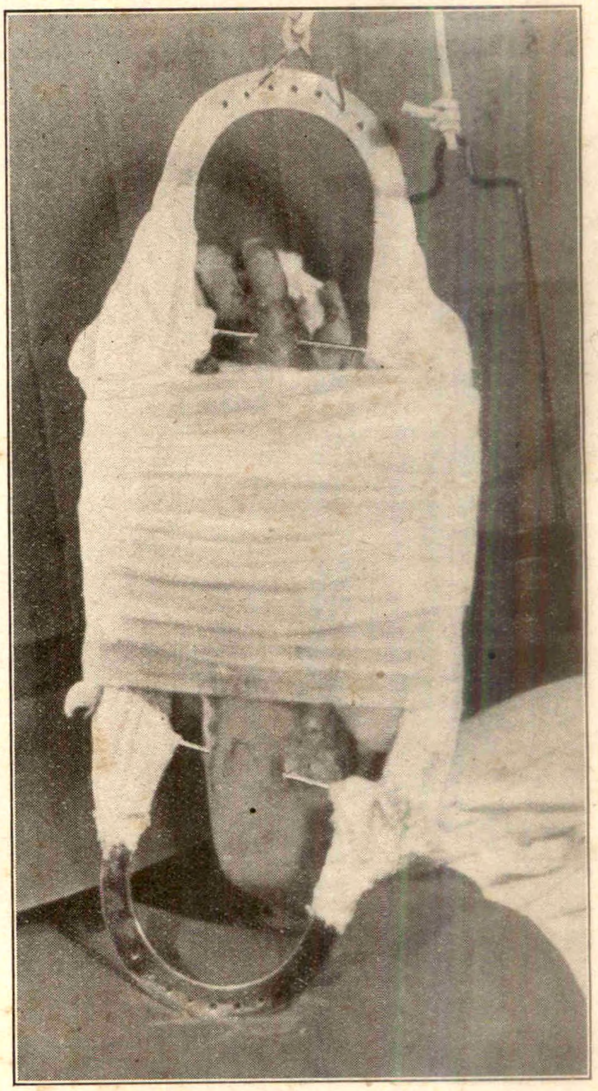


FIG. 1.—Posterior view. Note that the Kirschner wire which transfixes the metacarpal does not interfere with movements of the thumb or pierce any of the extensor tendons.

Method

After the wound toilet is complete a fine Kirschner wire is inserted obliquely across the back of the radial border of the second metacarpal, about an inch proximal to the head of the bone. A second wire is put through the subcutaneous border of the ulna 3 in. distal to the tip of the olecranon. A large stirrup is attached to each of these wires. An assistant now holds the arm suspended by the distal stirrup; the elbow is left at a right-angle. The proximal stirrup is allowed to hang down behind the olecranon. The weight of the arm, so suspended, is enough to produce full length, though alignment and rotations will need to be adjusted.

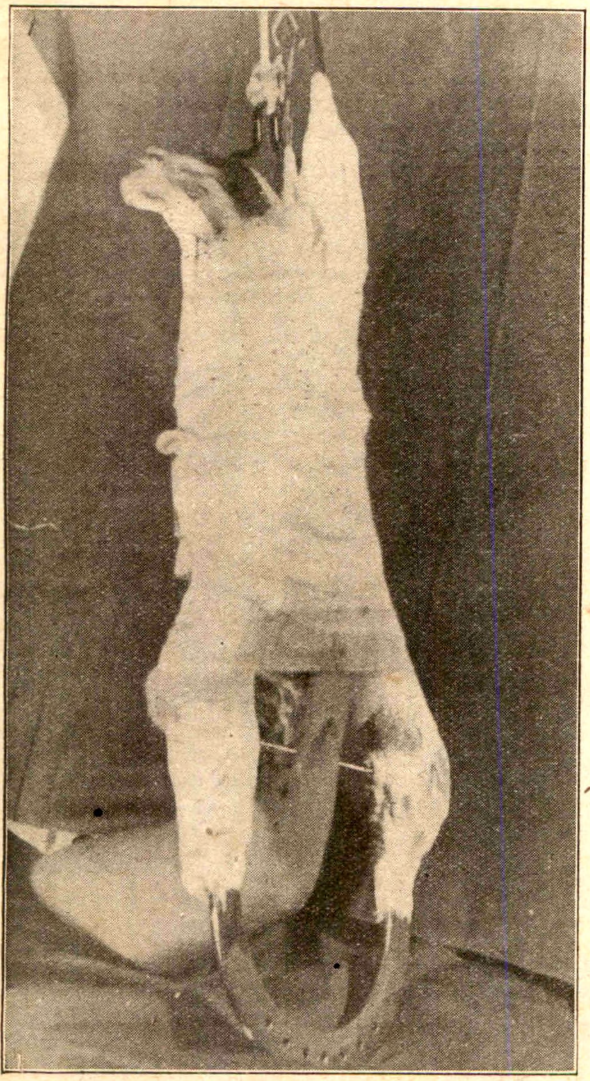


Fig. 2.—Lateral view.

While the arm is still held suspended the stirrups are connected together by two plaster ropes, each made of three 6-in. cellona bandages. Further adjustment of the fracture may be made while the ropes are drying. These ropes are parallel with the forearm, about 2 in. from it, and when dry convert the whole structure into a rigid skeleton splint with fixed skeletal traction. The dressing of the wounds is completed with a layer of wool and a bandage which encircles the side bars of the splint. The addition of extra wool anteriorly or posteriorly, combined with firm bandaging, will correct any tendency to a backward or forward bow. Finally a removable anterior plaster cock-up splint may be bandaged on to immobilize the fingers. When the patient returns to the ward the forearm is suspended vertically, with the elbow at a right-angle, and accurately counterbalanced with a weight. This is the best position to allow the swelling to subside, and puts least strain on the splint. Inspection of the wound or further surgical treatment can be carried out by removing the bandage which holds the dressing, and the arm need not be removed from its suspended position during the process.

Directly all active sepsis has disappeared the wires may be removed and a plaster applied. This can usually be done in two or three weeks. This point needs emphasis, since in the absence of definite indications the disadvantages of skeletal traction, such as wire-track sepsis and delayed union, will outweigh the advantages of this form of immobilization.

I am indebted to Dr. Geoffrey Robinson for his photographs of the splint.

Medical Memoranda

Notes on a Case of Death by Lightning

On Aug. 29, 1942, during a severe thunderstorm about 8.30 p.m., a farmer aged 54 was sheltering under a large bombing aeroplane lying in a grass field. A soldier about 200 yards away saw a "thunderbolt" fall, but did not trouble to investigate as there was no sign of fire afterwards. On the 30th, about 5.45 a.m., the corpse of the farmer was found lying supine under the wing close to the body of the aeroplane. Some camouflage netting, which stretched over the tail of the aeroplane, lay under the corpse. Also under the corpse and under the netting was a cross-piece of metal tubing about six inches long each way.

On the same day about 10.15 a.m. I examined the body, which had been taken to an outhouse near by. Rigor mortis was complete. The clothes, which were damp but not soaking, were removed. The cloth cap had a small hole in it. I could not see charring of the edges of the hole, though I looked carefully. Corresponding to the position of the hole in the cap there was a small hairless spot in the right parietal region looking like an abrasion. The face was congested, especially by the left cheek and left ear, where dark fluid blood oozed out of the pores of the skin. On each buttock over the ischial tuberosity there was a circular area about 1½ in. in diameter looking like a recent superficial burn. I could find no other signs of injury on external examination. The boots he was wearing were heavily shod with iron at heels and toes. His watch was still going. I think perhaps he was squatting or sitting on the ground, and the marks on scalp and buttocks show where the electric current passed.

Two fitters in charge of that particular bomber searched carefully inside and out, and found no sign of damage to the aeroplane, which is largely composed of metal. The aerial had a wire earthing it to a metal rod in the ground some 6 to 8 feet from where the corpse was found.

I do not know if similar deaths have been recorded. It is evidently not safe to shelter under an aeroplane in a thunderstorm. Perhaps it would have been quite safe inside the aeroplane, which was not damaged. I am a civilian practitioner, and record the case hoping it may be helpful to medical officers in charge of aerodromes.

Alfred V. Dill, M.D.

Tetanus in the Puerperium

Owing to the extreme rarity of cases of tetanus in the puerperium, it has been thought advisable, and important for statistical purposes, to record the following case.

Case History

A strong healthy woman aged 40 was delivered of a healthy child at a farm-holding on Jan. 21, 1942. Apart from difficulty of micturition during the third month, due to an impacted retroverted uterus, which was corrected without difficulty, her pregnancy ran a perfectly normal course. Her labour, too, which was supervised by the district nurse according to arrangement, was accomplished without any trouble, lasting some six hours. There was no tear of the perineum. The puerperium proceeded uneventfully until the tenth day, when the patient complained of a slight "stiffness of the neck." This was regarded by the nurse as a slight attack of fibrositis, but when, next day, the patient complained of stiffness of the jaw muscles and of inability to open her mouth properly or to swallow food and drink, the patient's doctor was sent for. On arrival he found the woman sitting up in bed in evident distress. There was a good deal of pain and stiffness in the neck, and trismus was very pronounced. Speech and swallowing had become impossible. At this time there were no spasms of the limbs or general convulsions. Facial symptoms were fairly well marked. Later there was partial intermission of the symptoms and the patient could make herself understood. This, however, was only temporary, and she was admitted to hospital on Jan. 31, 1942, where she was seen by a consultant physician. Later that same day, while being fed through a nasal tube, she developed severe spasms and died.

COMMENT

When it was realized that the case was obviously one of tetanus the question that immediately suggested itself was, How did the infection occur? Was it via the skin or the birth passages? It is perhaps significant, especially when it is remembered that the tetanus bacillus is usually present in cultivated ground and horse manure, that this case occurred in a farm-holding. In regard to the skin, careful inquiry failed to elicit any history of recent cuts or external wounds, and examination revealed no evidence of any recent scars. On the other hand one can quite conceive how infection would occur by the birth passages. Although the district nurse supervised the puerperium, it appears that on several occasions the patient "attended to herself." One can easily imagine some member of the family handing the patient the necessary utensils, bowl, wool, etc., and there is a temptation to conclude that infection occurred in this way. Against this possible explanation, however, are the post-mortem bacteriological findings. Necropsy showed no lesions except in the uterus, from which a small piece of adherent placenta was removed, and a very careful bacteriological investigation failed to reveal the presence of tetanus bacilli in any of the birth passages. Some were found in the bowel, but this, apparently, is not unusual in the adult gut. The skin seems the more probable route of infection, in spite of the absence of external evidence, and one can only suggest that some tiny prick or scratch may have healed over before the illness.

The 1940 report of the Royal College of Obstetricians and Gynaecologists contains the findings of a special committee set up to investigate the question of tetanus in relation to childbirth. The conclusion arrived at was that cotton-wool as commonly supplied by chemists often contained many organisms, among which the tetanus bacillus was occasionally found. This may provide another possible explanation of the source of infection, but in the absence of any definite findings, both in regard to the skin and to the birth passages, the mode of infection must remain "something of a mystery."

Dundee A. T. DUNCAN, M.B., Ch.B.

Reaction to Rubber-ended Stethoscope

The following case is recorded as an example of extreme sensitivity to rubber. I know of no other instance in which reaction has occurred after such short contact.

A power-loom overlooker aged 35 was referred to me by his doctor on Sept. 2, 1942. He gave a history of reacting to his suspenders—i.e., the small rubber pieces to which the buttons are attached—in the spring of 1941. He was then told to stop wearing suspenders, and the eruption gradually cleared. At Whitsuntide of this year he went for a holiday to the country, and took with him a pair of rubber Wellington boots for walking through the fields. He noticed as he was tramping along, wearing these boots, that his socks kept falling down, leaving a gap between socks and breeches. The same night a circular band eruption broke out corresponding to this area and, of course, he stopped wearing the boots. The reaction was a severe one, and it was on account of this that his doctor referred him to me.

The facts up to now merely demonstrate a case of rubber sensitivity. After I had examined the affected parts of his leg the patient volunteered the information that the previous day his doctor had gone over his chest in the course of a general examination and listened to his heart. Pulling open his shirt, he showed me four perfect rings corresponding to the usual listening-sites. I asked whether the stethoscope was a metal one with a rubber-covered end, and the patient told me that that was so. I am informed that when the doctor listened to the heart no prolonged application of the stethoscope occurred, merely the usual fairly rapid auscultation, and yet the reaction provided four clearly marked red rings.

The above account demonstrates how easily slight contacts may be overlooked in cases of skin sensitivity.

ALLAN BIGHAM, M.D.,
Hon. Dermatologist, Bradford Royal Infirmary.

Reviews

ENDOCRINOLOGY

Endocrinology: Clinical Application and Treatment. By August A. Werner, M.D., F.A.C.P. Second edition, thoroughly revised. (Pp. 924; illustrated 45s.) London: Henry Kimpton. 1942.

A Manual of Endocrine Therapy. By Bernard L. Cinberg, M.D. (Pp 178. New York: Brooklyn Chemical Publishing Company, Inc.; London. Macmillan and Co 1942.

There appears to be no end to the making of books on endocrinology, and it has therefore become our custom to draw attention to the special characteristic of each one rather than to discuss the details. Dr. Werner's *Endocrinology* throughout particularly emphasizes the close association between the endocrines and the autonomic nervous system, which is often insufficiently realized. Nevertheless we feel that the emphasis is not placed just where it should be in such statements as that the ductless glands act as governors over the autonomic nervous system, and that the present state of our knowledge of their functions is rendering such terms as neurasthenia, hypochondria, and nervous breakdown obsolete. Desirable as it is that such vague labels should be replaced by more accurate ones, we hesitate to believe that endocrinology will provide them. Surely of recent years the tendency has been the other way—to attribute to the hypothalamus a larger part in the control of the endocrines, while recognizing the psychosomatic origin of obscure nervous disorders. Once over that objection, the course becomes simpler, for we can approve unreservedly the prominence given by the author to the clinical aspect, while providing the reader with just that amount of anatomical, histological, and physiological information which will enable him to follow the argument without reference to other books. It is interesting to find Dr. Werner faithfully reporting cases successfully treated by preparations now often declared to be practically inert. As he states, when these products were used no better ones were available, and they are not recommended now. But it does show that here, as in other instances, the pharmacologist is a little too apt to sneer at purely clinical findings. The varieties of pituitary disorders are well described, and a judicial attitude is adopted on the vexed question of the number of individual anterior pituitary hormones. On the other hand the author has no hesitation in contradicting the ideas which have led to so lamentable a confusion between Simmonds's disease and anorexia nervosa. He is, however, more convinced of the existence of a male climacteric and of the hormonal origin of involutional melancholia than we should care to be. The lesser-known alimentary hormones are fully described, as is renin. Mongolism is regarded as an endocrine disturbance of pre-natal origin, but among the aetiological factors no reference is made to the age of the mother; it does seem clear, however, that this condition is particularly frequent if the mother is over 40 at the time of conception. The section on the thymus is judicial in tone, but the possible—even probable—association between hyperthymia and myasthenia gravis is not mentioned. Despite these minor points, here is a book of real usefulness.

Dr. B. L. Cinberg's *Manual of Endocrine Therapy* has a quite different purpose, which is to give a brief compendium of the subject without any attempt to provide a textbook. After the initial surprise at being informed that our knowledge (and not merely the therapeutics) of the endocrine system was very meagre until the discovery of insulin in 1922, we encounter a useful abstract of the therapeutic applications of each endocrine, briefly but critically stated, followed by a list of the preparations in current use, but omitting the polyglandular ones which are not biologically assayed. Only preparations thus standardized are recommended. There is also a useful chapter on diagnostic procedures, and a summary of therapy. A caution is given concerning the liability of desoxycorticosterone acetate to produce alarming oedema because of the rapid retention of sodium; this necessitates avoidance of large sodium dosage in conjunction with that synthetic hormone. It is curious to learn that the posterior pituitary has been used in the U.S.A. for the treatment of peptic ulcer, in view of the experimental work of Dodds and Noble, which showed gastric lesions could be induced by the injection of this hormone. The price seems high for so short a book.

MASSAGE, MANIPULATION, AND LOCAL ANAESTHESIA

Massage, Manipulation, and Local Anaesthesia By James Cyriax, M.D. (Pp. 302; 26 figures 12s. 6d.) London. Hamish Hamilton

This book is written primarily for "graduate masseuses and the practitioners from whom they receive instruction." A small amount of space is devoted to theoretical considerations, but the greater part of the work comprises practical instruction in dealing with the conditions that the physiotherapist is commonly called upon to treat. The book is wider in its scope than most written on this subject and the method of presentation and arrangement of material is good. The conditions in each part of the body commonly requiring diagnosis and treatment are dealt with, beginning at the head and neck and progressing in an orderly sequence to the ankle and foot. Following this are chapters on the use of local anaesthesia and on traumatic neurasthenia. Terms frequently appear which indicate the empirical nature of much of the treatment and a lack of precise knowledge of the cause of many chronic pains and aches; for example, "rheumatic inflammation" and "capsulitis." Some controversial subjects are dealt with in a dogmatic fashion, and certain definitions are a little hard to accept—for example, "Sciatica is synonymous with pain running down the lower limb from above whatever its origin." There is a good chapter on referred pain, and the importance is emphasized of the use of local anaesthesia in diagnosis and treatment.

The chapters that deserve special mention are those on the alimentary tract and on the use of local anaesthesia. In the former Dr. James Cyriax deals in considerable detail with indications for abdominal massage and the technique that should be used for the various conditions in which this treatment is of value. In the latter he first stresses the difference between diagnostic and therapeutic local anaesthesia; then gives the indications and contraindications for each, and the merits or otherwise of massage in relation to both types of injection. In the chapter on referred pain the diagnostic use of local anaesthesia is also emphasized.

The description of methods of examination of various parts of the body, particularly the back, is very good. Illustrations are not numerous and consist entirely of diagrams. There is a very apt paragraph dealing with the activities of the bonesetter. Those for whom this book is written will find it useful and stimulating.

A NOTEBOOK FOR JUVENILE COURT MAGISTRATES

A Notebook for the Children's Court By Margery Fry and Champion B. Russell. (Pp 24 1s post free.) Oxford: Howard League for Penal Reform. 1942.

The juvenile courts set up by the Children and Young Persons Act, 1933, are a vital part of the nation's defence against adolescent crime. To be effective they must be staffed by magistrates with special knowledge of children, their problems, and the ways in which they can be dealt with and assisted. Several valuable books have been written on this work, but these are mostly large and none too easy to read. This notebook is a slim, paper-covered volume into which two experts have put an amazing amount of legal and practical knowledge for the benefit of magistrates of children's courts. They sketch what they have found to be real requirements in the arrangement of the court accommodation, such as waiting-rooms and lavatories. They mention small and important matters like the lighting, which should not dazzle bench or witnesses or accused, and the seating arrangements, which should allow quiet conversation between magistrates, the clerk, the offender, his parents, and the probation officer. They give much useful advice on the way in which the bench should handle the cases, and carefully point out the many pitfalls of law and practice that await the unwary, such as the putting of incriminating questions to a child who is not giving evidence, the failure to warn a child of his right to go before a jury, or too ready an acceptance of a plea of guilty. Throughout this small volume the authors express a constructive and humane spirit; their instruction is all calculated to increase the confidence of accused children, their parents, and witnesses in the kindness and justice of the magistrates, and to help the magistrates themselves to make the best use of remand, probation, and t other means of disposing of delinquent children. These methc are summarized at the end of the pamphlet in a handy tab Of psychological examination they say that magistrates w make full use of the professional help that is already availat are not only doing wisely for the children but are helpi to build up a co-operation between science and law whi is full of hope for the future.

Notes on Books

A second impression has been published by Edward Arnold a Co. at 63s. of Sir H. Harold Scott's *History of Tropi Medicine*, based on his Fitzpatrick Lectures delivered before t Royal College of Physicians of London in 1937-8. These tv learned and comprehensive volumes were reviewed in a leadi article in the *Journal* of October 7, 1939. The second Gre Fire of London destroyed in its path some two million bool among them nearly 500 copies of this work. A reissue h therefore become necessary, and in an appendix the auth records certain quite recent advances of importance that ha taken place in the history of tropical medicine.

Dr. Hardie Neil has produced a third edition of a useful litt book on *Ear, Nose and Throat Nursing* (Auckland: Clark a Matheson, Ltd.). In the small compass of 126 pages the subje is covered as a whole but without that special reference nursing which the title suggests, though the after-treatment operations is described. The testing of hearing and t vestibular tests are not of much interest to nurses, whereas t feeding of patients, which is of great importance, might described with more detail and precision. There are al various descriptions of surgical technique, such as the autho method of ligaturing bleeding vessels in the tonsillar foss matters which do not concern nurses very much. The gener survey of the subject will be, and no doubt has been, usef to nurses, to whom the complicated illumination required practice renders the subject difficult and a little remote, b the emphasis on nursing is lacking.

Volume XLI of the *Transactions of the Ophthalmologic Society of the United Kingdom* for the session 1941 is publishe by J. and A. Churchill at 40s. The contents include Mr. Afflec Greeves's presidential address on macular oedema, and a repo of the discussion on ocular injuries resulting from the war. O of the sections was devoted to wartime ophthalmology, an Sir John Parsons read a paper on protection of the eyes fro war injuries.

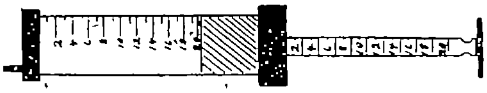
A copy of the *Collected Papers from the Middlesex Hospit* published during 1940-2 has been received from the canc and general research committee of the hospital, and can b consulted in the Library of the British Medical Association.

The National Institute of Economic and Social Research ha made arrangements for its publications to be issued by th Cambridge University Press. There will be two series "Economic and Social Studies," edited by Prof. A. L. Bowley and "Occasional Papers," the first of which is *The New Popu lation Statistics*, by R. R. Kuczynski.

Preparations and Appliances

SYRINGE FOR CONTINUOUS INTRAVENOUS ANAESTHESIA

Dr. S. C. Lewsen, M.R.C.P., writes: For successful co tinuous intravenous anaesthesia a fairly wide-bore needle intr duced deeply into the lumen of the cubital vein is desirabl Splints have been devised to hold the syringe, which shoul have an eccentric nozzle, in position. I have found a wid piece of elastoplast bound firmly to the syringe and round th arm very adequate and less cumbersome in the majority c cases. It is a simple matter to arrange the direction of th needle in the line of the vein by judiciously placed pieces o cotton-wool or lint between the arm and syringe. In orde however, to overcome the disadvantage of the elastoplast cove ing the graduation markings on the syringe, I have had a 2 c.cm. Record syringe made with a wide piston which has a fla surface graduated as shown in the sketch. This syringe wa made for me by the Medical and Industrial Equipment Co., Ltd



BRITISH MEDICAL JOURNAL

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A TUBERCULOSIS POLICY

Soon after the outbreak of war in September, 1939, anxiety began to be felt lest history would repeat itself and there would occur a reversal of the favourable pre-war trend of mortality from tuberculosis. By the autumn of 1941 vital statistics had amply justified this fear, and on the analogy of the war of 1914-18 it seemed likely that the death rates from tuberculosis would continue to rise unless steps were taken to limit the spread of infection and to deal with the determining factors. At the request of the Ministry of Health the Medical Research Council appointed a Committee on Tuberculosis in Wartime. Its report has just been published, and on page 436 we print summaries of the findings and main recommendations as given in the report.

In 1939 and 1940 the increased tuberculosis mortality appeared to be mainly in young women. The committee's terms of reference were therefore : " To assist in promoting an investigation of the extent and causes of the wartime increase in the incidence of tuberculosis, particularly among young women, and also advise the Council regarding possible preventive measures." But a survey of the position up to the beginning of 1942 showed that all age groups had been involved to some extent in the increased tuberculosis mortality, and that those most affected included not only young women but also children and the older male age groups. The special experience of London in this respect is dealt with in the excellent article by Dr. Allen Daley and Mr. B. Benjamin at page 417 of this week's *Journal.* Furthermore, it was evident that a new programme of statistical, clinical, and pathological researches must take a long time to complete. In the committee's view the present situation and the evidence already in hand justified administrative action now. Its report therefore consists of a statistical analysis of existing data, a critical review of the available evidence, and practical recommendations based upon them. Great public interest has been aroused by the increase in tuberculosis, and we are therefore glad that technical terms have been avoided whenever possible, so that the reading and understanding of the report should offer no difficulty to the intelligent layman, while at the same time it will provide a clear account for the medical profession.

A short section on our present knowledge of the types and development of tuberculosis is followed by a full analysis of the general trend of tuberculosis deaths, 1939-41, and a comparison with the last war. The increase in tuberculous meningitis in England and Wales has so far affected all age groups up to 45. Children up to 10 years show a relative increase in mortality of 50%, but young adult males and females aged 15–24 also show a relatively large increase (50%), though the actual number of excess deaths in this age group is less than that for the children. In the discussion on the many factors that may be responsible in wartime for an increase in tuberculosis mortality it is pointed out that these may not apply in the same degree to all the age groups among which the increase had been observed. Where children are concerned due weight must be given to infection of milk, particularly because of the evacuation to districts where little or none of the milk supply is pasteurized. But attention must also be focused on contact infection in the home and that resulting from unsuitable billeting. In connexion with young adults, especially women, an age group particularly susceptible to environmental factors, nutrition and conditions of employment are stressed, and in particular the fatigue resulting from the relatively long hours they are now working. The increase in tuberculous meningitis, moreover, points to the introduction into industry of previously non-infected persons under conditions that tend to lower resistance.

The bulk of the report deals with measures for preventing further deterioration in the tuberculosis mortality ; and the members of the committee, while indicating full measures for the combating of tuberculosis in the light of our present knowledge, state that they have applied themselves in the first instance to what is practicable under existing conditions. This should make it clear that they regard none of their recommendations as hypothetical or " ideal " measures. Few will quarrel with the implied sentiment that universal and efficient pasteurization is long overdue, or with the suggestion that specially skilled workers in pasteurization depots should be placed on the list of reserved occupations and that workers in this category who have already been called up should be returned to their posts, and, lastly, with the further suggestion that when transport and other difficulties make it impossible for pasteurized milk to be delivered to the home the housewife should by suitable propaganda be instructed to boil it. To prevent the spread of infection from unsuspected cases of pulmonary tuberculosis and to improve the outlook of those suffering from the disease extension of mass radiography is strongly advocated. An excellent practical exposition of the subject is given, with its division into pre-employment, employment, and periodic mass radiography. While indirect (or miniature) radiography is the method of choice in wartime (the essentials of this form of apparatus and the principles to be applied in its use are given in an appendix), the committee rightly stresses that the miniature method should be undertaken in preference to direct radiography, not merely for reasons of cost but rather where reasons of speed *plus* cost demand it, and recommends that, until apparatus for miniature radiography becomes available, mass radiography schemes should be instituted by means of the ordinary direct method. Indeed there are likely to be many instances in which full-size direct radiography will be at least as suitable a basis for a mass radiography scheme as the miniature method. It is recommended that for the present " miniature " apparatus already available or shortly to become available should be under the general direction of the Ministry of Health in order that the best possible use of the limited apparatus is ensured.

The care of persons discovered by mass radiography to have tuberculous lesions is discussed, and it is emphasized that the success of both mass radiography schemes and the treatment of those found to be suffering from active disease are intimately bound up with the removal of certain essential difficulties in the way. The first is shortage of institutional accommodation. Next, cogent reasons are adduced for improving the present financial provision for tuberculous patients. Thirdly, full consideration is given to industrial rehabilitation of both the convalescent non-infective and the chronic active case. Several possibilities in Great Britain are mentioned, involving part-time (ordinary work but with the number of hours reduced) and modified work (work, either full-time or part-time, carried out under less strenuous conditions than usual), with supplement to wages in each case. Insufficient emphasis is perhaps laid on the setting up of industries in connexion with sanatoria for both residents and non-residents, a solution for rehabilitation of the tuberculous strongly favoured by some authorities; but probably it is a method practicable only to a limited extent in wartime. We would point out here that the subject of rehabilitation and care of the tuberculous has also been dealt with by a special committee of the Joint Tuberculosis Council.[1]

A further section of the report is concerned with measures that should be taken to raise the resistance of the population to the tubercle bacillus, particularly in susceptible groups, and tribute is paid to measures already taken by the Government to maintain in general the national health under war conditions. But more is indicated, and stress is laid on nutrition, favourable working conditions, fatigue, and domestic overcrowding. Continued emphasis is to be laid on the examination of contacts, particularly of children under 5 and young adults (15–30), and such examination should always include an *x*-ray examination, and tuberculin testing in the case of children. It is recommended that billeting authorities should be made aware of homes that are unsuitable for billeting on account of tuberculosis, and that they should be notified of any case of tuberculosis among those to be billeted. There is one notable omission. An important feature of the antituberculosis campaign should be the special care of pregnant women suffering from or suspected of tuberculosis. A valuable recommendation would therefore have been that a radiograph or screening of the chest should form an essential part of the antenatal examination of every pregnant woman, to be followed by a repetition of such an examination within two months of labour. And we would also emphasize, more than is done in the report, the need for reorganization of the tuberculosis services, whose efficiency varies very widely in different parts of the country. Even in wartime certain improvements may be possible, and at all events, as is pointed out in the report, steps should now be taken to study the best methods by which reorganization could be accomplished when circumstances permit.

The committee rightly points out that if its recommendations are implemented this should be accompanied by information and propaganda both to the medical profession and to the public. No one connected with tuberculosis work, however remotely, or for that matter with public health in general, should miss studying this report. We hope that there will be no delay in bringing forward legislation which will give effect to the important recommendations contained in it.

ANATOMY OF THE BRONCHIAL TREE

The description of the bronchial tree in the standard textbooks of anatomy is at present incomplete and largely inaccurate. To most students the lobar bronchus is in uncharted country as soon as it has entered the lung substance, and its distribution is described only vaguely by the statement that it divides into alternate ventral and dorsal branches. In spite of the studies of Aeby (1882) and Ewart (1889), and of certain later authors (Nelson,[2] 1934; Kramer and Glass,[3] 1932; Neil,[4] 1939), a more exact knowledge of the segmental distribution of the bronchi within the lobes has been limited to but a few workers, chiefly those engaged in the special study of diseases of the lungs. The remarkable development of thoracic surgery during the last decade has introduced more and more people to this general inadequacy in understanding of the anatomy of the bronchial tree, and it is no exaggeration to say that the need has become almost urgent for a complete revision both of the details taught to students and of the conception held by most practising doctors; and in this are included pathologists and radiologists as well as clinicians.

It should be imperative to the physician or surgeon who is specializing in diseases of the chest to acquire this complete knowledge, for without it an understanding of many fundamental aspects of intrapulmonary disease is necessarily incomplete. Thus, the important condition of lung abscess and its associated grades of septic pneumonitis is inseparably linked with this segmental anatomy, whether it be from the causal aspect, radiological interpretation, medical treatment, or surgical approach. The day when radiologist, physician, and surgeon were all content with a single postero-anterior radiograph of the chest and a conclusion that the lesion was situated in the upper, middle, or lower "zone" is now, we hope, long past. The first essential, therefore, for a proper study of many lung lesions is a basic knowledge of the anatomy of the bronchial tree, obtained from careful study of good casts and preparations, preferably augmented by personal dissection. The study of an actual case demands a lateral radiograph of the chest in addition to a postero-anterior, usually good bronchograms, and often bronchoscopic examination as well. It is surely as illogical to be content with an imperfect knowledge of the anatomy of the bronchi as to expect a surgeon to do his work efficiently elsewhere in the body without that exact anatomical background which is accepted as essential in his training. Students in both the pre-clinical and clinical subjects should be taught this anatomy, and appropriate questions should be asked in examinations.

Among recent papers on bronchial anatomy is one by Foster-Carter[5] (1942), which gives a brief and lucid account of the most modern studies of the problem, supported by a consideration of the comparative anatomy and development of the bronchial tree, by diagrams, actual illustration of certain specimens, by bronchograms, and by a celloidin cast. Those wishing to improve or refresh their knowledge of the bronchial distribution will find much of value in this paper. Certain previously confused areas, such as that of the distribution of the upper lobe bronchi, are described with more accuracy and clarity than in most earlier publications. In spite of the excellence of this account, it is desirable to draw attention to certain defects, more especially since they closely follow ones that appear in almost all previous papers. The first of these is the nomenclature. A certain confusion already exists in terminology, and many of Foster-Carter's own suggested names do not make for further clarity, as, for instance, his insistence on retention of the term "eparterial bronchus" for the branch to the right upper lobe and his introduction of the term "hyparterial bronchus" for the bronchus to the left upper lobe. A new name is worthy of acceptance if it either corrects a previous inaccuracy or is more clearly descriptive than the old one it seeks to supplant. It is difficult to see that the name "hyparterial bronchus" could by any possibility suggest accurately that it refers to the left upper lobe bronchus. Finally, there is the misuse of diagrams and drawings. A diagram or drawing, even in these days of excellent photography, may be desirable in order to express clearly and easily what perhaps can be shown only imperfectly by even the most skilful photograph. For the demonstration or teaching of anatomical features that have been worked out beyond all possible doubt they may be excellent; for the portrayal of features that have not been so widely investigated and

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[1] *Tubercle*, 1942, Jan., Feb., and April.
[2] *British Medical Journal*, 1934, **2**, 251.
[3] *Ann. Otol.*, 1932, **41**, 1210.
[4] *British Medical Journal*, 1939, **1**, 495.
[5] *Brit. J. Tuberc.*, 1942, **36**, 19.

checked they are dangerous when unsupported by exact evidence; the author's own impressions or bias tend to creep in, and errors appearing in other apparently authoritative papers tend to be perpetuated. In almost all the papers on bronchial anatomy published during the last ten years this error is most apparent. Faulty diagrams abound. Although the diagrams in Foster-Carter's paper are much more accurate, certain misconceptions have again been perpetuated. The arrangement of the segments of the lingular process of the left upper lobe is, for instance, incorrectly portrayed, and the description of the lower lobe segments is lacking in that accuracy and completeness that is necessary if it is to be accepted as final.

A NEW METHOD OF AIR DISINFECTION

From recent work in England on the chemical disinfection of air two principal methods have emerged, both of which are certainly efficient, although neither has yet been applied in circumstances and on a scale which would prove its capacity to prevent the spread of air-borne infection. One of these is the spraying of hypochlorite solutions, which are believed to owe their effect to the liberation of hypochlorous acid gas. The other is the production of an "aerosol" or mist of very minute fluid particles consisting of or containing a germicide; these minute droplets are not intended to evaporate, and are believed to act by collision with bacteria-laden particles. Both because some of the germicides are poorly soluble in water, and because watery solutions evaporate, whereas a good aerosol should be persistent, propylene glycol has been used as a solvent: C. C. Twort and his colleagues,[1] for example, found the best of many reagents they tested to be a solution of hexyl resorcinol in propylene glycol. It was briefly announced last year by American workers who had taken up this study that propylene and other glycols are themselves air disinfectants of remarkable efficiency. A fuller account of this work has now been published by O. H. Robertson and his colleagues.[2] Their methods were of a nature now recognized as appropriate for this form of study, employing test and control chambers with adequate air circulation and the means of spraying in bacterial suspension and the germicide, and a device for obtaining plate cultures from measured samples of the contained air. Their chief observation is, briefly, that spraying such an amount of propylene glycol as to give a concentration of 1 g. in 2,000,000 c.cm. of air kills any of numerous species of bacteria almost instantly, even though their concentration be as high as 500,000 per litre of air. There were a few survivors for some minutes when the concentration of propylene glycol was 1 in 7,700,000; but even 1 in 50,000,000 had a pronounced bactericidal effect. By various forms of experiment, including mouse inoculation with washings of air sprayed with virulent pneumococci, it was shown that there is a true killing effect, sterile cultures from the air treated with propylene glycol not being produced in any of several other theoretically possible ways. Ethylene and trimethylene glycol were equally effective; glycerin had little action.

Droplets of propylene glycol evaporate rapidly, and as similar bactericidal effects are produced by pre-formed vapour it is concluded for this and other reasons that propylene glycol acts bactericidally as a vapour, and not in aerosol form. The contrast between its behaviour in air and in water is extreme: pneumococci will grow in broth containing 5% of it, and staphylococci in 10%. On the other hand suspension in 80% to 90% propylene glycol is immediately lethal to both. This is evidently bactericidal action of a quite unfamiliar kind, and no light has yet been obtained on its mechanism. Apart from its astonishing behaviour as a vapour, the peculiar effect of concentration on the behaviour of propylene glycol, in liquid form should repay further study. The authors have tried Twort's hexyl resorcinol solution, and found it somewhat more effective than propylene glycol alone. Atmospheres containing the vapour of pure propylene glycol, on the other hand, are odourless and non-irritating and, so far as is known, non-toxic; administration of the liquid is without toxic effects. On present evidence, this method of disinfecting air seems even more promising than those with which work in England during the past few years has made us familiar.

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[1] *J. Hyg., Camb.*, 1940, **40**, 253

[2] *J. exp. Med.*, 1942, **76**, 593.

ACTION OF DRUGS ON THE COLON

The drugs in common use for the treatment of post-operative distension and paralytic ileus belong to two groups—the parasympathomimetic and posterior pituitary. The theoretical basis for employing the former group is well established, and its action is explained either by the replacement of the natural neuromuscular transmitter by synthetic choline derivatives, or its enhancement by physostigmine or prostigmine, owing to the inhibition of cholinesterase. In practice it has been found that although carbamylcholine and acetyl-β-methylcholine are effective stimulants of the gastro-intestinal tract, since they are not so rapidly destroyed as the natural acetylcholine, yet for that very reason they cause in effective doses unwanted side-reactions such as flushing, sweating, increased salivation and lacrimation, and a fall in blood pressure.[1] Physostigmine, though equally effective in stimulating the colon, is open to the same criticism; but prostigmine, the synthetic substitute introduced in 1931, is singularly free from these objections and has been used with success in the prophylaxis and treatment of post-operative distension and paralytic ileus.[2] [3] The action of the posterior hormone on the large intestine has been strongly disputed, chiefly on the basis of experiments in dogs, which are not necessarily applicable to man. The vasopressor fraction can be used in the treatment of these conditions, though it is contraindicated in the presence of cardiovascular disease because of the coronary vasoconstriction. It has been argued that to be effective a drug should increase the propulsive activity of the large intestine rather than its segmenting movements. It is not true that any substance which is at all active will stimulate both equally, for morphine depresses peristalsis in the colon while increasing the tone.[4] On this basis physostigmine and prostigmine, which are believed to work by the enhancement of the natural processes (and an enema is an invaluable accessory), will be the drugs of choice.

Adler, Atkinson, and Ivy[5] have studied the action of various combinations of drugs upon 4 trained dogs with appendicostomies and 4 "fit" adults with colostomies. They used a modified balloon technique by which the propulsive force of peristalsis could be directly measured. In man, pituitrin, physostigmine, and prostigmine all increased the "propulsive motility" of the colon, but it was not possible to grade the dosage of physostigmine so as to avoid side-reactions. Oral administration of prostigmine (15 mg.) was effective after several hours' delay.

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[1] *British Medical Journal*, 1938, **1**, 1293

[2] *Lancet*, 1934, **1**, 942

[3] *J. Amer. med. Ass.*, 1938, **110**, 1165.

[4] *Physiol. Rev.*, 1937, **17**, 618.

[5] *Surg. Gynec. Obstet.*, 1942, **74**, 809.

Ergotamine given by itself had no discernible effect, but greatly increased and prolonged the action of the other drugs; and the authors concluded that a combination of ergotamine tartrate (0.25 mg.), prostigmine methylsulphate (0.25 mg.), and pituitrin (1.25 units) was the most effective, and worth trial in the treatment of post-operative distension and paralytic ileus. There is as yet no entirely satisfactory explanation of the synergistic action of ergotamine, though it is known that relatively bigger doses may stimulate the large intestine in intact animals. But this property may be used to increase the activity of the other drugs on the colon and so diminish their unwanted side-effects.

MALENESS, FEMALENESS, AND MENTAL DISEASE

It was noted a good many years ago by Mott in this country and by Myerson in the United States that male relatives of men suffering from mental disease are more frequently affected than are female relatives, and that this tendency is reversed in the case of women patients. It is difficult to devise any plausible explanation for this distinctly peculiar form of familial sex limitation. Penrose[1] has produced an ingenious hypothesis which, though highly speculative, does suggest a reasonable basis for the phenomenon. In addition it links together a number of diverse facts and also has the great merit of indicating useful lines of study for the future. From the psychological point of view maleness and femaleness are not two sharply contrasted characteristics. To some extent everyone is psychologically bisexual; but in normal persons there is a preponderance of instincts concordant with physical sex. It is possible to devise interest ratings, etc., which show a continuous gradation from the strongly female to the strongly male. Males and females occur in whom deviations in the normal direction are less marked, and finally there is some overlapping, a proportion of persons possessing frankly some of the instincts normally displayed by the other sex. There is in fact a continuous distribution which is clearly bimodal, but which equally clearly shows some overlap. It has also been found by observation and experiment with other forms that the underlying mechanism of sex determination is quantitative and not qualitative. A number of genes make for femaleness, a number for maleness; the result depends upon the balance. The selective advantage of clear-cut physiological division is such, however, that the mechanism has become so arranged that one or other balance is nearly always attained, and physical intersexes are therefore rare.

In man sex determination depends upon the X-Y chromosome mechanism. An individual with two X's is a female; one with an X and one Y is a male. But the discovery by Haldane of partially sex-linked characters in man, showing that sex determination is probably not the sole function of the X-Y pair, has as a corollary the possibility that autosomes (chromosomes other than sex chromosomes) play some part in sex determination. Sex determination may be brought about by some such mechanism as the following, though rather more elaborate. There reside on the X chromosome a concentration of genes making for femaleness, which are balanced by genes making for maleness situated in the other chromosome pairs. Two sets of the female-producing X genes overcome the complete set of male-producing genes, whereas one set alone is overcome by them. Human mental development being so recent, it may well be that mental sex constitution is inherited in a more primitive way than physical sex and is less concerned with the sex-chromosome balance. Imagine a gene, situated upon an autosome, which increases the quality of femaleness. Such a gene passed on by a man would tend to swing his sons in the direction of femaleness and in his daughters would, so to say, confirm their femininity. In short, such genes, though they would be transmitted by males or females, could only affect members of like sex in a family in the same sense; the same type of abnormality would tend to be present in father and son or in mother and daughter.

An association between sex inversion and mental disease has often been claimed, and so, Penrose argues, a hereditary mechanism of this kind determining psychological sex traits should be reflected in just that way observed by Mott and Myerson. Penrose shows that their figures when added together do indicate a highly significant tendency for affected relatives of lunatics to be of like sex. He produces further figures of his own, analysed in greater detail and based on the family records of 1,000 mental patients. The correspondence in this series also is highly significant. Penrose puts forward one or two alternative explanations, but regards the hypothesis outlined above as simpler and more comprehensive.

LATERALITY DOMINANCE IN SHAKESPEARE

Considered in all its implications there is no more fascinating neurological topic than handedness. The distinction between the right- and left-handed is probably as old as mankind; and the contrast between symmetry of structure and asymmetry of function must have puzzled men from the first. It was natural for primitive man to attribute a symbolic meaning to natural occurrences, and here was a distinction inherent in his nature and ready, as it were, to his hand. To the Roman augur the bird on the left was sinister indeed. Drs. G. Walsh and R. M. Pool[1] have sought for references to right- and left-handedness, or laterality dominance as they call it, in Shakespeare's plays, and found that "he is as positive as were the ancient Hebrews in the glorification of the dexter side of the body and the condemnation of the sinistral. . . . Around the left hand and the left side of the body the dramatist encounters an aura of evil." There are not many references to handedness in Shakespeare, and in some the use of right and left is no more than conventional. The most convincing evidence for a characteristically Shakespearean twist to the distinction is to be found in the instance in which disfigurement is placed upon the left side: the mole on Imogen's left breast and the wart on Dromio's left arm are examples. Hand-to-hand fighting in a predominantly right-handed world would lead to scars on the left side of the body, a fact which is reflected in several quotations. The authors do not mention a reference to laterality which occurs in *King John*—"Slippers, which his nimble haste had falsely thrust upon contrary feet." This drew from Dr. Johnson the surprising comment, "Shakespeare seems to have confounded a man's shoes with his gloves. He that is frighted or hurried may put his hand into the wrong glove, but either shoe will equally admit either foot." Sir Walter Raleigh infers from this that Johnson "wore his boots indifferently, either on either foot, and further, which is yet a stranger thing, believed that all other boot-wearers practise the same impartiality." He adds, "This is a topic which demands, and would well repay, the expert labours of academic research. Very little is known about Johnson's boots." Perhaps this enchanting subject will tempt Drs. Walsh and Pool to a new study of literary laterality.

Sir Wilson Jameson will deliver the Harveian Oration before the Royal College of Physicians of London on Monday, October 19, at 2.30 p.m., at the College.

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[1] *J. ment. Sci.*, 1942, **88**, 308.

[1] *South. Med Surg.*, 1942, **104**, No. 2, February.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

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LOUSE-BORNE TYPHUS FEVER

BY

Sir J. W. D. MEGAW, M.B., D.Sc., I.M.S.(ret.)

(*Concluded from p.* 403)

Diagnosis

The diagnosis of severe cases in established epidemics is easy and mistakes are rarely made. On the other hand sporadic cases, especially when they are mild, are often missed. An attitude of watchful suspicion and resort to laboratory tests are essential if these mistakes are to be avoided. M. D. Mackenzie states that 87 groups of cases have occurred in Glasgow between 1901 and 1926: in 36 of these the first case was wrongly diagnosed. There is reason to suspect that a good many sporadic cases may have occurred in this country without being detected. In every case in which there is the slightest possibility that the disease may be typhus early and repeated Weil-Felix tests should be carried out. This test, though not infallible, is by far the most reliable method of diagnosis that is generally available. All large laboratories have facilities for carrying out the reaction, which in most cases becomes positive before the end of the first week, though it may, exceptionally, be delayed till the ninth or tenth day, and in rare cases it remains negative. The special feature of the reaction is that the titre of agglutination rises rapidly, usually reaching heights of 1/500 or over towards the end of the fever or in early convalescence; then it falls to a low level, but titres of 1/50 or 1/100 may persist for weeks or even months. A reliable strain of *Proteus* OX 19 is essential; this is best obtained from the Oxford Standards Laboratory. In Great Britain complete naked-eye agglutination in a dilution of 1/100 is strong evidence of typhus fever, but if repeated tests are made the maximum titre is seldom less than 1/500. If the titre remains constant throughout the illness and convalescence a false positive should be suspected even if the reaction is positive in dilutions of 1/200 or more. The reaction is also positive in rising and falling titre in flea-borne typhus, often also in tick-borne typhus, but so rarely in other diseases that mistakes are very unlikely to occur. Recent work in America suggests that agglutination tests in which suspensions of *R. prowazeki* made from yolk-sac cultures are used may prove to be more strictly specific than the Weil-Felix reaction. The same remark applies to complement-fixation tests in which similar cultures are employed as the antigen; but neither of these tests has yet come into general use.

When laboratory facilities are available an attempt should be made to isolate the virus by intraperitoneal inoculation into guinea-pigs of 2 to 5 c.cm. of blood taken from the patient at the height of the fever. Isolation of the virus is the one method by which an absolute diagnosis can be made.

When persons, who have been inoculated against fevers of the typhoid group are attacked by typhus the Widal reaction is often positive in rising and falling titre, so that a mistaken diagnosis of typhoid has often been made by medical men who were not aware of this fallacy in the reaction. When inoculated persons are suspected of having typhoid and the blood cultures are negative the serum should be tested for typhus by the Weil-Felix reaction. The Wassermann reaction also may be positive during attacks of typhus.

For rapid bedside diagnosis a modification of the Weil-Felix reaction is sometimes used. A drop of the patient's serum is placed on a glass slide; to this is added a drop of suspension of *Proteus* OX 19 which has been tinted with methylene blue; the mixture is then tilted up and down for two or three minutes. In positive cases clumping is visible to the naked eye, but the standard test should be carried out in all reactors to find the titre of agglutination. Another modification has quite recently been described by German workers; this, called the "dry-blood agglutination test," has already proved its value as a means of making large-scale surveys of suspected populations. One or more droplets of each person's blood are allowed to dry on a labelled glass slide; suspensions of *Proteus* OX 19 are afterwards stirred in over the dried droplets; the slides are tilted up and down, and the results observed at intervals up to 10 minutes. In positive cases the clumping can easily be seen with a pocket lens. The standard test should be carried out in all positive cases.

Differential Diagnosis.—Typhus fever may simulate typhoid, meningitis, influenza, bronchitis, pneumonia, febrile catarrh, appendicitis, measles, small-pox, dengue and other fevers, especially during the first few days before appearance of the rash and development of agglutinins. Differentiation is seldom difficult if typhus is suspected and the usual laboratory tests are made. The simultaneous occurrence of other diseases, even in the same patient, is not infrequent during epidemics; in such cases serious mistakes may be made if a complete examination is not carried out. Flea-borne typhus can be distinguished from louse-borne typhus only by animal inoculation, though a knowledge of the conditions in which the infection has occurred will usually prevent difficulties from arising.

War Typhus

Typhus fever is far more common and far more deadly in the conditions resulting from war than in times of peace. Great movements of population often involve the transfer of susceptible persons to infected areas or of infected persons to places previously free from the disease. In either case the virus finds a virgin soil in which it flourishes. Overcrowding and lack of facilities for washing cause a great increase in the louse population and in the opportunities for migration of the insects from one host to another. Malnutrition causes lowering of resistance to infection. These factors lead to an acceleration in the rate of transmission from man to man and so to an increase in the virulence of the infection. Correspondingly, the incubation stage is shortened to an almost uniform period of about 8 days; mild attacks are less common and the death rate is higher. Even in areas in which the disease is smouldering in mild endemic form the risk to troops is great, because the soldiers are usually new-comers from non-infected places and so are highly susceptible.

Prevention

The best method of prevention is to eliminate louse infestation. This is a simple matter in normal conditions, but in war it may be very difficult or even impossible. The military medical authorities are fully alive to the importance of the problem; they have worked out an organization to deal with any conditions that can be foreseen. But no regulations, however perfect, can relieve the medical officers of the responsibility for constant vigilance; they must suspect typhus in every doubtful case of fever in areas of possible endemicity, and they must keep a careful watch on the health of the local inhabitants as well as of their own personnel. If the troops are stationed for any length of time in a suspected locality useful information can often be obtained from the local medical men; but undue reliance must not be placed on negative reports; because infection often smoulders in areas which appear to be free from the disease. The "dry-blood agglutination test" already mentioned deserves consideration as a rapid method of carrying out a survey in suspected localities: it has been used with success in German-occupied countries. The test can be carried out more rapidly and easily than the search for malaria parasites in blood films. Details of the method are given in the *Bulletin of War Medicine*, May, 1942, p. 397, and the *Tropical Diseases Bulletin*, June, 1942, p. 372.

The personnel engaged in typhus work of every kind should be young because of the great risk to life in the case of elderly persons. Preliminary inoculation should also be carried out if possible. In dealing with infected persons disinfection of the patient's skin by chemical antiseptics is desirable because of the risk of infection from louse faeces. Buxton suggests lathering the skin with a mixture of 1½ oz. of Jeyes' fluid, 1½ lb. of soft soap, and 10 gallons of water as a preliminary to bathing. For the same reason clothing and bedding should be disinfected by heat rather than disinfested with cyanide gas, which is of special value in the disinfestation of rooms and furniture. Special louse-proof clothing should be worn by persons exposed to risk: if this is not available a fair degree of protection is afforded by wearing rubber gloves and gum-boots into which the sleeves and trousers are tucked; the arms and legs should be smeared with camphorated oil made of 1 part of camphor to 9 parts of olive oil or liquid paraffin. The clothing must be changed frequently, and on each occasion a hot bath should be taken after preliminary lathering of the skin with a medicated soap of the type suggested by Buxton.

Medical men in Great Britain will find useful information about preventive measures in the Ministry of Health Memo. No. 252/Med. The general practitioner must always play a leading part in the detection of the first cases: he and the staff of our hospitals ought to keep a close look-out for suspicious cases. There is no need for an alarmist view of the risk of infection in this country; conditions here are very different from those prevailing in great epidemics, in which the danger to the medical and nursing personnel is very considerable. On the other hand the attitude of the medical profession should be one of uncompromising hostility to louse infestation, which is still far too widespread here. Educational propaganda directed towards arousing feelings of disgust and fear against lice must be combined with measures for the control of the insects.

Preventive Inoculation

Many kinds of protective vaccines have been tried; these fall into two main groups: (1) killed vaccines made from the rickettsiae of the disease; and (2) living vaccines containing the rickettsiae of flea-borne typhus, which have antigenic properties similar to those of louse-borne typhus. The living virus, attenuated in various ways, has been used on a large scale in French North Africa with apparent success: the vaccine acts by causing an unapparent or mild attack of the disease; but in some cases severe or even fatal attacks have resulted owing to an unexplained increase in virulence of the rickettsiae. There is a natural reluctance to use a virus whose constancy cannot be guaranteed, and, besides, there is some risk of introducing infection into places which are free from the disease.

Killed vaccines are free from risk; the first of these to be used on a large scale was Weigl's vaccine, which undoubtedly gives a considerable degree of protection. The preparation of each course of vaccine for one person involves inoculation per rectum of about a hundred lice, which have to be fed for some days on immunized persons and then dissected to extract their infected guts. This vaccine is clearly impracticable for everyday use. Cox has worked out a method which holds out promise of success; he grows cultures of *Rickettsia prowazeki* in the yolk sacs of developing chick embryos; suspensions of these cultures contain enormous numbers of rickettsiae, and large quantities of killed vaccine can be prepared at a small cost. The vaccine immunizes animals, but the crucial test of its effectiveness on human beings has not yet been completed. German workers have naturally been interested in Cox's vaccine; they are known to have taken up its preparation, and there are suggestions that it has already been found effective in reducing the severity of attacks which have occurred in inoculated persons. Killed rickettsial vaccines have not hitherto been found capable of producing complete immunity against virulent infection, but there is good evidence that they often lessen the risk to life.

The control of typhus fever in war conditions may be extremely difficult, as is shown by a report which appeared recently in a German medical journal. No fewer than 117 men engaged in guarding prisoner-of-war camps in one military district in Poland were attacked in November and December, 1941, in spite of delousing and orders to avoid close contact with the prisoners. The fatality rate was 35% in 82 of these persons who had not been vaccinated, but was *nil* in 35 who had been given one or more doses of a vaccine of unspecified type. In the same report there is a statement that 104 cases of a milder form of the disease were treated in the same hospital in the following two months. The patients were soldiers who had just returned from the eastern front; they had evidently become infected on the journey, but the virulence of the infection was low and there were no deaths.

Treatment

German physicians have been trying hard to find a curative drug, but although some of them have made great claims for sulphapyridine others are equally emphatic that it is useless except, possibly, in complications caused by organisms for which it has a specific action. The latest claim is for mepacrine hydrochloride (atebrin), preferably combined with pamaquin (plasmoquine); detailed evidence is promised, but in view of past disappointments it may be best to avoid undue optimism. No further reports have appeared about the use of intravenous solutions of chlorine which were claimed by Danielopolu to give almost miraculous results in the severest cases. Convalescent serum or direct transfusions of blood from convalescents may have some value if given early, but few observers are enthusiastic about their efficacy.

Good nursing and a light nutritious diet, rich in all the vitamins, form the basis of treatment. The free use of subcutaneous injections of normal saline or Ringer's solution is advocated by several physicians. Plenty of liquid should be given by the mouth. Chloral hydrate in doses of 15 to 40 gr. often relieves headache, joint pains, insomnia, and restlessness: if it fails lumbar puncture may be needed. Warm or even hot baths have their advocates. Complete rest, attention to the toilet of the mouth, and the prevention of bed-sores are other important points. Even in mild cases the patient must be kept in bed for at least a week after the temperature has fallen: in severe cases complete rest for periods up to three weeks or longer is essential because of the risk of sudden heart failure. For anaemia, iron and liver extract are needed.

In a disease which shows such extreme variations in the severity of different outbreaks, and even at different periods during the same outbreak, great caution is needed in estimating the effect of any special line of treatment. With any scheme of treatment the case mortality may range from *nil* to 30% or more.

The Other Fevers of the Typhus Group

As already stated, these are primarily diseases of lower animals, or "zootic" diseases, and are not capable of being naturally transmitted from man to man as is the case with louse-borne typhus, which is primarily a human, or "demic," disease. This general statement needs qualification in the case of flea-borne typhus: this disease is caused by a virus which is so closely related to *R. prowazeki* that many experts regard it as a variety of that organism rather than a distinct species. Some workers hold that the virus of flea-borne typhus, after being transmitted in the first instance from rat to man by the rat flea, may at times become capable of being transmitted from man to man by human lice. This is a disputed point, but even if the virus should occasionally be transmitted from man to man the resultant disease would automatically become louse-borne typhus and would have to be handled accordingly. Flea-borne typhus may possibly be the ancestor of the human disease, whose virus in that case would have originated as a modification of the rickettsiae of flea-borne typhus.

The other "animal" typhus fevers which are conveyed to man by ticks and mites, respectively, have never been known to be transmitted in natural conditions from man to man; cases of these diseases do not call for special precautions to prevent the spread of infection to contacts. On the other hand the possibility that flea-borne typhus may be transmissible by lice must be borne in mind; cases in louse-infested persons or communities should be handled on the same lines as louse-borne typhus, even though the risk of infection is doubtful or negligible in most of the affected localities.

Flea-borne Typhus

This is primarily a disease of rats, perhaps also of mice; it is ordinarily conveyed to man by the rat flea. The usual names of the disease are "murine typhus" and "endemic typhus," but neither name is appropriate: mite-borne typhus is also a murine disease, and both tick-borne and mite-borne typhus have an equal right to be called endemic diseases; even louse-borne typhus often occurs in endemic form. The numerous other names that have been given to the disease are equally unsuitable. Flea-borne typhus was first recognized only a few years ago, but already it is known to be widely distributed in many parts of the world; the only condition essential for its occurrence is contact between human beings and infected rats which harbour fleas. This contact is most frequent in houses in urban areas, so that the disease is chiefly urban or, at any rate, domestic in type, as opposed to tick-borne and mite-borne typhus fevers, which are rural in their distribution.

The virus, called *Rickettsia mooseri*, is similar in its serological and immunological features to that of louse-borne typhus, but it causes a milder disease in man and a more serious disease in rats than *R. prowazeki*. Mention has already been made of the possibility that the virus may in exceptional conditions become modified so as to be transmissible by human lice from man to man. Some French observers believe that the virus can be conveyed by food which has been contaminated with the faeces or urine of infected rats.

The clinical features of flea-borne typhus are very similar to those of mild louse-borne typhus; the case-mortality rate is very low as a rule, but virulent forms of the disease have been reported from Mexico and elsewhere. The disease should be suspected, even in this country, when sporadic cases of typhus-like fever occur in persons who are free from louse infestation and who have not been in contact with cases of louse-borne typhus. In countries where tick-borne or mite-borne typhus occurs there is often a difficulty in differential diagnosis, but knowledge of the epidemiological conditions, and laboratory tests if available, will usually be of great help. The rising and falling titre of agglutination to *Proteus* OX 19 is the same as in louse-borne typhus, and the reaction to *Proteus* OXK is negative or weak. Prevention is by rat destruction on the same lines as in plague.

Tick-borne Typhus

This disease occurs in many areas in North and South America, Asia, North and South Africa, and Southern Europe. Cases occur chiefly in temperate and subtropical climates during the season of activity of the vector ticks. The chief risk of infection is from bites by ticks which have been infected by animals in the open country or forests of affected areas, so that the disease is rare in urban communities. The handling of ticks which infest dogs has been regarded as the source of infection in some cases. Certain areas in the Rocky Mountains are the home of the classical form of the disease. The virulence of the infection is extremely variable; in some localities it is so great that the case-mortality rate is 70%; in others it is only 5%.

The onset and decline of the fever are usually more gradual than in louse-borne typhus; the rash is maculo-papular and usually extends to the palms, soles, and face. In some localities a local sore with lymphangitis often occurs at the site of the tick-bite. The agglutination response to *Proteus* OX 19 and OXK is very variable, ranging in each case from negative to strongly positive. Complement-fixation tests or agglutination tests in which the specific rickettsiae are employed may prove to be reliable methods of differential diagnosis from the other typhus fevers.

Prevention is by frequent examination of the body for ticks or by wearing tick-proof clothing when living or travelling in affected localities. If the ticks are removed within an hour or two after attaching themselves there is little risk of infection. A drop of tincture of iodine or kerosene should be applied to each tick before it is removed. Killed vaccines made from suspensions of laboratory-infected ticks have been used with success, and now yolk-sac cultures of the rickettsiae are being tried.

Mite-borne Typhus

This disease occurs chiefly in the Far East; cases have also been reported from India. The disease is rural in distribution; the causal rickettsiae are conveyed from infected rats by larval mites, which are microscopic in size. Japan is the home of the historical form of the disease; in that country a sore with lymphangitis is said to be uniformly present at the site of the infecting bite, but in other affected countries this is often absent.

A strongly positive agglutination reaction to *Proteus* OXK with a negative or weak reaction to *Proteus* OX 19 is highly suggestive of mite typhus: in other respects the disease has a general resemblance to tick typhus. The virulence of the infection shows the same variability according to locality as is seen in tick typhus.

References.—The recent contributions to knowledge of the typhus fevers are so numerous that detailed references to the literature cannot be given in the space available. Abstracts of the important articles appear in the *Tropical Diseases Bulletin* at frequent intervals

Fevers of the Typhus Group

	Epidemic Typhus Fever (preferably called "Demic" Typhus Fever). A human disease, transmitted from man to man by human lice. Associated with louse infestation, poverty, famine, and overcrowding.	The Non-epidemic Typhus Fevers (preferably called "Zootic" Typhus Fevers). Primarily diseases of lower animals, transmitted secondarily to man by fleas, ticks, or mites. Associated with life in the open country and forests or with contact with rats, dogs, etc. "Place" diseases and usually sporadic.		
Names	Louse typhus	Flea typhus	Tick typhus	Mite typhus
Synonyms	Typhus fever, typhus exanthematicus, etc.	Murine typhus, endemic typhus, shop or urban tropical typhus	Rocky Mountain spotted fever, boutonneuse fever, tick-bite fever, etc.	Japanese river fever, tsutsugamushi, scrub tropical typhus, etc.
Virus	*Rickettsia prowazeki*	*Rickettsia mooseri*	*Rickettsia rickettsi*	*Rickettsia tsutsugamushi*
Vectors	Human lice	Rat fleas	Various ticks	Larval mites
Reservoirs of infection ..	Man only known	Rats and mice	Various rodents; dogs and other animals suspected	Rats
Agglutination against:				
Proteus OX 19 . ..	++ to ++++	++ to +++	− to +++	− to +
" OX 2	++ to +++	++ to +++	− to ++	− to +
" OXK	− to +	− to +	− to ++	++ to ++++
Rash	Small macules, first on sides of chest, spreading over trunk, arms, and legs. Seldom on palms, soles, and face	As in louse typhus, but often inconspicuous or absent	Often conspicuous; may be nodular. Common on palms, soles, and face	Macular; often on face, rare on palms and soles
Local sore and lymphadenitis	Absent	Absent	Usually absent, but common in some localities, especially North and South Africa	Usually present in Japanese cases: absent or uncommon in Malayan and Dutch East Indian cases
Case mortality	5 to 50%	0 to 4% as a rule	1 to 70%	1 to 60%
Cross-immunity in animals	Strong against flea typhus, *nil* or weak against tick or mite typhus	Strong against louse typhus, *nil* or weak against tick or mite typhus	Only slight against other forms of typhus	Only slight against other forms of typhus
Distribution	Cosmopolitan, but not common in the Tropics	World-wide, common in the Tropics	Many localities in America, Europe, Africa, and Asia. Not common near the Equator except at high altitudes	Far Eastern tropical and subtropical countries

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A case of insulin resistance has recently been described by E. Lozinski and L. I. Frohlich (*Canad. med. Ass. J.*, 1942, *46*, 62) in which 3,000 to 4,000 units of insulin daily were required to prevent hyperglycaemia, acidosis, and coma. Experiment failed to demonstrate any anti-insulin substance in the patient's serum. The pituitary gland was thereupon irradiated with *x* rays. One month after leaving hospital (i.e., 3½ months after the beginning of irradiation) the required insulin dosage was down to 500 units. Approximately 16 months after irradiation fasting blood sugar was 108 mg. per 100 c.cm. on a dosage of 40 units daily of zinc-protamine-insulin.

THOMAS MANN ON FREUD

BY

Sir WALTER LANGDON-BROWN, M.D.

Shortly after the last war Thomas Mann, then undoubtedly the greatest literary influence in Germany, produced a striking essay entitled *Freud's Position in the History of Modern Thought.* It does not appear to have excited much interest at the time, but it is so prophetic in tone, so penetrating a study of German mentality, and so appreciative of Freud's value as physician to the body politic, that his essay gains fresh interest at the present juncture. He starts by adopting Nietzsche's view that the later part of the 19th century was characterized by two leading *motifs*—reaction masquerading as progress, and subservience of reason to emotion. Though not confined to Germany they were specially potent there. He elaborates this by maintaining under the first heading that reformations by their very nature may have little to do with progress, since they tend to re-establish the old in an extremely conservative sense, and that at a time when the new is already known, while the second arouses sympathy with the chthonic and daemonic, with night and death—in short, with a primeval and earth-born religion. This recognition of the feeble control exerted by the reason and intellect, and of their incapacity to condition life, has led to scorn being poured on reason as an unfruitful illusion, and to the re-instatement of the irrational and instinctive. When reaction disguises itself as revolution, it succeeds best with youth, which not being fortified by experience against such tricks can be beguiled into accepting the most outworn devices as promising novelties. The revolutionary freshness of youth has impressed upon it the "principle of mindless nature, the folk soul, hatred, war . . . the great retreat dressed out in the uniform of the advance guard. . . . Is youth really going to fall victim to this crude abuse of the new knowledge? . . . We are no longer strangers to the disheartening sight of youthful bodies in gay quickstep, songs arising from young life, arms flung in a Roman salute, wasting the fine flight of their youth upon hoary ideas." Since he wrote those words history has answered his questions. As Kerr Clarkson expressed it in his *Europe in Eclipse,* Hitler's "Youth Movement was his method of harnessing the challenging demands of puberty to the service of the State," while Howard Smith in his vivid *Last Train from Berlin* concluded from study on the spot that the Nazi "Ship of State has ridden the waves, not of the future, but of the blackest past." Hitler has completed what Wagner began—the exploitation of the myth.

The recent arrest of the veteran physiologist Prof. Lapicque in Paris and the suppression of the *Presse Médicale* are typical of much. Science, literature, and art are to be tolerated only in so far as they are within the comprehension of the autocrat. Any higher values are met with the retort of Goethe's Mephistopheles—"I am the spirit that denies."

Indeed we must admit that a reactionary element is not uncommon in revolutions. The lictors' rods are suitable symbols for Fascism, for the Romans have been the most persistent *laudatores temporis acti* in all history, even in the moments of their greatest conquests. The renaissance of Irish nationalism gained force from the Celtic twilight, represented poetically by W. B. Yeats and pictorially by his brother.

Thomas Mann sees in Freud's technique a method designed to expose reactionary manœuvres. "Long ago, and certainly to the surprise of its physician-founder, it outgrew the domain of medicine and became a world-wide movement that has penetrated into all possible fields of intellect and science. . . . But being by origin a technique of healing, it has preserved in the broader intellectual fields its physicianly character, its human and ethical urge . . . which gives it a peculiar status within the scientific movement of our time." While Freud recognizes the power of impulse over the mind, he is far from giving way to its superiority, for, as he himself phrased it, "The voice of the intellect is low, but it rests not until it gets a hearing. In the end after countless repulses it gets one after all." When Freud describes the impulses to death and destruction as the effort of the living to relax the strain by returning to lifelessness, and then crosses this backward urge with the "actual life impulse"—namely, sex—with which all striving towards evolution is bound up, he gives to sexuality a revolutionary and intellectual significance such as had never before been ascribed to it. Extending his views from the individual to the body politic, Freud compares the unstable equilibrium of civilization to the condition in which a neurotic patient, without the will to recovery, comes to terms with his symptoms. This application of the idea of repression, leading to transformation into the neurotic symptom, to the disease of nations to-day I ventured to emphasize in my Maudsley Lecture in 1936. The modern fanatical outburst of nationalism may be regarded as the pathological outcome of repressing the evolutionary trend towards internationalism.

Mann thinks deeply, though perhaps at times almost too subtly, and not all will agree with him; nevertheless I feel that his diagnosis here is correct, and it is to be hoped that his anticipations of the therapeutic benefits to be derived from Freudian doctrines may be justified. He certainly concludes on an optimistic note: "The goal of psycho-analysis is a new life order, earned by effort, resting on freedom and security, obtained through self-knowledge. . . . It deals with the night, the dream, impulse, and the pre-rational . . . but it is far from being a tool of the obscurantist, fanatical, backwardly directed spirit. . . . It is, in my sincere conviction, one of the great foundation stones of a structure of the future which shall be the dwelling-place of a free and conscious humanity." Yet one feels impelled to add Crichton-Miller's observation as a *caveat*: "To Freud there are but two goals in life—libidinal satisfaction and a return to the inanimate. Jung on the other hand seems to see in human behaviour a manifold purpose which embraces realization of individual potentialities, mastery over circumstances and progressive evolution of the race."

TUBERCULOSIS IN WARTIME

We print below a summary of the main findings and recommendations of the M.R.C. Committee on Tuberculosis in Wartime. The following are members of the committee: Viscount Dawson of Penn (chairman), T. Stenner Evans, Prof. Major Greenwood, F. R. G. Heaf, G. Gregory Kayne, Sir Alexander Russell, Miss May Smith, Norman F. Smith, Wing-Cdr. R. R. Trail, Prof. G. S. Wilson, and P. D'Arcy Hart (Secretary). A leading article on this report appears at p. 429.

Summary of Findings

1. There has been a real increase in deaths from tuberculosis since the beginning of the war.

2. All age groups have been involved to some extent in the increase, and the participants up to the present have not been predominantly young women—as seemed likely early in the war—but include, particularly recently, children and the older male age groups as well.

3. Although there has been a slackening in the increase of tuberculosis mortality in the second year of the war—e.g., in young adult females—the position is still unfavourable in relation to the pre-war figures.

4. In view of the similar, though only temporary, slackening in the rise of tuberculosis at a corresponding time in the last war, together with what is known of the course of tuberculosis, we must be prepared for a further increase as hostilities continue.

5. A disquieting feature of the present position is the increased mortality of children from tuberculous meningitis. Measures have been indicated which should reduce the deaths from bovine infection. To reduce human infection it is necessary not only to take special measures with children, but also to control pulmonary disease in the adult. The suggestions which have been made for the early detection, segregation, and adequate treatment of the tuberculous adult should have an indirect effect in reducing infection among children.

Summary of Recommendations

Mass Radiography.—1. Subject to limitations of apparatus, the controlled use of mass radiography before, or as soon as possible after, employment should be extended, especially (*a*) in the Services, (*b*) among men and particularly women entering the war industries, and (*c*) among those taking up certain other occupations.

2. A single mass *x*-ray examination should be carried out, where practicable, upon those already employed in certain industries—e.g., munition factories.

3. As an extension of the preceding, but probably practicable to a much less extent in wartime, *x*-ray examinations should be repeated at regular intervals upon certain groups of the population, including (*a*) employees in factories which contain large numbers of young adults, (*b*) nurses and medical students, and (*c*) merchant seamen.

4. Where speed and cost dictate, the miniature method is the one of choice for mass radiography. In certain circumstances it may be practicable to make use of existing full-size apparatus.

Institutional Accommodation.—5. Accommodation for institutional treatment of tuberculosis is urgently required. A good deal is now available, but cannot be used because of lack of nursing and domestic staffs. Until these staffing problems are solved, no advance can be made in institutional control of the disease.

Financial Provision.—6. In view of the special character of the disease and the prolonged treatment usually required, special financial provision greater than that obtainable under the N.H.I. scheme should be made for persons with tuberculosis.

Rehabilitation.—7. Rehabilitation should be considered an essential part of the treatment of tuberculous persons, and arrangements should be made for the gradual return to industry of such patients on a basis of part-time or modified work. During the period of rehabilitation a supplement to wages should be provided, in order that an adequate standard of living can be maintained by the patient and his family.

Examination of Contacts.—8. The examination of all home contacts must be energetically pursued, a first examination being the chief requirement. The re-examination of children under 5 years of age, and of young adults, is highly desirable.

Examination in Special Cases.—9. *X*-ray examination, and re-examination at intervals, should be undertaken for all cases of pleurisy and erythema nodosum in young people, whether institutional treatment has been given or not.

Mental Hospitals.—10. The special conditions prevailing in mental hospitals make it desirable that an effort should be made as soon as practicable to *x*-ray periodically all residents of such institutions.

General Working Conditions.—11. It is of the first importance that continued watchfulness should be maintained upon the working conditions of young employees, particularly in regard to hours of work, transport difficulties, rest periods, factory canteens, and hostel arrangements, and their relation to sickness absence.

Milk.—12. The pasteurization of milk should be extended throughout the country, and, where this is not practicable, all milk consumed by children should be boiled, or dried milk should be provided.

Propaganda.—13. The implementing of these recommendations should be accompanied by information and propaganda both to the medical profession and to the general public.

SURGICAL HONOUR FOR LORD NUFFIELD

A ceremony was held at the Royal College of Surgeons of England on Sept. 30, when Lord Nuffield received at the hands of the President, Sir Alfred Webb-Johnson, the Honorary Medal of the College, a distinction instituted in 1802 for "liberal acts or distinguished labours, researches, and discoveries, eminently conducive to the improvement of natural knowledge and of the healing art." This was the eighteenth award, and earlier recipients had been Lord Lister, Sir James Paget, and Sir Richard Owen. The company supporting the President and the Council in the College building at Lincoln's Inn Fields included Mrs. Churchill, representing the Prime Minister in his capacity as First Lord of the Treasury and Trustee of the Hunterian Collection; Mr. Ernest Brown, Minister of Health, and Miss Horsbrugh, Parliamentary Secretary to the Ministry; Sir Charles Wilson, President of the Royal College of Physicians; Dr. Daniel O'Brien of the Rockefeller Institute; Sir Farquhar Buzzard, Regius Professor of Medicine at Oxford; Mr. H. L. Eason, President of the General Medical Council; and Sir Stanley Woodwark, Master of the Society of Apothecaries.

The President welcomed the distinguished company whom the prestige of the Royal College of Surgeons and the romance of this occasion had brought together. The primary duties of this corporate body were the same to-day as those of their fathers of old—to strive for the improvement of the science and art of surgery, and to ensure that those who practised it were qualified to do so. It was essential that it should continue to be an arbiter of surgery and a centre of independent authority. While keeping in the van of progress it had to preserve the broad bases on which the whole edifice of biological knowledge was built, thus maintaining it as a great staff college of learning. Besides being heirs to these responsibilities and traditions the Council were trustees of several distinctions and awards; one of these was the Honorary Medal. Lord Nuffield's youthful ambition to be a surgeon was not to be fulfilled, but they had invited him to the headquarters of British Surgery that day to receive their most exclusive emblem of merit in recognition of his greatness in generosity and in wisdom.

The Senior Vice-President, Surgeon Rear-Admiral G. Gordon-Taylor, presenting Lord Nuffield for the award, said that it was not only the dazzling magnitude of his gifts to medicine but also the manner and the direction of his giving that the College wished to honour—the thought and the deliberation that had guided each beneficent act. The whole realm of the healing art had attracted Lord Nuffield's interest and had come within the orbit of his wise munificence.

Lord Nuffield, in a brief acknowledgment of the medal, said that nothing he had ever received had given him greater pleasure. What he had done for medicine and surgery was only what he thought he should have done, and it would be his highest ambition and desire in the future, as in the past, to help those less fortunately placed than himself, and to encourage others to do so.

Mr. Ernest Brown, at the close of the ceremony, spoke in praise of Lord Nuffield's gifts, saying that too often givers who lavished money on expensive buildings showed little concern for the men and women who were to work in them. Lord Nuffield never made that mistake. Of all his gifts the Minister would like to praise him most for two things—the establishment of the Professorships and Readerships at Oxford, and the foundation of Chairs of Social Medicine and of Child Health.

AWARD FOR GALLANTRY

Dr. ROBERT HAMILTON MOYES, deputy medical officer of health, Kingston-upon-Hull, has been appointed an M.B.E. (Civil Division). The citation in the *London Gazette* reads:

> "Throughout enemy air raids Dr. Moyes has played an important part in succouring wounded and trapped people and in encouraging the personnel of civil defence services. During one raid he rendered assistance to many victims and gave morphine to ease the sufferings of those who could not be immediately released. This necessitated crawling into tunnels at a time when debris was still falling, but he carried on regardless of personal risk and displayed a high degree of courage. His initiative and skill undoubtedly saved several lives and brought comfort to the suffering. Dr. Moyes has been medical officer at many incidents and he has always maintained a high standard of professional skill and courage. He has worked untiringly for the injured victims of enemy air attack and his calm demeanour has been an inspiration."

A conference of the Nutrition Society will start at 11 a.m. at the London School of Hygiene, Keppel Street, London, W.C.1, on Saturday, Oct. 17, to discuss "Trace Elements in Relation to Health." Papers will be read by Dr. H. H. Green (Significance of Trace Elements in Relation to Diseases of Plants and Animals), Dr. R. L. Mitchell (Distribution of Trace Elements in Soils and Grasses), Prof. D. Keilin and Dr. T. Mann (Copper, Zinc, and other Trace Elements in Relation to Physiological Function and Enzyme Systems), Prof. T. Dalling (Enzootic Ataxia or "Swayback" of Lambs in England in Relation to Copper Feeding of Ewes during Pregnancy), Sir Charles Martin (Cobalt and Other Trace Elements in Relation to Disease in Australasia), Dr. W. Lyle Stewart (Sheep "Pining" in Britain), Dr. M. M. Murray, Dr. D. C. Wilson, and Dr. F. H. Kemp (Fluorine in Human Nutrition), Mr. F. Blakemore (Industrial Fluorosis of Animals in England), Mr. W. S. Ferguson ("Teart" of Somerset; a Molybdenosis of Farm Animals), Dr. R. A. McCance and Miss E. M. Widdowson (Absorption and Excretion of Trace Elements). Further details of the Nutrition Society can be had from the Hon. Secretary, Dr. Leslie Harris, Dunn Nutritional Laboratory, Cambridge.

Correspondence

Dysentery and Diarrhoea in Wartime

SIR,—Sir Philip Manson-Bahr's paper concluded in your issue of Sept. 26 (p. 374) will be helpful to many medical officers in the Services and elsewhere. But in recommending doses of 50 to 80 c.cm. of serum in severe cases of Shiga dysentery he is not, I think, taking into account the remarkable progress achieved during the past few years in refining and standardizing these sera. The product issued to the Army contains 50,000 international units of antitoxin in a volume of less than 10 c.cm.: and 50,000 to 100,000 units is considered sufficient as an initial dose, even in fulminating toxic cases, if given intravenously. Intravenous injection, as Sir Philip will agree, is preferable to intramuscular injection as a means of securing rapid circulation of antitoxin; and, thanks to the use of proteolytic enzymes in preparing the serum, the risk of anaphylaxis to which he refers is now so small that it need no longer deter us from using the most effective route.—I am, etc.,

War Office, S.W.1

L. T. POOLE,
Major-General, Director of Pathology

Post-mortem Facilities for All

SIR,—Prof. G. Grey Turner's letter (Sept. 26, p. 376) on post-mortem facilities for all seems to be based on a misunderstanding. He refers to post-mortems in cases connected with workmen's compensation, but in all such cases where an accident has occurred it is the duty of the doctor to notify the coroner. A complete necropsy will then be ordered. And, again, when persons have died after discharge from hospital and where the cause of death is not known, the doctor should inform the coroner so that a post mortem can settle the question.

In other words, the essentials for which Prof. Grey Turner craves are already in existence and in action; but, admittedly, the "fully equipped institutes" do not exist. If they did, they would be but rarely required because in the great majority of the cases to which Prof. Turner refers the simple methods of the morbid anatomist (and histologist) suffice; on the rare occasions when they do not, the hospital laboratory is available for complicated investigations.—I am, etc.,

London, W.1

A. PINEY.

Antiseptic Technique

SIR,—We would like to associate ourselves with Prof. R. J. Willan's plea for an antiseptic technique in surgery (Sept. 5, p. 291). His letter has prompted us to give an account of our own experience. After discussions last February, we decided to try to eliminate rubber wastage by adopting the following technique for scrubbing-up in the theatre, and have used it exclusively ever since.

1. Ordinary toilet of nails, etc.; wash hands and forearms and dry.
2. Put on non-sterile rubber gloves previously inspected and patched if necessary. The gloves should be well pulled on to obviate wrinkles and the risk of resultant unwashed areas
3. Wash gloved hands in soap and water for three minutes.
4. Put on sterile gown and fasten the sleeves at the wrists over the gloves with small rubber bands previously sterilized in 1 in 50 lysol. The gown sleeves should be long to avoid exposing areas of bare wrist.
5. Steep hands in 1 in 50 lysol for two minutes.
6. Rinse in saline.

Using this technique more than 2,000 operations have been performed in the past eight months, of which 800 were major operations. This number includes some 700 abdominal cases of various kinds, but does not include 121 operative obstetric cases, for which the above technique has also been used exclusively. No difference in the wound-healing and post-operative progress has been observed between this technique and the usual aseptic method using dry-heat-sterilized gloves.

Our justification for bringing this procedure to your notice is: (*a*) That it prevents the wastage of rubber gloves caused by heat sterilization. This saving of gloves has been so marked that consumption has been reduced to one-eighth of the previous quantity. In addition, the gloves fit as perfectly after five weeks' use as when new, the only reason for their final abandonment being the impracticability of patching them further. (*b*) The technique is applicable should war conditions abolish the sterilization amenities of a modern theatre.

We agree with Prof. Willan that operations can be performed successfully with an antiseptic technique and no gloves at all, but gloves afford a necessary protection to the surgeon against infection.

Our experience gives us complete confidence in recommending this method to other surgeons, and we regard the marked saving of rubber as a definite war economy.—We are, etc.,

N. S. CRAIG.
R. L. DODDS.
N. C. TANNER.
H. K. VERNON.

London, S.W.12.

Classification of Nerve Injuries

SIR,—It may cheer Dr. Russell Brain to know that I have received three other letters of complaint about the terms recently introduced for the three types of nerve injury. All the correspondents have suggested others—some old, some new—but with one partial exception the only thing common to their terms is that they are not so un-English as "neurotmesis," "axonotmesis," and "neurapraxia." In my opinion none of them (except, perhaps, "division") is satisfactory. There has, in fact, never been agreement on the nomenclature of nerve injuries, although I believe that in their own minds most neurologists are fairly clear about the three main types. But I cannot help being a little doubtful about Dr. Russell Brain. In his excellent textbook of neurology (1940) he draws no clear distinction between them, and in referring to the second type as "division of axis cylinders without division of the nerve sheath" (this was not my description) he has failed completely to appreciate the importance of the survival of the more intimate supporting structures of the nerve. Preservation of the sheath alone is of little value so far as spontaneous regeneration (a constant feature of axonotmesis) is concerned, as we have demonstrated histologically. And he does not use his own or any other terms in his book.

It is necessary, first, to ask whether he wishes the terms, his or mine, to be used in the widest possible sense or to refer only to lesions produced by certain kinds of injury. It seems to me that the more comprehensive a term the greater its value. Secondly, the term should be more closely related to effect than cause, and the effect should, where possible, be indicated in such a way that the reader is made aware of the consequent anatomical and functional disturbances. I do not suggest for a moment that this should be a universal rule, but it applies with great force to most local lesions and especially to nerve injuries.

Let us consider Dr. Russell Brain's *contusion*, "injury by blow without breaking the skin" (*O.E.D.*). This is much more a description of the cause rather than the effect, but, as the Table shows, axonotmesis may be produced in at least eight different ways, and in each the result is the same. The word "axonotmesis" indicates that the axons have been divided; a little thought brings one to the conclusion that the disturbance

Neurotmesis	Axonotmesis	Neurapraxia
1. Open wounds	1. Open wounds	1. Open wounds
2. Direct-blunt injuries	2. Direct blunt injuries	2. Direct blunt injuries
3. Traction	3 Traction	3. Traction
	4. Compression, sudden or prolonged	4. Compression, sudden or intermittent
	5. Friction (? a combination of 3 and 4 as in traumatic ulnar neuritis)	
	6. Freezing	5. Freezing
4. Local chemical poisoning	7. Local chemical poisoning (e.g., injection of sulphapyridine)	6. Certain drugs
	8. Experimental crushing	7. Experimental compression

In other words, there are more ways of

producing {neurotmesis / axonotmesis / neurapraxia} than by {dividing / contusing a nerve / concussing} of function must be exactly the same as if the whole nerve had been divided (hence the importance of the cognate neurotmesis); and a little experience reveals the striking difference between the two when recovery occurs—namely, that axonotmesis, being predominantly a simple break in the axons, is capable of spontaneous regeneration, whereas neurotmesis is not. "Contusion" is, therefore, a limited, vague, and thoroughly unsatisfactory term.

And so is "concussion." How does "a violent shaking" (*O.E.D.*) fit the six or seven known causes (see Table) of neurapraxia? I admit that "neurapraxia" is a little unsatisfactory, but not for the reason that Dr. Russell Brain gives. The difficulty is that no constant anatomical lesion has yet been demonstrated, and hence it cannot be described. But we do know that the nerve (or certain fibres in it) stop working, and this is precisely what "neurapraxia" means. He is disturbed because "apraxia" is already used in medicine in another connexion. Apparently he takes to himself the privilege not simply of copyrighting a word (which is legitimate and is called definition) but forbidding its use as part of a compound. Why not command the anatomists to abandon "aponeurosis" because "neurosis" "has for many years been the name of a psychic disturbance at the highest level"?

I am not fond of new words, and I am especially shy of the strange terms, many of them of Greek origin, that have come into medicine during recent years, more particularly in neurology. But here there was a real need, and I think Prof. Henry Cohen has made a successful attempt to meet it. This is why my colleagues and I use these words. The fate of them will not be decided by their inventor, Dr. Russell Brain, or myself. If they express something that is true, or reasonably near the truth, and if they fill what is clearly an awkward gap in neurological nomenclature they will probably survive. If they are found deficient or perhaps just too difficult to pronounce then they will almost certainly perish.—I am, etc.,

Headington, Oxford. H. J. Seddon.

Treatment of Haemophilia

Sir,—The paper by Messrs. C. L. Endicott, J. H. Mitchell, and G. Qvist (July 11, p. 34), describing a fatal case of bleeding in a haemophiliac, has given rise to some subsequent correspondence. While we agree with Prof. G. Grey Turner (Aug. 29, p. 258) that suitable local measures should be employed when the site of bleeding is accessible, it would appear, as Dr. R. G. Macfarlane and Prof. L. J. Witts have admirably pointed out (Aug. 1, p. 140), that the value of *general* therapy in controlling bleeding in haemophilia is still not sufficiently appreciated. From a study of 6 haemophiliacs at the Hospital for Sick Children, Great Ormond Street, London, we demonstrated (*British Medical Journal*, June 29, 1929) that the only general treatment of any value in haemophilia is the intravenous administration of whole blood or plasma. We showed that this resulted in an immediate fall in the coagulation time to a normal figure, and while the figure rose steadily to its original level after about one week, the temporary improvement was sufficient to act as a most valuable haemostatic, and in our cases resulted in an immediate cessation of bleeding. As Dr. Macfarlane and Prof. Witts mentioned, other workers have confirmed these findings.

At the time our paper was published dried plasma was not readily available, but there is every reason to hope that it would be equally as efficacious as liquid plasma. At that time we approached a well-known firm to try to get human plasma in ampoule form, but we were told that owing to the rarity of haemophilia the demand would not make this possible. Now that blood and plasma are so readily available the difficulty has been largely overcome. We feel, however, that the impression may still be held that blood transfusion in haemophilia is simply trying to maintain a blood level which will continue to fall unless something further is done. We would therefore again point out that blood and plasma act in haemophilia as substitution therapy, supplying the missing factor, and analogous, therefore, to insulin in diabetes or thyroid in the cretin, except that in haemophilia the exact nature of the defect has not as yet been fully established.—We are, etc.,

London W. W. Payne.
Dublin. R. E. Steen.

Breast-feeding

Sir,—Prof. Charles McNeil in his interesting article on this subject (Sept. 5, p. 271) says in conclusion: "Every doctor and nurse who has the responsibility of advising and assisting mothers in breast-feeding ought to urge its continuation wherever possible and as long as possible, and give their best thought and effort to overcome any difficulties that may arise." The question at once prompted to my mind is: "How are these difficulties to be overcome?"

So far as I can see the most difficult and dangerous period for the mother and child in this effort to breast-feed is the four weeks following the return home from the nursing home or after the midwife and/or the doctor have ceased visiting the house. The mother, who has received scanty grounding in the art of breast-feeding during the short preceding fortnight, is now left to her own devices, surrounded by various members of her family and her omniscient neighbours. It may be that she has been fortunate, that she has good feeding breasts, plenty of milk, and a healthy, normal-sized, tractable, good sucking baby. Under these conditions she usually requires and seeks no advice and may be seen neither at the clinic nor by her own doctor until the first disturbance of health demands advice.

The mother may, however, fall into the category of those who have no wish to feed their babies, upon whom it is not worth wasting time, or of those who find difficulties in the task but who, rightly advised, will succeed in overcoming them. Very frequently she fails because: (1) she is overridden by her friends' advice, or (2) because she finds bottle-feeding a way of escape from what appears, with insufficient practical help, an impossible task with its attendant anxiety state. The help she requires in this difficult period must be given frequently, unhurriedly, and in the home, and it is most likely that before the problem is solved there must be opportunity for a number of test feeds. It is my opinion that such help, in the present state of things, is not and most likely cannot be given by the infant welfare clinics or the health visitors. It cannot be given by the former, because over an anxious period weekly visits are useless, for in the meantime the fight may be lost and submission made to bottle-feeding. It cannot be given by the latter, because most of their time is taken up by shepherding the legions of babies at overcrowded clinics whose mothers have come (*a*) to weigh the baby, (*b*) to get artificial foods cheaply, or (*c*) to spend a pleasantly gossipy hour. Each of these babies occupies the time in turn of the caretaker, the voluntary worker, one or two health visitors, and the doctor. Individual attention is impossible and often not encouraged by those in authority, and the criterion of success is numbers. Even if the health visitor does find time and is allowed to tear herself away from the clinic to do a useful bit of follow-up work at the home of a difficult case, the length or frequency of the visits is often insufficient to be really effective.

Could not a great deal of what appears to be wastage of time and effort at the clinics be given to home visitation in the early days of difficult cases, or could not one health visitor at least be available each day at the public health department, to whom harassed and anxious mothers could come for advice if they have no doctor to whom they could turn, or if the economic factor prevents their doing so? Some babies can feed from any mother and some mothers can feed any baby. Let all such visit the clinic less often and so allow those responsible to concentrate on the doubtful difficult cases.

It may be that in some areas this problem has been tackled and some such arrangements have been made. If so, I apologize for any apparent generalizing aspersions I may have made, and ask any who have solved this problem to give others who have not the benefit of their knowledge and experience.—I am, etc.,

London, S.W. E. Gerard Housden.

Sir,—With regard to the establishment of natural feeding, it has been my experience in many different areas that those mothers who are attended by the district midwives, although from much poorer and less well-fed homes, show far greater success than those who are admitted to hospital. I am certain that this is due to the misguided interference on the part of their medical advisers. Expectant mothers should be taught that pregnancy, childbirth, and lactation are normal episodes in a woman's life, and should be taken in her stride. So much stress is often laid on preparation for breast-feeding that the mother comes to think of it as something difficult to achieve and literally "worries the milk away." Another unfortunate mistake is that of the maternity hospital sister who is over-anxious to get the baby's weight up to a prearranged standard before its discharge. She frequently tells the mother how much it has gained at every feed, and is far too ready with the complementary feed. It cannot be too strongly stressed that, short of actual starvation, the baby should be left alone in its earliest days (except for extra water); as it becomes hungrier it will suckle more vigorously and stimulate the breast.—I am, etc.,

L. M. M. Beadnell,
Assistant Medical Officer, Maternity and Child Welfare, Barking

Fair Distribution of Milk

Sir,—Last autumn all general practitioners were asked to assist the Ministry of Food in its endeavour to direct the available supplies of liquid milk to those needing it most. On the advice of the Special Diets Advisory Committee, the Medical Research Council, and the B.M.A., arrangements were then made whereby doctors could prescribe quantities up to 2 pints a day for certain specified types of invalids. In a letter I received on this subject from the Ministry of Food last autumn I was informed that if the maximum allowance be prescribed in every case of illness qualifying for priority milk the total amount consumed in this way would seriously curtail the supply available for able-bodied adults, and even prejudice the quantities needed by mothers, children, and adolescents.

The Ministry of Food asked for and readily obtained our co-operation in maintaining a proper balance between the claims of the healthy and the sick upon our milk supply. However, a new form of milk certificate has now been issued (R.G. 50) and been in use for at least a month, and we are now not asked to prescribe any definite quantity of milk for our invalid patients. The question of quantity is governed entirely by the class or category in which the patient is placed. Thus, a patient suffering from an acute form of gastric ulcer, confined to bed, and living almost entirely on milk, receives a certificate that he should be granted "such supplies as are at present authorized." In this case he is placed quite rightly in Class I of the schedule of diseases, and the local food control office will give him automatically an authority to obtain the maximum of 2 pints a day. However, a patient suffering from a chronic form of the same disease, not confined to bed, and able to take a varied diet, yet needing extra milk, receives under the regulations exactly the same certificate, since he has to be placed in the same class and consequently obtains an authority for the maximum quantity. As the need for milk in the acute and chronic cases is very different, it would seem that unless something is done to amend speedily the present form of certificate, the available supplies will not be directed fairly to those needing it most.—I am, etc.,

J. D. Borham,
Medical Officer of Health, Southwold

Rickets on the Increase

Sir,—In recent months during the clinic sessions of an extremely widespread and well-supported orthopaedic service I have been convinced that there is a definite increase in the evidences of rickets. This has been thoroughly investigated and the results are as follows: (1) there is a 50% increase in the number of rachitic patients seen; (2) a 15% increase in the number of cases of acute rickets: these have been of a much more severe type than formerly; (3) very many cases are in babies of 4 to 8 months of age. In the majority of these cases vitamin therapy has been used, and with regard to the babies, all of whom were breast-fed, the mothers had not been taking vitamin D.

May I submit my conclusions; they are: (1) the present standard of dosage of vitamin D is inadequate; (2) more care should be taken of nursing mothers; (3) there should be some form of notification of every case of acute rachitis; (4) a thorough, widespread investigation should be carried out if other centres report similar findings.

My period of investigation has been from March to September for the years 1941-2. It has in most cases been impossible to ascertain when symptoms first began, so sunlight estimations have not been practical, but in the gross majority the parents have assured me their children get plenty of fresh air.

With regard to notification, I feel it is only in this way that rickets can be placed in its rightful category of seriousness. Certainly notification should make possible investigation by the local health service. Rickets, with its distressing sequelae, is a preventable disease, and in my opinion every case is a responsibility, if not a disgrace, on our medical organization. —I am, etc.,

Manfield Hospital, Northampton. Noël Smith.

Tenosynovitis in Untrained Farm-workers

Sir,—It is with great interest that I read the report of Colonel Flowerdew and Dr. Bode on this condition (Sept. 26, p. 367). At this time of the year, here in Kent, we all go to the hop-gardens, joining those who come to spend their holidays hop-picking. For the uninitiated, hops are about the size of a rose-bud and the texture of tissue paper, and a good picker might gather 30 to 35 bushels a day. Every year, a few days after picking has started one sees at least half a dozen cases of tenosynovitis, always affecting the extensor tendons, usually the extensor ossis metacarpi pollicis and the extensor digitorum communis. For these patients hop-picking is finished for that year. Treatment has always consisted of strapping with elastoplast and complete rest for a week and restrapping for a further week. Recovery is the rule at the end of this time, and these workers are able to pick the following year, usually without recurrence.

I believe that it is the repetition of exactly the same movement many hundreds of times a day that induces the inflammation, for it is often the experienced picker, "out to do a little better this year," who is affected, and not the novice picking but a few bushels a day.—I am, etc.,

Tenterden. Thos. H. E. Taylor-Jones.

The Demand on the Blood Donor

Sir,—Your leading article on the demand on the blood donor (Sept. 19, p. 342) interested me. When, ten days ago, a donor previously bled 5 months before presented herself to me for bleeding and on investigation I found her to have only 60% haemoglobin (Sahli), instead of bleeding her I gave a prescription for iron on a hospital form; I told her to continue with iron therapy for 6 or 8 weeks, assuming that she would quite cheaply obtain the iron in the form prescribed from a local chemist, there being no out-patient facilities within 10 miles of her home. She, however, went to her family doctor, who upbraided me on the telephone for not referring her in the first place directly to him. I thought he had reason for complaint on ethical grounds, though from the donor's point of view—i.e., convenience and expense—and from the point of view of preventive medicine in general, I considered that I may have done rightly.

I then ascertained the official view of my own transfusion service, and it was that enrolled donors should be at liberty to accept free advice and if necessary prescription of iron from the transfusion officer attached to the service in which the donor is enrolled—this has been its custom from inception 18 years ago. In the leading article there appear the following passages: (1) "Transfusion officers are beginning to realize the need for checking the haemoglobin level before bleeding and for prescribing iron for the prevention and treatment of anaemia in blood donors." (2) "It seems unwise to bleed a donor whose haemoglobin is below 11.7 g. per 100 c.cm., or 85% on the Haldane scale. Such volunteers should be advised to take iron and be seen again after an interval. For administrative reasons, it may be simpler to prescribe iron for all donors after bleeding."

There is no doubt in my mind which of these methods is likely to be most effective in preventing anaemia, especially as moderately anaemic subjects are virtually symptomless very often, and are, therefore, unlikely to seek professional advice in more than a percentage of cases, even when this course is suggested to them.—I am, etc.,

Sutton Coldfield Guy R. Bashford.

Sir,—With reference to your leading article (Sept. 19, p. 342), I think the following case will be of interest.

A patient, a woman of 26, has been acting as a blood donor for the last 3 years. She has been called upon every 3 months up to April, 1942, during that period. The last time she was called upon, in July, 1942, she did not attend. She was sent to me by her private doctor in August, 1942. There was evidence of chronic disease in the left lung and the sputum test was positive. She gave a history of having had a cough for the last 3 years. There was no history of tuberculosis in the family, and considering the factors that lead to the manifestation of tuberculosis importance can be attached to the fact that she has been a regular blood donor. Further study, however, of her dietetic habits revealed the fact that she was the type of individual who disliked meat and fat, cabbage, and green salads. The lack of these elements in her diet would cause a state of malnutrition, and this condition would be intensified by the regular withdrawals of blood.

The advice given in the article, that volunteers should take iron, is good, but it also seems necessary that inquiry should be made into the habitual diet of these volunteers, and that they should be investigated by miniature radiography.—I am, etc.,

Plaistow, E.13

P. A. Galpin,
Tuberculosis Officer.

"Silent" Sinusitis

Sir,—I wish to confirm Mr. Terence Cawthorne's statement (Sept. 26, p. 379) that sinus disease as a cause of visual disturbance is very rare. It has been and is my privilege to see a number of cases of retrobulbar neuritis and loss of sight referred to my clinic by one of our largest ophthalmic hospitals. In 1923 I studied my notes of 54 cases of retrobulbar neuritis; after a careful and thorough examination of the nasal sinuses, in only 5 of the 54 cases was the retrobulbar neuritis due to nasal disease (*British Medical Journal,* Nov. 10, 1923). Many of these 54 cases were followed up, and at a meeting of the Sections of Ophthalmology and of Laryngology in 1926 (*Proc. roy. Soc. Med.*, 1926, vol. 19, Sect. Ophthalmol., p. 90) I gave details of the review of 76 cases of optic neuritis, and in only 5 of these was the neuritis caused by nasal disease. In all these 5 cases the sinusitis was manifest and obvious.

Modern methods of examination and improved *x*-ray photography have abolished latent, hidden, or silent sinusitis, and to the honest rhinologist "silent sinusitis" does not exist.

My experience since the above publications in 1926 has shown that the number of cases of loss of sight of nasal origin are considerably fewer than the above figures indicate.—I am, etc.,

London, W.1. Edward D. D. Davis.

Sir,—It is only right to be sceptical about a condition which is difficult to diagnose except by a specialized *x*-ray technique not always available. I felt sceptical myself when first introduced nearly 3 years ago to the Proetz technique of ephedrine replacements as a means of curing asthmatics, epileptics, and "migraines." The proof of the pudding, however, is in the eating.

A boy of 14 was seen in May, 1940. He had had asthma since an attack of measles in 1936. He was deaf and "bunged up" with catarrh. He had 12 replacements over about 3 weeks. His catarrh and deafness cleared up completely, and he has had no asthma since.

A youth aged 19 suffered from petit mal, having had an attack about once a fortnight since childhood. He had a stuffy, blocked-up nose. He had 10 replacements in June, 1940, and has not had a single fit since.

These two cases are selected from a large number, all of which have shown remarkable improvement by relieving this allergic condition of the sinus linings.—I am, etc.,

Ashtead, Surrey. W. Edwards.

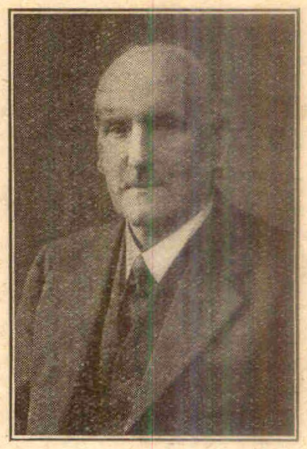
Sir,—Mr. Terence Cawthorne (Sept. 26, p. 379) writes of the custom to regard the sinuses as healthy in the absence of radiological or clinical evidence. In the face of the evidence given in the two cases I reported in the *Journal* of Aug. 1 (p. 128), is it not time that we changed our custom?—I am, etc.,

London, W.1. Rosa Ford.

Obituary

A. B. MITCHELL, O.B.E., F.R.C.S.I., M.P.

The recent death of Arthur Brownlow Mitchell (familiarly known to all old Queensmen as "A. B.") has severed a link which securely bound successive generations of medical graduates to Belfast for half a century.



Entering the old Queen's College as a medical student in 1885, he graduated in the Royal University of Ireland in 1890. By winning the Coulter Exhibition he had already proved himself the first man of his year and had given an indication of that ability, industry, and practical knowledge of medicine and surgery which in later years placed him in the forefront of the surgeons of his time. After graduation he held the post of house-surgeon to the Royal Hospital at a time when there were but two resident medical officers. At once he showed his dexterity and quickness in the performance of minor operations and in the treatment of fractures, and by conducting a surgical "grind" for final-year students gave promise of the capable and attractive teacher which remained one of his chief characteristics throughout his surgical career. In 1893 the Ulster Hospital for Children and Women gave him his first staff appointment, and this was followed next year by his election as assistant surgeon to the Royal. In both these institutions he had for a colleague William Whitla, for many years his chief medical friend. At this time both hospitals had become antiquated and ill fitted for the great advances which were to be made within the next few years. In the rebuilding of each Mitchell took a prominent part and showed that he possessed other qualifications for leadership besides those of a professional nature.

The time was opportune for the young surgeon. A new era had just been opened by the discoveries of Lister. These inaugurated the study of pathology in the living subject. The abdomen lent itself to this experimental stage both by reason of the extent of the field and by the relative ease with which abdominal explorations could be carried out. Mitchell was immediately attracted by its problems. His enthusiasm, manual dexterity, gentleness, and quickness gave him initial successes in gastric and duodenal perforations. Operations for acute appendicitis followed and afforded facilities for studying the varied pathology to which this organ gives rise. In a brief period Mitchell obtained a wide experience of abdominal diseases generally, and by papers on abdominal subjects to the various societies played a great part in the medical education of the Province. These papers established the position of the rising young surgeon throughout the whole country, notably enhancing the reputation of the Belfast Medical School. At the Belfast Meeting of the B.M.A. in 1909 he read a paper on 23 consecutive operations for perforations of the duodenum, with two deaths—a record performance at the time. The treatment of the "acute abdomen" by surgical methods was soon followed by the operative treatment of less urgent conditions. As pathological knowledge increased attempts were made to anticipate perforations of the stomach, duodenum, and appendix. This opened up a wide field both in diagnosis and treatment when *x*-ray diagnosis was still in its infancy. Gastro-enterostomy for pyloric obstruction is an obvious example of this, and few operators in the country equalled him in the performance of this operation. While the upper abdomen absorbed much of Mitchell's attention his technical skill gave him experience in all abdominal diseases, so that before 1909 he had contributed important papers on intussusception, intestinal obstruction, and cancer of the rectum.

Mitchell's outstanding position in the surgery of the abdomen in the early years of the century brought with it a rapid increase in his work as a consultant. His advice was sought not only by the general practitioners all over the country but by the surgeons to the county and district hospitals, most of whom were brought up on pre-Listerian principles and were eager for him to demonstrate his methods in the country. The advent of the motor car made this possible, and during the ten years before the last war Mitchell's country work was enormous. The outbreak of war showed, however, that he was a general surgeon of wide capabilities. He was nominated by the Royal College of Surgeons in Ireland for the post of consulting surgeon to the Forces in France. When the invitation arrived, however, he was in a nursing home, having himself undergone an abdominal operation. He had therefore most unwillingly to decline the offer. Later on, in 1916, Sir Robert Jones put him in charge of the Military Orthopaedic Hospital in Belfast. In this post he proved himself a first-rate administrator as well as an expert on the problems presented by the wounded soldiers who were arriving in great and increasing numbers. At this time his daily list included nerve sutures, bone grafting, and amputations. During the war the hospital dealt with over 3,000 cases, and this work gained for him the O.B.E.

But Mitchell's interests were not confined to his professional work. When Queen's College became Queen's University in 1908 he was appointed to the Senate. From the first he was a member of the Standing and Finance Committees, which determine the policy and carry out much of the administrative work of the university. For several years he was chairman of the Athletic Field Committee, and the spacious and attractive grounds at Cherryvale are a permanent memorial to his foresight and knowledge of the value of physical health to the student. In 1935 he became M.P. for the university in the Northern Ireland Parliament. He greatly appreciated the confidence of his medical friends which this honour conveyed, for he had never had time in his very busy professional life for political activities. In Parliament he often spoke on public health problems, especially when these entailed the improvement and extension of medical services. Whatever Mitchell's activities may have been, and they were widespread, he allowed nothing to interfere with his work for the Royal Victoria Hospital. At his retirement from the active staff he joined the board of management, and for twelve years up to the end held the office of chairman. Under his direction recent extensions were made to the wards, and the new fracture department now in process of building had his constant support.

Mitchell's greatest asset was the charm of his personality. His rapid success in his early surgical career did not fail to cause some jealousy. Most of this, however, was ill founded, and he lived to gain the undivided esteem and affection of his colleagues on the staff of the hospital and its board of management. He had many friends, too, among the leading surgeons of his time. Two of his most cherished possessions were letters of appreciation from Lord Moynihan and Sir Robert Jones.

Dr. **Edwin Lancelot Hopkins** died suddenly on Sept. 10 at the age of 53. He had been medical superintendent of the Derbyshire County Mental Hospital since June, 1931. E. L. Hopkins was a Somerset man, lived for some time in Southern Ireland, and studied medicine at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1916, after which he at once joined the R.A.M.C. and saw service first with the 39th Field Ambulance, and later with the 6th Battalion South Lancashire Regiment in Mesopotamia, being awarded the M.C. for conspicuous gallantry and devotion to duty while attending the wounded under fire. Upon the termination of his military service he secured an appointment in the Ministry of Pensions and took the D.P.H. in 1921, after which he joined the L.C.C. Mental Hospitals Service, and was A.M.O. at Bexley and Hanwell Hospitals, and deputy medical superintendent at the Ewell and West Park Hospitals at the time of his appointment to the Derbyshire County Mental Hospital at Mickleover. He was a man of charming personality, and displayed a kindly sympathy which endeared him to his patients and to those with whom he came in contact in his various outside activities. During his term of office at Mickleover he added much to the amenities of the patients, improving their living conditions and methods of treatment, and creating a fuller sense of security and freedom in the outlook of the mental sufferer. He inaugurated psychiatric clinics at Derby and Chesterfield and helped many neurotic subjects by his calm, kind, and tolerant attitude. He avoided hasty decisions and proved himself a man of sound judgment.

On Sept. 16 there passed away Judge **Digby Cotes-Preedy**, one of the few medical men who have forsaken medicine and thereafter attained distinction at the Bar. The outstanding instance in our time is the late Lord Finlay. He was born in 1875, and after taking his degree at Cambridge, from Emmanuel College, he studied at St. George's Hospital; but he always had one eye on the law, and this delayed his qualifying as L.S.A., about which he appeared to be in no great hurry. He held a house appointment at his own hospital, however, and was "called" not long after. Always a man characterized more by knowledge of the world than by aptitude for academic distinction, he applied himself to his second profession with great energy. He became law reporter for the daily press (actually, for the *Daily Mail*, if memory serves) and attended the Courts most assiduously. This, together with his natural shrewdness and native wit, with which he was well endowed, presently led him to adopt the Divorce Division as his province, and there he soon obtained a very considerable practice as a junior. In 1925 he took silk, and continued to enjoy even greater success, becoming a Bencher of the Inner Temple in 1932. He was promoted to a County Court Judgeship in 1936, but had to resign owing to ill-health in 1941. He had been a member of the Coroners Committee in 1935 and served on two select committees during the war of 1914-18. He was also Chancellor of the Diocese of Worcester. Cotes-Preedy was an interesting and amusing raconteur; and the County Court Bench was exactly his right *milieu*. He married in 1908 Margaret, younger daughter of the late Mr. S. Bradley of Blakedown, and had one son. His father was the late Rev. D. H. Cotes-Preedy, minor canon of Worcester Cathedral.

The Services

The M.C. has been awarded to Capts. A. A. Byrne, C. R. Tilly, E. Townsend, and J. Watt, R.A.M.C., and to Capt. R. B. Sule, I.M.S., for gallant and distinguished services in the Middle East.

Capts. J. H. Annan, A. C. D. Parsons, and I. McD. G. Stewart, R.A.M.C., have been mentioned in dispatches in recognition of gallant and distinguished services in the Middle East.

CASUALTIES IN THE MEDICAL SERVICES

Temp. Major **John MacMillan**, R.A.M.C., died on active service in July. He was born on May 18, 1912, and was educated at Aberdeen Grammar School and at the University of Aberdeen, where he graduated M.B., Ch.B. in 1936. He held house posts at Walsall and Kettering hospitals and was in general practice for eighteen months before being appointed A.R.P. assistant medical officer for Southgate. He entered the R.A.M.C.(T.A.) in Aug., 1937, was promoted capt. a year later, and was called up immediately war broke out. He was posted to the Middle East early in 1940 and served in Palestine, Iraq, and Syria. In April, 1941, he was mentioned in dispatches for distinguished services. He leaves a widow. He was a member of the B.M.A.

Temp. Major **Thomas Gerald Martin**, R.A.M.C., is included as "died" in an Army Council Casualty List published on Sept. 25. He was born on Aug. 24, 1906, and graduated M.B., B.Ch., B.A.O. (with honours) at the National University of Ireland, and gained the Blayney prize and the Pearson gold medal in 1931. He also took the D.P.H.Lond. He had held house posts at Sheffield Royal Hospital, and in 1937 settled in practice in London. He entered the R.A.M.C. in Nov., 1939, and was promoted capt. a year later.

An India Office Casualty List announces the death of Lieut.-Col. **Bishambhar Sahai**, I.M.S. He was born on Oct. 17, 1888, and was educated at the University of Calcutta and at Charing Cross Hospital, qualifying M.R.C.S., L.R.C.P. in 1916. He immediately took a temp. commission in the I.M.S., and in 1920 received a permanent commission, being ranked as capt. from 1919. He became lieut.-col. in 1931. He served in France and Flanders during the war of 1914-18, receiving the medals.

Prisoners of War.—Major J. A. G. Carmichael, R.A.M.C., War Subs. Capt. H. D. Fleming, R.A.M.C., War Subs. Capt. C. D. Holdstock, R.A.M.C., Capt. W. O. James, R.A.M.C., War Subs. Capt. J. C. Mustardé, R.A.M.C., Capt. P. Turner, R.A.M.C.

Missing.—Capt. C. V. Lewis, R.A.M.C.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the seasonal rise in the incidence of infectious diseases which is expected in early autumn appears to have begun. A rise, in some cases substantial, occurred in the number of notifications of every disease excepting typhoid fever, which fell by 17 cases.

There was a small rise, 23 cases, in the incidence of diphtheria, the notifications of which are now 36% larger than four weeks ago. No marked contrasts exist between the area totals of last week and this week.

The notifications of scarlet fever have also shown a continuous rise during the past four weeks and are 264 more than last week. The rise was fairly general throughout the country, the record increase being 75 in Yorks West Riding.

The notifications of whooping-cough were 76 more than last week. The trend of the incidence within the counties fluctuates from week to week, the largest variations during the week reviewed being a rise of 26 in Yorks West Riding and a fall of 23 in Middlesex.

The incidence of measles, which had been continuously declining for eleven weeks, during which the weekly totals fell from 7,581 to 2,644, rose by 354 cases. The additional cases came from the North Country. The increases were Yorks West Riding 116, Lancashire 60, Cheshire 58, Cumberland 49, Northumberland 42. In the southern part of the country the incidence continued to decline, except in London and Middlesex, where 38 and 30 cases more than last week were recorded.

Although the notifications of dysentery rose by 38 there was no new outbreak of any size. Small numbers of cases occurred more frequently than usual and ten more counties reported cases than during the preceding week. The outbreak in Oxfordshire fell from 41 to 14 (Oxford C.B. 5, Bullingdon R.D. 9), while in Norfolk there was a rise from 16 to 36 (Norwich C.B. 13, Swaffham R.D. 18, St. Faiths and Aylesham R.D. 5). The largest of the other county totals were Lancashire 20, London 16, Surrey 10.

In *Scotland* there was little change during the week. The only noteworthy variation was an increase of 33 cases in the notifications of scarlet fever. The chief centres of infection of this disease were Glasgow 76, and Edinburgh 68.

In *Eire* there was a relatively large increase, from 15 to 31 cases, in the incidence of poliomyelitis. The cases were widely distributed, and involved fifteen districts. The largest centre of infection was in the county of Louth (Drogheda U.D. 5 and Louth R.D. 5); 5 cases were also reported in Dublin.

Quarterly Return for Eire

The report of the Registrar-General for the second quarter of 1942 shows that the general position was better than in the corresponding quarter of 1941.

The birth rate was 24.5 per 1,000, being 4.5 above the rate for the June quarter of 1941 and the largest recorded in any quarter during recent years. The infant mortality was 62 per 1,000 registered births. This rate was 9 below that of the second quarter of 1941 and 5 below the average of the June quarter of 1937-41.

The general death rate was 14.6 per 1,000. Although this was 0.5 below the rate for the corresponding quarter of 1941, it was slightly higher, 0.2, than the average for 1937-41. Deaths from puerperal causes were 2.2 per 1,000 births, an increase of 0.2 on the value for the second quarter of 1941 but considerably lower than the rates for the corresponding quarters of 1937-40, when the rate varied from 2.3 to 4.3. The death rate from tuberculosis was 1.7 per 1,000 compared with 1.3 in the previous year, and was the largest rate recorded in a June quarter during recent years. The increase was mainly due to pulmonary tuberculosis with 1,011 deaths compared with 738 in the second quarter of 1941.

Returns for the Week Ending September 26

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,963, whooping-cough 938, diphtheria 807, measles 3,356, acute pneumonia 459, cerebrospinal fever 70, acute poliomyelitis 32, dysentery 237, paratyphoid 13, typhoid 9.

Helen Wyandt and her colleagues (*Arch. intern. Med.*, 1941, **68**, 1043) report 86 new cases of elliptic erythrocytes in three large families of German extraction. In this series elliptic red cells were found in one member of each of two pairs of twins, in the other member of which the cells were round. In one family both the mother and the father had large numbers of elliptic red cells. The authors state that their investigation lends support to the opinion that the anomaly has no definite relation to disease.

No. 37

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 19.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	72	4	19	3	3	118	6	23	3	11
Deaths		—	2				1	—		
Diphtheria	878	35	206	65	22	917	30	254	13	30
Deaths	16	1	2	4	—	22	—	5	1	1
Dysentery	184	16	58		—	94	9	67		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute . ..	1	—	—		—	1	—	—		—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						49	4	7	8	3
Deaths . ..						1	1	—	—	1
Erysipelas ..		—	49	12	—		—	48	4	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				116						
Deaths	69	10	17	27	9	25	3	16	16	8
Measles	2,998	259	127	13	17	808	25	38	35	1
Deaths .. .	4	—	3	—	—	2	—	—	1	—
Ophthalmia neonatorum	93	3	29	1	—	83	9	20	2	—
Deaths										
Paratyphoid fever ..	8	—	1	—		141	8	15	1	
Deaths	—	—	—	—	—	1	—	—	—	
Pneumonia, influenzal*	401	18	4		2	466	16	3		5
Deaths (from influenza) .	10	2	1	—	1	8	8	—	—	3
Pneumonia, primary ..			127	9				132	11	
Deaths .. .				8	7				9	—
Polio-encephalitis, acute	1	—				4	—			
Deaths										
Poliomyelitis, acute ..	29	1	1	31	1	36	4	2	1	1
Deaths								—		
Puerperal fever ..	—	—	19	—	1	1	1	19	4	—
Deaths		—					—			
Puerperal pyrexia ..	136	7	9		6	150	13	11		3
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	1,882	115	351	70	34	1,005	39	185	51	23
Deaths	—	—	—	—	—	3	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	13	2	3	9	6					
Deaths	—	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths .. .			—	—	—			—	—	—
Whooping-cough ..	1,150	105	55	49	29	2,710	246	153	35	16
Deaths .. .	9	—	—	2	—	15	3	6	3	—
Deaths (0–1 year)	332	36	56	48	23	256	15	55	52	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths) .. .	3,422	461	503	188	111	3,436	419	535	173	113
Annual death rate (per 1,000 persons living)			11·3	12·6	†			11·6	11·5	†
Live births . .	5,861	675	833	443	253	4,910	423	828	452	235
Annual rate per 1,000 persons living ..			17·2	29·6	†			16·8	30·0	†
Stillbirths . .	206	21	28			185	16	35		
Rate per 1,000 total births (including stillborn)			33					41		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

At a meeting of the Royal Sanitary Institute to be held at 90, Buckingham Palace Road, S.W., on Wednesday, Oct. 21, at 2.30 p.m., a discussion on "Scabies" will be opened by Dr. Henry MacCormac, Dr. Thomas Standring, and Major C. G. Johnson, R.A.M.C.

A meeting of the Therapy Section of the Faculty of Radiologists will be held at 32, Welbeck Street, W., on Saturday, Oct. 17, at 10.30 a.m., when there will be a discussion on beam direction in radiotherapy.

A Christie pension of £89 per annum will in November be awarded to a necessitous medical man fully 55 years of age, who has been registered for 5 years, and who is in need of help. Forms of application may be had from the Secretary's Office, Epsom College, Surrey, and must be completed and returned by Oct. 26.

The address of the Drugs Branch, Home Office, is now Cornwall House, Stamford Street, London, S.E.1. Telephone number Waterloo 8070.

After a trial lasting eight days at the Central Criminal Court Dr. Francis Percival de Caux of Green Street, W., and with a country house at Marden, Kent, was found guilty on eight of nine counts charging him with performing illegal operations to procure the miscarriage of women. The jury were at first unable to agree upon a verdict, but after a second retirement they recorded their verdict and also found Dr. de Caux guilty of conspiring with another woman to attempt to procure her miscarriage. Supt. Smeed of the Kent County Police said that 75 women had been seen by the police in the course of their inquiries, and 35 admitted they had undergone an operation; 47 women had been treated and the fees paid amounted to £2,698. Mr. Justice Hallett, passing sentence of five years' penal servitude, and two years' imprisonment on the second charge, the two sentences to run concurrently, said, "You must have known all through the penalties that would follow such a practice, and you did your best to cover up your activities."

The Medical Research Council has received a bequest of the residuary estate of the late Mrs. Emily Inston of Sandbach, Cheshire, to be applied to the furtherance of research work on arthritis.

Dr. H. D. Clementi-Smith and Dr. M. H. Watney have been elected wardens of the Mercers' Company.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Post-mortem Lividity

Dr W. W. MACKINLAY writes: In my textbook (Glaister) the time of earliest appearance of post-mortem lividity is stated to be 8 to 14 hours and in exceptional cases 5 hours. Recently this phenomenon was observed when I examined a body at 1 p.m. where death undoubtedly took place after 10 a.m.; the time elapsing being thus certainly less than 3 hours. I should be glad to have the comments of those of extensive medico-legal experience. I may say that the case was a cardiac one—probably aortic. This, of course, may have had considerable influence on time of appearance.

Itching of Limbs

Dr. F. M. PURCELL writes in reply to Dr. W. A. Milligan (Aug. 5, p. 208): During recent months I have been treating a bed-ridden man, aged 72, suffering from chronic heart disease and paresis of the limbs. He has been under medical treatment for many years, and during the last year or so has suffered from severe generalized pruritus. Already he had tried various antipruritics without relief; I fared no better than my predecessors until July, when, in curiosity, I prescribed 1,000 B units of oestrone twice daily by mouth. Prompt relief followed, and has been maintained on two three-weeks courses. The itching had been persistent and intractable, the skin scratched and pigmented; the poor old wife was in great distress as the husband's sleep was so upset. He has not complained of the itching again since July. Last month I prescribed 1,000 B units for another elderly man, who was also complaining of chronic generalized itching. Each week he has admitted improvement under this treatment, not complete relief, but considerable: he is not an enthusiastic patient. Neither of these patients was diabetic.

LETTERS, NOTES, ETC.

Fly Pest

Dr. J. B. WRATHALL ROWE (Harrow) writes: I have noticed a considerable increase in the numbers of the common house and other flies during the past summer compared with previous years, and attribute this to the greater use of garbage bins which are now dotted about the streets for the reception of pig food. While realizing the necessity for collecting pig food in this way, I feel that attention should be drawn to the need for destroying as many flies as possible next spring and summer if we are not to be faced with outbreaks of fly-borne diseases such as summer diarrhoea. Steps should be taken now to begin the manufacture of fly-traps and other means of killing them. The ordinary fly "swatter" is practically unobtainable and in any case is an inefficient and messy instrument. I have been experimenting lately with a de Vilbiss atomizer, and find that if ordinary commercial paraffin is used in it and the spray directed on to the fly the latter rolls over and dies with astonishing rapidity. The corpses can then be collected and burnt. I believe the cause of death is asphyxia resulting from blockage of the air ducts by the paraffin. Incidentally, ordinary paraffin is very much cheaper than the proprietary insecticides on the market—about 4d. a quart compared with 2s. 6d. a pint—and is just as efficacious. It does not stain and evaporates in time from walls and ceilings. It should not, of course, be used in proximity to food or open flames.

Bureaucracy in Rubber Gloves

Mr. A. J. BLAXLAND (Norwich) writes: On July 22 I applied to the Regional Office of the Ministry of Health for a supplementary ration of rubber operating gloves. I stated that my practice was entirely a surgical one and gave an estimate of my average yearly consumption. After an interval of six weeks I received a letter asking what my basic ration had been. I replied, by return of post, that it had been the usual three pairs of gloves, and I requested that I might be allowed a supplementary ration as soon as possible, as my reserve stock was nearly exhausted. I received a certificate for extra gloves this morning—i.e., nearly ten weeks after my application. I grant that this may be considered a somewhat trivial affair, but it seems to me to be typical of the dilatory methods that one may expect of the bureaucratic control in a Government Department. It would not be tolerated in any ordinary business concern; and it is one illustrative portent to our profession of what to expect in a State Medical Service.

Bleeding Tooth Sockets

Dr. S. JUNG (Heworth, York) writes with reference to Dr. J. T. Maclachlan's note (Sept. 19, p. 356): May I draw attention to a simple method to stop bleeding tooth sockets. Once when I failed to stop the persistent welling-up of blood into the mouth by use of silver nitrate, and attempts to plug the socket of the bleeding tooth with small strips of gauze also proved unsuccessful, I inserted a cork of a small bottle into the socket. I had sterilized the cork by boiling it in water for ten minutes, and I removed it after 24 hours. Since then I have used this method 3 or 4 times, always with success.

"The Pleuro-subpleural Zone"

Dr. J. SKLADAL writes from 26, Trinity Street, Cambridge: I was rather surprised by the review of my monograph in the *British Medical Journal* of Sept. 5, made under the heading "An Auscultatory Method." Regretting very much indeed that the reviewer did not attend the meetings of the Royal Society of Medicine and of the Physiological Society in November last year, at which both occasions I demonstrated the method of sudden expiration and one patient with cortico-pleural lesions, as also the mechanism of the reduplicate sound on the physical model, I would stress my readiness and, as I think, my duty, too, to endeavour to convince everyone who doubts about the findings and conclusions given in my monograph.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 17 1942

BLOOD TRANSFUSION IN THE U.S.S.R.

BY

Prof. A. BAGDASAROV

Director of the Central Blood Transfusion Institute, Moscow

Blood transfusion cannot to-day be regarded merely as a substitute method of medical treatment. It should really be designated by the term "haemotherapy"—i.e., treatment with blood—as, in addition to the infusion of fresh blood, elements which stimulate and alter its reactions, mainly in a beneficial direction, are likewise introduced into the organism. This is usually followed by restoration of the functions of various diseased organs.

Blood is distinguished from all the tissues and organs by virtue of its extraordinarily wide range of functions. Besides its own life, it reflects in itself that of all the organs and systems. Not only does the blood distribute the oxygen it obtains from the lungs but it also serves as a universal medium in metabolism and carries within itself the products of nutrition and disassimilation. The chemical stimulators of vital processes, fragments of hormones, as well as catalysers—ferments and protective substances—are all concentrated in the blood. These factors are no doubt of fundamental significance in rendering blood transfusion one of the most effective measures known in medical practice.

Its Wide Application

The wide application of blood transfusion in the U.S.S.R. was preceded by research work by a number of Soviet scientists (among them, Academician A. A. Bogomoletz and Academician S. I. Spasokukotsky), who sought to establish the mechanical basis of the effect of blood transfusion and to determine indications and contraindications in applying this means of treatment.

The application of blood transfusion has greatly developed since 1926, when a special institution was founded in Moscow—the Central Institute for Blood Transfusion (I.P.K.)—under the auspices of the People's Commissariat for Health of the U.S.S.R. (Narkomzdrav); and parallel with this development there proceeded research work which resulted in the scientific establishment of several points touching upon this method. Blood transfusion is to-day performed in all medical institutions throughout the U.S.S.R., and the number of such transfusions has grown rapidly year by year. Whereas in 1935 the officially registered cases of blood transfusion numbered 22,000, by 1940 this figure had mounted to 200,000, excluding transfusions given on the Finnish front in that year.

With us, blood transfusion always had a definite ultimate aim—the utmost possible use of this prepotent medical treatment in wartime. And this urged us to solve the problem of organization, to train all physicians in the giving of blood transfusions, and to set up special institutes and stations—future blood-purveying depots—in all regional centres and large towns. This work has made great progress during recent years. Whereas in 1932 there were only about 80 such institutions in the U.S.S.R., by 1941 their number had reached 1,500; and, of course, there has been a corresponding growth in the number of donors. Soviet scientists, too, demonstrated their theoretical and practical achievements in the sphere of blood transfusion at the 1935 and 1937 International Congresses on Blood Transfusion.

Blood Conservation

At the outset blood transfusion in general practice was resorted to mainly as an emergency measure. There then arose the task of finding preservative agents which would allow blood to be conserved and retain its biological qualities for considerable periods of time. The solution of this problem facilitated the urgent transfusion of blood in times of peace, and particularly so in wartime. Nowadays we consider it an ordinary matter to ship conserved blood by aeroplane over distances of hundreds and even thousands of miles into the most distant corners of the tundra and taiga, and into the steppes and deserts of the south-east regions of the Soviet Union. No small number of human lives have already been saved, thanks to the speedy transportation of conserved blood by aeroplane to the front lines from far inland. And in this connexion the utility of various isothermic containers for shipping blood over long distances is worthy of special attention.

Hundreds of thousands of transfusions of conserved donors' blood have been made in the U.S.S.R., and this source ranks first among all sources of blood for transfusion. Only a few years ago conserved blood could be stored for not longer than 15 days, and under conditions of transportation, when the blood was subject to being shaken and jolted, this was reduced to 10 days. In recent years, however, great success has been attained in lengthening the period over which conserved blood can be kept: the addition of a small quantity of glucose to the sodium citrate solution substantially improves the storage properties. Blood conserved with a glucose-citrate solution can be successfully kept in a condition suitable for transfusion for 25 days, and for 20 days when transported. Experience in the war has shown transport by aeroplane to be the main, and the most preferable, method of shipping conserved blood to the front, even from distances of thousands of miles.

Soviet physicians have paid particular attention to designing appliances for taking blood and for the transfusion, storage, and shipping of conserved blood. Practice has shown that standard rectangular jars which fit into an isothermic container best answer the purpose of uniting in one vessel both the taking and the transfusion of blood; they are also very convenient for transport. These jars, which are produced on a mass scale, are placed inside the insulated containers, in which the blood keeps irrespective of external heat or cold. The ampoule type of appliance for blood transfusion is also eminently suited to the purpose, being easily portable and simple in use.

Utilization of the blood of "universal" donors acquires great significance under wartime conditions. Soviet scientists have accomplished a great deal of work in solving this problem. Without any complications whatever, massive doses of group O (IV) blood are now transfused to recipients of other groups who have lost a great deal of blood. And this is done actually at the front. Here the blood of universal donors is of particular value to active service medical stations, for there is often no opportunity for blood grouping.

Another matter of much importance for ensuring supplies of conserved blood at the front, and for its transfusion, is the efficient organization of stores of blood and their shipment. Our main supply base for conserved blood is the network of blood transfusion institutes and stations of the Narkomzdrav which have been established all over the country. When war broke out, many of these institutes and stations swiftly and efficiently readapted their work and became main bases for the mass purveyance of conserved donors' blood for dispatch to the front and to hospitals in the rear. During twelve months of war literally hundreds of tons of blood have been thus applied to wounded men in all stages of evacuation, and with truly tremendous success.

Narkomzdrav regularly sends out groups of experienced specialists—scientific collaborators from the institutes and stations—who give practical assistance in ensuring the adequate supply of conserved blood at the front. Thus, thanks to timely blood transfusion, we can indeed say that hundreds of thousands of human lives have been saved.

The Plasma Method

The most diverse methods of haemotherapy have been extensively used—the drip method of blood transfusion, the transfusion of plasma and serum, immunotransfusion, the injection of small doses of blood of incompatible groups, and heterohaemotherapy. Among these the plasma method has a particularly wide scope in present wartime conditions. It is known that blood plasma is the main substratum of metabolism; and its most striking feature is that, despite the constant inflow of matter and energy, its composition remains unaltered. Soviet scientists are in complete accord with the conclusions of British and American scientists that, as a medium impregnated with plastic substances and containing a large quantity of ferments exerting a haemostatic action on the organism, as well as a medium in which viscosity and osmotic pressure are almost at the same level as in whole blood, plasma beyond a doubt possesses unqualified advantages as a blood substitute.

With the object of establishing the most favourable conditions for preserving plasma over long periods we have had recourse to freezing it. As did M. Struma and S. M'Graw in their investigations, the Central Institute for Blood Transfusion has found that when plasma is frozen and afterwards quickly thawed at a temperature of 37° C.—immediately preceding transfusion or a short while before—it preserves intact such labile elements as prothrombin, fibrinogen, and complement. Recently we have introduced into practice desiccated plasma and serum preparations. Under front-line conditions plasma finds wide scope as a highly active haemostatic agent in cases of protracted loss of blood in which the transfusion of massive doses of blood is contraindicated. As a substitute for blood, plasma is employed in cases of shock accompanied by a moderate blood loss, when the organism still retains an adequate reserve of erythrocytes. In cases of burns we have found plasma of great service. When introduced in large volume, following heavy loss of blood, it usually has a most striking detoxicating effect. We employ various balanced physiological solutions for preserving the erythrocyte mass remaining after the plasma has been separated. We have recently been using the following solution: $MgSO_4$, 0.04 gr.; KCl, 0.2 gr.; NaCl, 8.5 gr. per litre of double-distilled water. It has been termed the modified I.P.K. fluid.[*] This fluid is mixed with the erythrocyte mass in different ratios. After the plasma has been separated from them and replaced with the modified I.P.K. fluid, the conserved blood erythrocytes are preserved in an external temperature of 4° to 6° C. Under these conditions they show no marked change up to 12 days, including the day the blood was taken from the donor. The transfusion of conserved blood erythrocytes containing this plasma substitute was found most effective in those cases of anaemia in which the aim of medical treatment is preferably to obtain a substitutive effect—that is, cases of much loss of blood, regenerative forms of post-haemorrhagic anaemia, etc. Naturally, the erythrocyte mass method is of service mainly in hospitals situated not far from the institute or station preparing these erythrocytes.

Plasma Substitutes.—The wide application of blood transfusion in the U.S.S.R. and the generous manner in which donors give blood for the needs of the Army and civil medical institutions have not relegated the question of blood substitutes, or, rather, plasma substitutes, that can be employed in all cases in which the main object is that of augmenting the volume of circulating blood. From our point of view, any physiological solution containing only salt ingredients, without colloids to maintain the viscosity and osmotic pressure of the solution on a level approaching that of plasma, is useless as such a substitute. Balanced solutions containing a small volume of blood or plasma have recently been finding a practical use as isotonic fluids with a natural colloid. Other solutions also serving this end are those in which the colloidal properties are ensured by adding casein that has been specially processed, with the object of eliminating the antigenic properties inherent in this preparation. The complicated circumstances existing in the front line sometimes preclude the possibility of utilizing conserved blood within its period of serviceability, and these are the conditions under which plasma, as well as synthesized substitutes for the latter, is of chief use. From a fairly wide experience we may draw the conclusion that in cases of acute loss of blood and shock, when infusion of plasma substitutes is carried out in conjunction with haemotherapy, a favourable influence on the condition of the patients' haemodynamics is usually obtained by the use of small doses of blood or plasma

Side by side with colloidal substitutes for plasma we have recently introduced on a wide scale so-called physiological balanced solutions containing alcohol and glucose. These solutions, which mainly reinforce the vital processes, are administered in cases in which the wounded patient suffers from disturbed haemodynamics not associated with heavy blood loss, and also in septic cases.

It is no matter for surprise that since the outbreak of war a tremendous number of Soviet patriots have streamed into the numerous blood transfusion institutes and stations. From early morning till late at night these institutions seethe with activity. New donors undergo medical examination, their blood groups are checked, blood is taken and conserved, and jars and ampoules are packed for urgent dispatch to the front And these donors are not only the donors—so to say, "cadre" donors—who used to give blood for transfusion before the war. They largely consist of the huge number of those who declared their desire to give blood for transfusion to the wounded when necessity arose. This great army is held in reserve, and at the very first call they flock to the transfusion centres to give their blood. And this reserve army has been augmented to-day by a great number of people in all walks of life. Even the briefest of informative talks on the important part which blood transfusion and the donor play in the Soviet army medical services suffices to bring to the institutes and stations groups of workers, students, militiamen, housewives, and the wives of those on active service, expressly to join the ranks of donors.

COMMENTS ON AN EPIDEMIC OF HEPATITIS

BY

PHILIP EVANS, M.D., M.Sc., M.R.C.P.

Assistant Physician for Children, King's College Hospital

The hospital in which the epidemic occurred was formed in Sept., 1939, and has catered for up to 120 children at a time, as well as for a variable number of adults. The children have been nursed mainly by children's nurses in training, and these young women have been chiefly affected.

History of the Outbreak

In March, 1940, a nurse became jaundiced (Table I), and a second case occurred 35 days later. Shortly afterwards 2 nurses were transferred from another hospital, where the infection was rife, and they soon developed the illness. In August another nurse was affected, and in October another. Thus in 7 months 4 nurses probably acquired the disease in the hospital, and this epidemic period was followed by an outbreak in one ward affecting in a month 5 children and 5 nurses who worked in that ward, while 2 nurses and a ward-maid were probably infected in the nurses' sick-rooms. The outbreak later declined, but during the final 17 months' observation a further 8 children and 30 nurses became jaundiced. Ten children who had acquired the disease elsewhere were also admitted during this time.

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[*] I.P.K.—initial letters of the Russian for "Blood Transfusion Institute."

Table I shows the ramifications of the epidemic. From its study certain features may be picked out for comment.

TABLE I.—*Cases of Infectious Jaundice in Hospital between Oct., 1939, and June, 1942*

No.	Nurse or Child	Where Probably Infected	Where at Onset	Where Nursed when Ill	Date of Onset	Date of Jaundice	Remarks
1	Nurse	?	C2	N.S.R.	21/3/40	25/3/40	
2	,,	C2	C1	N.S.R.	25/4/40	29/4/40	
3	,,	Away	C4	N.S.R.	6/5/40		
4	,,	Away	C1	N.S.R.	16/5/40		
5	,,	?	C3	N.S.R.	19/8/40	19/9/40	
6	,,	C3	C3	N.S.R.	22/10/40	24/10/40	
7	Child	C4	C4	C4	18/12/40	27/12/40	
8	,,	C4	C4	C4	20/12/40	22/12/40	
9	Nurse	C4	C4	N.S.R.	28/12/40	2/1/41	
10	,,	C4	C3	Away	29/12/40	29/12/40	
11	,,	C4	C4	N.S.R.	30/12/40	8/1/41	
12	Child	C4	C4	C4	7/1/41	12/1/41	
13	Nurse	C4	C4	N.S.R.	8/1/41	8/1/41	
14	Child	C4	C4	C4	8/1/41	12/1/41	
15	Ward maid	N.S.R.	C3	Away	9/1/41	9/1/41	
16	Nurse	N.S.R.	Away	Away	11/1/41		
17	,,	C4	Away	Away	11/1/41		
18	,,	N.S.R.	Away	Away	12/1/41		
19	Child	C4	C4	C4	16/1/41	20/1/41	
20	Nurse	N.S.R. or M.	Away	Away	20/1/41		
21	,,	? M.	Away	Away	24/1/41	30/1/41	
22	Child	Away	Away	C4	10/1/41		Admitted 24/1/41
23	Nurse	C4	C1	Away	2/2/41		
24	,,	C3	C5	N.S.R.	17/3/41	25/3/41	
25	,,	C4	C4	N.S.R.	26/3/41	2/4/41	
26	Child	C5	C5	C5	26/4/41	2/5/41	
27	,,	C5	C5	C5	1/5/41	6/5/41	
28	Nurse	C5	C5	Away	3/5/41	4/5/41	
29	Child	C5	C5	C5	4/5/41	5/5/41	
30	,,	C5	C5	C5	6/5/41	6/5/41	
31	Nurse	C3	Away	Away	26/5/41	2/6/41	
32	,,	C3	C4	Away	30/5/41	30/5/41	
33	,,	C3	C4, C1	N.S.R.	4/6/41	7/6/41	
34	,,	?	C3	N.S.R.	8/6/41	13/6/41	
35	,,	C3	C3	N.S.R.	10/6/41	13/6/41	
36	,,	C3	C3	C3	14/6/41	14/6/41	
37	,,	C3	C3	N.S.R.	17/6/41	17/6/41	
38	Sister	N.S.R.	Away	Away	7/7/41		
39	Child	Away	Away	C4	20/7/41	21/7/41	Admitted 24/7/41
40	M'seuse	?	?	N.S.R.	23/7/41	28/7/41	
41	Nurse	N.S.R., C4, or A1	A1	N.S.R.	28/7/41		N.S.R. 8–28/5/41 C4 3/6–3/7/41 A1 4–29/7/41
42	,,	?	C4	Away	2/8/41	5/8/41	
43	,,	C4	Away	Away	?11/8/41		
44	Child	Away	Away	C3	21/8/41	21/8/41	Admitted 27/8/41
45	,,	Away	Away	C2	25/8/41	26/8/41	Admitted 27/8/41
46	,,	C4	C4	C4	1/9/41	4/9/41	
47	,,	? Away	C4	C4	7/9/41	12/9/41	Admitted 6/8/41
48	Nurse	C4	C2	N.S.R.	11/9/41	12/9/41	
49	Child	Away	Away	C3	?		Admitted 16/9/41
50	,,	Away	Away	C2	?		Admitted 16/9/41
51	Nurse	N.S.R.	C3	N.S.R.	18/9/41		Nursed Case 41
52	Child	C4	C4	C4	23/9/41	30/9/41	
53	Nurse	C3	C3	N.S.R.	26/9/41	29/9/41	
54	Child	Away	C4	C4	29/10/41	29/10/41	
55	Nurse	C4	N.S.R.	Away	14/12/41	19/12/41	
56	,,	C3	C3	N.S.R.	15/12/41	20/12/41	
57	,,	N.S.R.	M.	N.S.R.	18/1/42	18/1/42	
58	,,	? C5 ? Away	C5	A6	? 8/3/42	13/3/42	
59	Child	Away	C2	C2	?	10/3/42	Admitted 24/2/42
60	Nurse	? C5	C5	A6	4/5/42	6/5/42	
61	Child	Away	C2	C2	?	28/3/42	Admitted 18/2/42
62	Nurse	C2	C2	A6	11/4/42	18/4/42	
63	,,	? A6 ? C4	C4	A6	4/5/42	6/5/42	C4 17/2–17/4/42. A6 6–15/2/42, and from 17/4/42
64	Child	C4	C4	C4	11/5/42	18/5/42	
65	Nurse	C4	Away	Away	4/6/42		

C1, C2, C3, C4, and C5 are children's wards. M. is the maternity ward. A1 and A6 are adult medical wards. N.S.R. means nurses' sick-rooms (attached to C3). "Away" means outside the hospital.

The endemic stage, in which single cases appeared at intervals of 1, 2, and 3 months, shows that infection was smouldering in the hospital for some time before conditions were ripe for an epidemic. It suggests, too, that the incubation period varies widely and may be longer than 3 months, that there are carriers, or that subclinical infection may occur.

Subclinical infection here means infection without jaundice, but not necessarily without symptoms. No proof of the existence of such infection was found, but several observations suggest that it does exist. No direct source of the outbreak in ward C4 was discovered, but a nurse in that ward had an attack of frequent vomiting, without pyrexia, diarrhoea, or jaundice, on Dec. 1 and 2. She was admitted to a nurses' sick-room (attached to C3 ward). Jaundice followed in patients in C4 from Dec. 22 onwards, and in the sick-room attendants from Jan. 9.

Late in 1941 another nurse was in C4 when a boy developed jaundice for one day (Oct. 29). The nurse had an attack of severe vomiting for which she was "warded" from Nov. 21 to 28; she was nursed by patient No. 56, who was not in contact with any known patient with jaundice but who developed the disease on Dec. 15.

Young children usually have mild attacks, often consisting only of a pale stool or two, faint jaundice, bile in the urine for a day or so, and a rise of temperature to 99°–100°. It is easy to imagine yet milder attacks in which jaundice is not noticeable. For instance, a boy aged 2 in ward C5 seemed out of sorts and lost his appetite for one day. He passed one pale stool, but had no jaundice of conjunctiva or urine, and the occurrence would have attracted little notice if 4 children and a nurse had not developed hepatitis in that ward during the preceding 11 days. No one who reads Newman's (1942) persuasive paper is likely to doubt the existence of abortive cases. Cullinan (1939) has described a patient seen by A. W. Franklin who had biliuria in the morning but not in the afternoon. Case 54 had only a trace of jaundice of the conjunctiva, and had biliuria for one day.

Incidence of Hepatitis

That age affects the development of hepatitis even in children is a clinical impression: children from 1 to 4 years old seem to have brief mild attacks with slight jaundice, and often negligible prodromata. Table II bears out the contention that young children are relatively insusceptible. Babies are almost immune, though instances have been recorded (Cockayne, 1912-13). It is notable, too, that junior nurses were more likely to acquire the infection than senior: many of the latter had already had attacks. The regulations which permit, and thus ensure, that girls training as sick children's nurses shall be younger than those doing general training are partly responsible for the prevalence of infectious fevers in children's hospitals.

TABLE II.—*Age of Children admitted to Hospital, and Number getting Jaundice, between April 25, 1940, and May 31, 1942*

Age in Years	No. of Admissions		No. with Jaundice	
0	243	921	0	2
1	181		1	
2	150		0	
3	158		0	
4	189		1	
5	152	980	2	11
6	133		1	
7	118		3	
8	93		1	
9	118		0	
10	98		1	
11	94		1	
12	76		2	
13	76		0	
14	22		0	

Studies of the *seasonal incidence* (cf. Wallgren, 1930) show infectious hepatitis to be chiefly a disease of autumn and winter, though there are many exceptions. In the present outbreak the epidemic wave developed in the winter and spring of 1940-1, but there was no second wave the following winter (Table III). The ventilation of the blacked-out wards at night

TABLE III.—*Quarterly Incidence of Cases of Jaundice developing in Hospital*

Year	Quarter	No. of Cases
1940	1st	1
	2nd	1
	3rd	1
	4th	6
1941	1st	13
	2nd	12
	3rd	10
	4th	2
1942	1st	2
	2nd	5

was better in the second than in the first winter, but this is probably irrelevant, for day and night nurses were affected in proportion to their numbers.

The Incubation Period

The incubation period has been variously estimated. Glover and Wilson (1931) and Glover (1939) considered that the abrupt character of the outbreak they studied suggested a short incubation period, probably of 3 to 4 days. The majority of recent authors favour a longer period, and the conclusions of Glover and Wilson have been criticized by Pickles (1939b). Booth (1928) put it at 20 to 40 days, Pickles (1939a) at 23 to 35 days in three outbreaks. Most calculations have been based on case-to-case intervals, and there are few records of single exposures. Booth (1928) records one which indicates an incubation period of 31 days. Newman (1942) had instances of 29, 30, and 31 days. In one of Bashford's (1934) adult patients the period was apparently only 8 to 10 days. Wallgren (1930) observed hepatitis 15, 21, 20 to 22, 22 to 25, 25 to 28, 23 to 29, 8 to 15, and 31 to 40 days after exposure. Pickles (1939b) has good examples of 27, 27, 28, 28, 29, 31, and 34 days.

A few observations were made in the present outbreak. Case 24 was "warded" on March 17 and became jaundiced 8 days later. Children in her ward developed the disease 40, 45, 48, and 50 days after the last contact with her, and another nurse in the ward developed hepatitis after 47 days. These are long periods, but no trace of an intermediate infection could be found, and to postulate one would merely substitute two unusually short periods for one unusually long one. Case 48 was exposed to infection 53 to 40 days before becoming ill, and not at any other time so far as was known. Case 57 was ill and was nursed by Case 56 (who developed hepatitis on Dec. 15) from Dec. 8 to 14, and developed jaundice on Jan. 18, an interval of 35 to 41 days. In Cases 2, 46, and 47 incubation took more than 34, 29, and 35 days respectively; in Case 53 less than 35 days; in Case 38 it was probably exactly 38 days.

It seems that infection usually takes about a month, but that longer or shorter periods are possible. The size of the infecting dose may well be important, as in enteric fever. There may also be differences between strains of the unidentified hepatotoxic agent; perhaps different routes of infection may also produce different incubation periods. Propert (1938) observed that jaundice developed 78 to 83 days after the injection of human serum which was probably contaminated with a virus causing hepatitis, and two contacts of the original patients developed jaundice two months later. This batch of serum produced cases elsewhere (MacNalty, 1938; Findlay, 1940). According to Findlay (1940), yellow fever vaccine, similarly contaminated, produced jaundice 2 to 3 months after injection.

Duration and Degree of Infectivity

The *duration of infectivity* is thought by Pickles (1939a, 1939b) to be short, chiefly because not all the susceptible members in a family epidemic develop jaundice in one batch after exposure, but instead become ill in succession at intervals of about a month. This curious sequence has been equally plausibly explained by Newman (1942), who postulates a phasic or intermittent susceptibility to the infection. Pickles has actually noted transmission 8 days before the development of symptoms, and on the fifth and seventh days of the disease. Bates (1936) suggested that infection could still be transmitted a month after jaundice appeared; but this is not a common experience, and other explanations of his observation are possible. The epidemic described here did not provide information about the limits of the infectious period, although it was clear that infection might be transmitted some time before jaundice showed—e.g., Case 24 infected 5 people on or before March 17, when she became ill, although she was not jaundiced until March 25.

The *degree of infectivity* is difficult to estimate, but a rough idea may be obtained from Table IV, in which the number of times a patient or a nurse developed an acute infectious fever in an apparently uninfected ward is compared with the number of times a secondary case followed the occurrence. It will be seen that in this computation (which does not include children admitted to hospital after jaundice had appeared or abortive cases) infectious jaundice occupies a middle position between the more and the less infectious fevers.

TABLE IV.—*Number of Times a Secondary Case followed the Development of an Infectious Disease in Four Similar Children's Wards*

Disease	No. of Times Infection introduced (A)	No. of Times a Secondary Case followed (B)	Index of Infectivity (B/A)
Chicken-pox ..	10	9	0·9
German measles ..	6	5	0·8
Mumps	5	3	0·6
Infectious jaundice ..	11	6	0 6
Whooping-cough ..	12	5	0·4
Scarlet fever ..	11	1	0·1

Pharyngitis without rash following scarlet fever and abortive hepatitis are not included.

Transmission of Infection

The mode of transmission of infection in this epidemic, as in most, appeared to be aerial, and perhaps also by contagion. The frequency with which nurses became infected by nursing patients is striking when compared with the rarity with which patients in bed infected other patients, and suggests the possibility of the acquisition of the virus from faeces or urine This is certainly not the usual route, for patients may infect one another by close proximity in out-patient waiting-rooms (Graham, 1938; Cullinan, 1939; Barber, 1937). A head master infected some pupils by merely walking through the rooms they were in (Newman, 1942); a rent collector visited infected houses and was himself stricken (Nicol, 1942). In one curious case (No. 38 in Table I) a sister spent a day in the next room to a nurse who had just developed jaundice, and came down with it herself 38 days later. There was no direct communication between the rooms, but the two doors opened side by side into a common corridor, and the two patients were nursed by the same staff. Apparently contact need not be very close, although it undoubtedly usually is. Wider spacing in a hospital waiting-room has been followed by the ending of an outbreak (Barber, 1937).

Usually a direct communication can be traced from case to case, while at times an abortive case seems to be the cause I doubt if healthy carriers played much (or any) part in this epidemic, although their existence has been suggested by Cockayne (1912-13) and Newman (1942).

Some Further Points

Relapse is uncommon, but has been recorded (Cockayne, 1912-13; Bates, 1936; Newman, 1942): I have seen it once in a man aged 53. *Second attacks* are rare, but are mentioned by Findlay, Dunlop, and Brown (1931) and Newman (1942) *Convalescence* is long. Many non-medical people do not think "the yellow jaundice" is catching, nor do they realize that it may make a patient feel ill and exhausted for weeks. It is often treated as an "ambulant illness," but it is in fact an important cause of loss of health: few nurses at this hospital were well enough to work in as short a time as a month. Blood sedimentation rates may remain elevated for several weeks (see Chart).

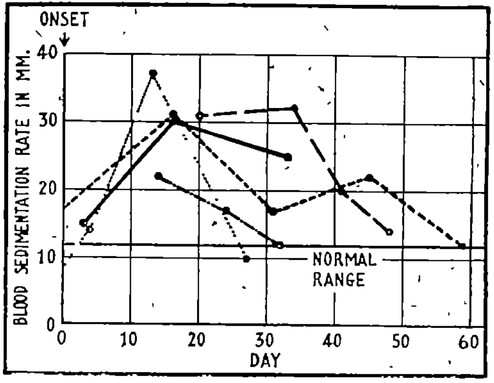

Chart showing the blood sedimentation rate (Payne's method) in 5 children who had mild attacks.

Finally, the role of a children's hospital as a *reservoir of infection* is obvious. There is a long incubation period, and many nurses happened to be on holiday when they became ill, and thus carried infection into parts of Berkshire, Hampshire, Kent, Lancashire, Middlesex, Oxfordshire, Staffordshire, and Sussex. There seems no reason why the thread of infection should die out of the hospital while it exists in its present form, for its population is continually being refreshed by the influx of susceptible children and young nurses. If this should not be enough, another outbreak could be started by the admission of a patient incubating the disease—a fairly common event.

Summary

Infectious hepatitis became endemic in a hospital early in 1940, and in the following winter an epidemic started. It gradually subsided in the next year and a half, but the frequent introduction of young nurses and children into the community is likely to maintain the infection and form a reservoir from which the disease can be distributed to other places.

Infection is usually transmitted from case to case, but abortive cases are probably important links in the chain of infection.

Young children and senior nurses are less susceptible than older children and junior nurses.

The incubation period is usually about a month, but shorter and considerably longer periods are possible. The duration of infectivity is uncertain. Hepatitis is easily transmitted, but is probably less infectious than varicella or rubella.

The disease often produces several weeks of invalidism. The blood sedimentation rate may remain elevated for some weeks after a mild attack.

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IN-PATIENT TREATMENT OF CIVILIAN NEUROTIC CASUALTIES

REPORT ON 100 CASES TREATED IN AN E.M.S. NEUROSIS CENTRE

BY

W. S. MACLAY, M.D., M.R.C.P., D.P.M.
Medical Superintendent, Mill Hill Emergency Hospital

AND

J. WHITBY, M.D., M.R.C.P., D.P.M.
Psychiatrist at Mill Hill Emergency Hospital

The Emergency Medical Service is responsible for the care of civilian casualties. As a result of enemy action, particularly after the severe air raids in the autumn of 1940, some of the neurotic cases continued for a prolonged period to be unfit for work, and it was decided that specialized investigation was required to determine whether their condition was in fact due to "war injury" and whether they could be benefited by in-patient treatment at a neurosis hospital. Cases of long standing were therefore seen by a psychiatrist, and those suitable were offered in-patient treatment.

This paper is based on a study of the first hundred patients who passed through the hospital between July, 1941, when the scheme came into operation, and January, 1942. The total number referred was very little more, and as this hospital serves a large area, including London, there would appear to have been but few neurotic casualties in the country at that time. The paper is not intended to be a statistical one, but to point to factors of interest in the aetiology of the illness, and to the results of treatment.

The material investigated consisted of 70 men (of whom 20 came from Services such as Fire, Police, or Merchant Navy, the remainder being civilians) and 30 women, none of whom were in these Services. Their average age was 45 years, which is significantly higher than the average age of the usual patients attending practitioners at this period, and indicates that the special stresses fell more heavily on the older age groups. All had been closely exposed to bombing, which constituted the precipitating factor and which was followed by incapacity for work. They may therefore be considered in chronological periods before and after this incident.

Before the Incident

Family history may be disregarded, as, although information concerning neurosis or psychosis in close relatives was inquired for, a positive history was rarely obtained. Significant physical illness occurred in 11 instances. Among these were physical disorders such as cerebral arteriosclerosis and Parkinsonism now masquerading as neurotic illnesses. Other physical disorders, although contributing to the total picture, did not affect the prognosis of the neurosis. Definite neurotic illness had occurred in 13 patients and psychosis in 3. These figures are high for the general population but low for neurosis cases in pre-war practice, and would indicate that many, but not all, of the illnesses arose in people who do not easily break down. The diagnosis of the previous illness was not necessarily the same as the present one, hysteria being the only condition that recurred relatively often.

Personality characteristics of a kind which are usually regarded as predisposing to illness, such as "timid," "nervous," "worrying," "irritable," or "obsessional," and which were sufficiently marked to be apparent, occurred in 24. They coloured the content and contributed to the total picture of the illness, but they were not correlated with the diagnosis, and bore no relation to the outcome of the illness. Although it may be argued that predisposition could have been found in 100% if enough trouble had been taken, the fact remains that by ordinary standards a large proportion of these patients had had a good previous personality. This is one reason why the results of treatment were good. These cases are not comparable to the compensation neuroses of peacetime or to the soldiers who are unable to adapt to Army training; rather should they be compared to soldiers of good personality who broke down after such exceptional stress as Dunkirk and who tended to make a quick recovery in hospital. That a large number had stable personalities is confirmed by the fact that 90% of the men had steady work records, unlike the work histories so often obtained among peacetime neurotics.

In the period immediately preceding the incident 30 cases had been subjected to prolonged stress, beyond that of the average civilian, by virtue of their special occupations, including those in the Fire, Police, and A.R.P. services or in the Merchant Navy. Of these, 19 had begun to show symptoms but had not been off work. Nevertheless in these cases the results of treatment as regards symptoms were no different from the others.

The Precipitating Incident

The comparison with the Dunkirk cases is apt in that our patients were not those who broke down through a bomb merely dropping somewhere in the neighbourhood. On the contrary, 86 as a result of bombing had endured severe mental stress, such as loss of husband, wife, or children, loss of home or business, or being buried for hours. The severity of the incident is borne out by the fact that 50 sustained physical injury also, excluding minor bruising. It is interesting to note that among soldiers in the last war neurotic illness rarely coexisted with physical injury. Presumably anxiety in a soldier is relieved by a wound which will remove him from the battle area; but this does not happen to the bombed civilian, and other factors become more important.

Another common finding in these patients was that the majority had previously heard bombs exploding in the vicinity without developing any more anxiety than is usual, but once they were actually blown up they tended to become afraid of a repetition of the experience. Feeling a bomb is quite different from hearing one.

After the Incident

It is well known that most of those who got acutely anxious, hysterical, or panic-stricken recovered in a short time—e.g., after a few hours in hospital—but in our group the average duration of incapacity before admission to hospital was 7 months. What, then, were the factors responsible for the persistence of symptoms?

In 39 cases a main factor appeared to be fear of fresh exposure to another severe experience. Many of the cases with previous neurotic breakdown occurred in this group, but it included others—e.g., a merchant sea-captain who had behaved in an exemplary fashion under attacks until actually sunk on one occasion, after which he could not bring himself to face the sea again. As one woman, with a previously good record put it, "It is too much to bear; no one could be expected to stand it." In some of these a hysterical symptom maintained the patient's self-respect, as he believed he had been physically injured and there was no need to acknowledge fear.

Domestic and financial factors were important in 42 and the main factor in 17. Thus in many cases the loss of loved ones, home, possessions, and a lifetime's savings which might be represented by the house and its contents, proved too much against which to struggle: and understandable reactive depression carried on into a chronic depressive illness, the effort to make a fresh start proving too great. Such cases occurred especially among the more elderly patients; usually the form of illness was depression, but sometimes conversion hysteria coexisted or was the main symptom, and protected the patient from being called upon to make such an effort. Thus an elderly farmer whose wife had been killed and whose house, which he had built with his own hands, had been destroyed, developed a hysterical paralysis of the arm, which had only been bruised. The paralysis persisted until he had been brought to the point of really determining to start again.

Pensions considerations were important in only 13 cases. The usual attitude among these patients was one of resentment against the world, and they felt they were entitled to some compensation for their sufferings or to have security in the future. Although exaggeration of their experiences was especially common, only one of them could be considered a conscious out-and-out malingerer. In some instances the desire for compensation appeared to be motivated by loss of possessions or loss of self-respect, and could be met only by a pension for a hysterical illness masquerading as a physical injury.

Numerous other psychological considerations were responsible for the persistence of the illness in different cases. Thus in one case anxiety lest he be called up for the Army helped to maintain a neurotic illness after the physical injuries had healed; in another it was fear that he might have to go on with an unwanted engagement; in another it was guilt over the death of a friend whom he had not relieved at his post of duty at the proper time. Often it was a pre-existing problem that the illness helped to solve.

In 24 cases physical factors were considered to be of importance, and in 11 the final diagnosis was one of physical illness. These patients were sent into hospital for investigation, report on how far the illness had been caused or aggravated by the incident, and assessment of the permanent disability. Examples would be cases of cerebral arteriosclerosis, aggravation of Parkinsonism, or nerve injury.

Such factors as have been described were rarely single. A debilitating physical illness might coexist with domestic stress and fear of air raids in a complicated causal chain in which any such factor could be analysed into a result of some and a cause of others, but all had to be considered in treatment. A study of the factors concerned showed once again the minor importance of the actual blast in persistence of the illness. The bad cases prognostically were not those which had been the worst-bombed, but those in which some other factor such as pensions considerations or early senility played a major part.

Hospital Treatment

As has been pointed out, the diagnosis was often mixed, and cases could be considered under more than one heading. Taking the most important symptoms as criteria, they were classified as: anxiety states 37, hysteria 25, depression 22, physical 11, schizophrenia 2, left before fully investigated 3. Of these cases, one-third had left hospital by the end of a month, one-half by two months, and two-thirds by three months. The best results were obtained in those able to recover quickly enough to leave hospital in a short time. In view of the fact that these patients had been ill for an average of 7 months before admission to hospital, the period of hospital treatment required was short. When the cases were considered in two groups—one consisting of those who had been ill less than 7 months, and another of an equal number of those who had been ill more than 7 months—the results of treatment were numerically identical. This would suggest either that the illness had a natural period of recovery of some such length or that the cases had been awaiting specialized treatment such as a hospital could give them and could not recover without it. The evidence would appear to show that the latter was true in many instances, and would indicate that in the absence of other factors chronicity itself does not militate against recovery.

An attempt was made to determine how far the onset of the illness was wholly due to the precipitating incident. In 57 cases it was considered to be wholly attributable, and in a further 18 to be due to the incident but with previous predisposing personality characteristics not amounting to neurotic illness. The others were regarded as cases of neurotic relapse or aggravation of pre-existing physical illness.

The methods of treatment adopted were those ordinarily used in psychiatric practice. Persuasion, explanation, re-education, removal of symptoms by suggestion, occupational and physical therapy, were all employed in suitable cases, but the important feature in this group of patients was an assessment of the factors responsible for the persistence of the illness and the removal of these wherever practicable. Psychiatric social workers were freely employed in all their three main functions—namely, to obtain reliable information not available to the doctor, to advise and give aid in dealing with current problems, and to help patients on discharge.

The immediate results of treatment were considered in relation to symptoms (Table I) and to estimated capacity for work (Table II). Under the first heading a case was classified as recovered if symptom-free on leaving hospital, irrespective of the possible effect of future stress. Under the second heading, "same work" is defined as work of the same socio-economic level as before the illness, though not of necessity the same occupation. "Light work" refers to an occupation of less stress for the patient, though not necessarily physically lighter. Occasionally, to minimize risk of relapse, patients returned to work in a different locality, the classification then depending on the kind of work which they did. In most cases specific arrangements for return to work were made with the help of social workers and the Ministry of Labour before discharge from hospital.

Table I

	Recovered	Much Improved	Improved	No Change	Treatment Incomplete	Total
M. ..	12	19	23	13	3	70
F. ..	9	8	5	6	2	30
	21	27	28	19	5	100

Table II

	Same Work	Light Work	No Work	Unknown	Total
M. ..	32	22	13	3	70
F. ..	19	3	6	2	30
	51	25	19	5	100

Of the patients who showed no change, 2 suffered from schizophrenia and 5 from physical illness of a kind which could not be expected to improve, leaving only 12 who were not benefited by treatment.

In the case of the women the figures often refer to estimated work capacity, as many had previously been employed in domestic duties only.

Follow-up

When those with irremediable organic and mental disease (e.g., cerebral arteriosclerosis and chronic schizophrenia) were excluded the immediate results were so surprisingly good for neurotic illnesses of such duration that it was felt desirable to follow up as many as possible. Practical difficulties allowed of this being done for only 29 patients, who were interviewed by a trained psychiatric social worker, and 7 about whom information was received from other sources. The average length of time between discharge from hospital and the follow-up was over 6 months.

The follow-up enabled the condition to be compared with that at time of discharge and the actual work record to be compared with that anticipated when leaving hospital. In both these respects the condition after this interval agreed very closely with the estimated prognosis. Of the 36 cases followed up, 26 corresponded exactly, 5 did somewhat better than anticipated, and 5 not so well. They appeared to be a fair sample of the whole, and if this is so the policy of arranging for specialized in-patient treatment of neurotic casualties would appear to be well justified by the results.

Summary

Investigation was made of 100 patients referred by the Ministry of Pensions because for a prolonged period they had been receiving "war injury" allowances for neurotic illness caused by enemy action. Over and above this total very few were referred. This suggests that the number of severe neurotic casualties in the country was small.

The average age was higher than the average age of other patients attending practitioners.

Judged by ordinary standards a large proportion had good personalities prior to the incident, which in most cases was severe.

Coincident physical injury did not prevent a neurotic illness, as it often does in soldiers on active service.

Feeling a bomb was a much more severe psychological trauma than hearing one.

The factors which prolonged the neurotic illness were numerous and had to be analysed in each instance. They were often unrelated to the war.

The bad cases prognostically were not those patients who had been most bombed, but those in which some other factor played an important part.

In spite of prolonged illness and allowances these patients responded quickly and satisfactorily to hospital treatment, unlike patients with compensation neuroses in peacetime.

76% were able to return to work of some kind.

A follow-up showed that the symptomatic recovery or improvement was maintained and that they were usually able to continue at the work to which they went when discharged.

Care of the feet is an important part of the medical services of the A.T.S. Certain foot complaints, due to different shoes, unaccustomed standing, and, in some instances, to drill, occur within a few weeks of enrolment, and regular examination is necessary if the feet are to be kept in a good condition and such disorders to receive early treatment. An appeal is therefore being made for women chiropodists up to the age of 43 (50 for ex-Service women) for the A.T.S. They will be sent to a basic training centre for one month and afterwards posted, with the rank of corporal, to A.T.S. groups or training centres and will receive pay at the rate of 3s. 8d. a day. They will be supplied with a complete set of instruments and all felts, pads, and lotions required for treatments. All chiropodists work under the direction of a medical officer, and cases which do not respond adequately to treatment are referred to an orthopaedic surgeon in a hospital. It is intended to have a corporal chiropodist for every 600 auxiliaries.

THE CURE OF SCABIES, AND A NEW REMEDY

BY

G. H. PERCIVAL, M.D., Ph.D., F.R.C.P.Ed., D.P.H.

Physician to the Skin Department, Royal Infirmary, Edinburgh

The time required to destroy an acarus infestation may not be long enough to allow the structural disorganization of the epidermis caused by the parasite to have righted itself entirely by the end of the treatment period. A treated case of scabies may be free from acari—that is to say, cured of scabies—but need not present a skin entirely free from lesions. Immediately after successful treatment with any of the recognized remedies scratch marks and pin-head blood crusts, subsiding pustules, crusts, and scaly tags may still be seen on the abdomen, buttocks, thighs, and anterior axillary folds. Such residues are less pronounced after the use of ointment preparations than when the remedy has been employed in the form of a liquid to be painted on the skin. While the presence of lesions following treatment does not mean that the object has not been attained, the absence of itching may not indicate a cure, for this symptom may disappear temporarily in a case in which treatment has failed, only to return in about ten days, during which time the surviving parasites have increased sufficiently to cause symptoms. The discovery of live acari at the end of a period of treatment proves its failure at once, but failure to find the acarus immediately is no proof of cure. It can only be regarded as such if repeated examinations over a period of two weeks are negative. By this time, however, if cure is not complete, lesions and symptoms will have developed which will be visible to the naked eye and obvious to the patient, except in the very rare instances of latent scabies, if such a state exists.

Observation Period after Treatment

The majority of cases of scabies to which one or other of the known efficient remedies are adequately applied are cured, and in them no acari would be discovered. In a few uncured cases, and perhaps in a given series in all uncured cases, no acari might be found immediately after treatment, and a period of observation would be necessary to demonstrate their continued presence. Only in a very few cases can the discovery of acari immediately following treatment, and not the failure to demonstrate their presence, at once give the desired information as to the result. It follows, therefore, that only in an extremely small proportion of cases can the observation period be dispensed with if the result is to be established with certainty.

This observation period subsequent to treatment of scabies is necessary and of practical importance only when the value of a new drug is first being assessed. If it is then established that a drug in a definite concentration is capable of curing the disease when tested on a reasonable number of cases and following a definite routine, the criterion of cure, for practical purposes, when the drug is used in conditions where known new cases are numbered monthly by the thousand in a single community, is the efficiency with which the prescribed routine of application is carried out. In a large treatment centre it is not possible either to examine for acari closely enough for the examination to be of any practical value or to multiply visits by insisting on the period of observation. Apart from staff shortage, it is difficult to obtain regular attendance during the treatment period.

It cannot be asserted that the prescribed technique of treatment with any remedy is capable of success in every case, but failures following the correct application of sulphur ointment are extremely rare (Mellanby *et al.*, 1942). When the patient personally carries out the instructions the percentage of failures depends on his intelligence, home surroundings, and the care with which the instructions have been explained to him. A patient may reasonably be expected to be able to take a teaspoonful of cough mixture three times daily, and failures in the technique of this procedure must be few indeed. Similar success in the carrying out of instructions is not met with in the treatment of scabies or, for that matter, in the treatment of skin disease in general.

Choice of Remedy

The technique of the commonly used remedies is more or less similar and the choice has up to the present been governed by cost, cleanliness, time, and freedom from irritant properties. It may be, however, that the availability of the remedy will become the deciding factor.

Sulphur is the oldest remedy for scabies, and according to Hebra its indirect use dates back to the cure of Naaman's presumed attack of the disease. Its outstanding worth as an agent lethal to the mites and eggs of the acarus has been demonstrated recently by Mellanby, Johnson, and Bartley (1942). It should be noted, however, that the standard treatment for scabies is not three applications of sulphur ointment as stated by them. Authors differ slightly in the technique advised. That laid down by Walker and Percival (1939) is six applications of 5% sulphur ointment over a period of three days, preceded and followed by a bath, no bath being taken during the period of application. Sulphur is cheap and can be incorporated in a more elegant base than lard or soft paraffin if so desired, but to be efficient it must be applied in the form of an ointment to be rubbed in. This necessary use of fats and oils in conjunction with sulphur at a time when these substances are in short supply justifies the trial of possible substitutes which do not require fats and oils in their application or which need a less amount.

Tetraethylthiuram Monosulphide

Another substance has recently suggested itself as possibly being of use. There is no reason to anticipate a shortage in its supply, and this fact alone should recommend its trial on a large scale. This substance is tetraethylthiuram monosulphide, and since 1940 I have used it in the treatment of human scabies. Because of unavoidable delays it has been employed in only a small number of cases. It was found to be non-irritant to the human skin when applied in the form of the pure powder, and no case of cutaneous idiosyncrasy to it has been encountered. It has proved curative in a strength of 5% in the form of a liquid preparation in 50 consecutive cases, 21 of which were treated as in-patients in the ward of the skin department of the Edinburgh Royal Infirmary, and 29 as out-patients at scabies treatment centres. Of 25 cases treated with a 0.25% solution 4 were cured; 1 case was treated with 5% tetraethylthiuram monosulphide in a vanishing cream and was cured; 3 were treated with a prepared tetraethylthiuram monosulphide powder mixed with water to form a paste, which was then smeared on the skin, and 1 was cured. The liquid preparation used was an emulsifiable oil having the composition: tetraethylthiuram monosulphide 25%, polyglycerol ricinoleate 10%, industrial methylated spirit 65%. One part of this oil was added to four parts of water immediately before use. While the 25% concentration remained stable at room temperature it tended to crystallize out if kept at lower temperature, but gentle heating sufficed to redissolve the crystals. Unfortunately the diluted oil separated, giving a layer of pasty consistency which did not redissolve. This necessitated preparing the required 5% dilution immediately before use. The 25% solution may stain material yellow, but this discoloration washes out easily. The mixture has a slight odour, not noticeable, however, in the 5% dilution.

The liquid preparation was rubbed over the whole body, with the exception of the head, face, and neck, twice daily for three days, as in the case of sulphur ointment. The duration of treatment is an important point in the cure of scabies with any remedy, and repetition reduces the possibility of inadequate application. If staffed by a trained personnel, the scabies treatment centre can be relied on to ensure at least one adequate application even if there are difficulties in enforcing the necessary return visits (Percival, 1941).

Observations by Gordon and Seaton (1941) on the lethal properties of tetraethylthiuram monosulphide for acari in animal scabies have shown that it is more toxic for the mites and eggs and more rapid in its action than either benzyl benzoate or dimethylthianthrene (mitigal). During their experiments they were also able to prove conclusively that mites, especially larvae, can migrate from their burrows and infect surrounding clothing, which is capable of reproducing the disease if applied to another animal. These experiments on the possible transmission of animal scabies cast some doubt on the advisability of omitting to disinfest clothing in the case of human scabies, a view originally advocated by Mellanby (1941), although later modified by him.

Summary

Tetraethylthiuram monosulphide in a concentration of 5% is capable of curing human scabies. So far it has been found to be non-irritant to the human skin, and no instance of cutaneous idiosyncrasy to it has been encountered. It is cheap, clean, easily available, and economizes in fats and oils. Its trial on a more extensive scale by independent observers is suggested.

The author thanks Imperial Chemical Industries (Pharmaceuticals) Ltd., Manchester, for preparations of tetraethylthiuram monosulphide.

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BENZYL BENZOATE IN TREATMENT OF SCABIES

A COMPARISON OF THE EFFECTS OF AQUEOUS AND SPIRIT EMULSIONS

BY

K. C. MALLEN, M.B.

Major, R.A.M.C.

At the request of the A.D.M.S. a series of cases of scabies was treated during a three-months period to ascertain the value of an aqueous emulsion of benzyl benzoate. During the previous 12 months many cases of scabies had been treated in this camp reception station by various methods, and it was evident that the benzyl benzoate one was the best.

The cases were not selected, every second admission being treated with the aqueous emulsion, regardless of the extent of the lesions present. The control group was treated with the spirit emulsion. The emulsions used contained equal parts of benzyl benzoate, soap, and spirit or water. The number of cases upon which these figures are based was 1,000, and the slight discrepancy in the final figure is due to the fact that benzyl benzoate was at times difficult to obtain. As a result more cases were treated with the spirit emulsion and a few with sodium thiosulphate and hydrochloric acid. The latter treatment was used to a considerable extent in the earlier part of the year, but was discontinued because of the number of cases of dermatitis that resulted.

Method

The number of beds available was 39; but at times room had to be found for more cases, and these were accommodated on stretchers. There were only two baths to be had, and these were in constant use for the bathing and scrubbing of the patients. During the three months under review the number of baths given averaged 25 per day.

On admission the patient's clothes were checked and sent to the pack store, where the articles, which included the bedding, were disinfested in a hot-air disinfestor of the Millbank type. The clothes were then stored away until the patient was ready for discharge. The patient was given a bath and scrubbed by an orderly, and was treated with either type of emulsion. He was then dressed in pyjamas and put to bed. On the following day he received the same treatment. On the third morning he was seen by the medical officer, and if there was no active lesion he was given a treatment of calamine lotion and discharged the next morning. In the cases in which there was a secondary infection, such as impetigo, he was transferred to the main block of the camp reception station for further treatment. These cases with another infection are not included in this series. Some of the cases were not completely cleared by two baths, and these had to have a third application of the treatment; a few had four applications. The numbers, however, were very small: in 28 cases three baths were required, and in 3 cases four baths.

Owing to the possibility that dermatitis, present as the result of treatment, might persist, it was necessary to adopt some kind of follow-up, and the following form was forwarded to the regimental medical officer for completion seven days after the man's return to his unit.

SUBJECT: SCABIES "FOLLOW-UP"

To: M.O. i/c ....
Reg. No......... Name................ Rank........
The a/m man was discharged from the Camp Reception Station, ..., on ...., having been treated for scabies. I should be very grateful if you would examine him on .... and return the attached proforma. It is recommended that one week's treatment of calamine lotion be given.
Lieut.-Col., R.A.M.C., O.C., Field Ambulance.

To: Camp Reception Station, ... Tel.......
....
Name................ Number........ Rank........
Condition of skin (is there any dermatitis?) ....
Is there any irritation? If so, where? ....
Do you consider there is any recurrence of scabies? ....
Date............ Signature........................

Excellent co-operation was given by the R.M.O.'s concerned, and in only a few instances was it necessary to send out reminders.

The following Table shows the numbers treated and the percentages of recurrences and incidence of dermatitis:

Treatment	No.	Cures	Recurrences	Dermatitis
Benzyl, meth.	527	519	8 (1·56%)	6 (1·2%)
Benzyl, aqueous	448	447	1 (0·24%)	14*(3·1%)
Thiosulph.+HCl	24	24	1 (4·0%)	1 (4·0%)

* 11 of these occurred at a time when it was impossible to obtain sapo moll. *B.P.*, so a brown soft soap issued by the O. i/c Barracks was used instead. This I think definitely contributed to the incidence of dermatitis. This soap was not used in the preparation of the spirit emulsion.

Conclusions and Summary

One thousand cases of scabies were treated, half with an aqueous and half with a spirit emulsion of benzyl benzoate. It would appear from the results that the aqueous is as efficient as the spirit emulsion. The advantages as regard cost are obvious.

The amount of dermatitis is slightly higher and the incidence of recurrence very much lower. There are a few general points worth noting about the cases sent in for treatment. The incidence of penile, abdominal, and thigh lesions is amazingly high—79%—and the fact that only one case had the lesion confined to the interdigital spaces bears out the theory that most people consider that the disease is due to close body contact. This is also borne out by the fact that the majority of these men gave a history of having returned from leave during the previous 7 or 8 days or admitted recent venereal contact.

K. Mellanby (*British Medical Journal*, 1941, **2**, 405) states that the possibility of the spread of scabies by means of blankets was very remote and that the spread by underclothes was possible under conditions which appear to offer the maximum chance of infection. It is hoped that these conclusions will be further tested, so that this point can be cleared up. If what he states is true then surely the amount of time, labour, and money spent on the disinfestation of clothes is useless.

I should like to thank all the medical officers who have helped in this investigation for their assistance, and also to pay tribute to the nursing orderlies whose work made the above results possible.

W. N. Warvi and R. W. Rawson (*Arch. int. Med.*, 1942, **69**, 90) record a case of torula meningitis in a man aged 39 in whom the characteristic symptoms were the insidious onset and the intermittent but progressive course, going on to a fatal termination. The increasing intracranial involvement caused the following symptoms: severe headache, visual, sensory, and motor disturbances; weakness; projectile vomiting; disorientation; coma; and respiratory failure. The case is the eighth reported example of the association of Hodgkin's disease with torula meningitis.

TREATMENT OF VARICOSE VEINS IN SOLDIERS

BY

ERIC L. FARQUHARSON, M.D., F.R.C.S.Ed.
Major, R.A.M.C.

The treatment of varicose veins by injections alone presents many difficulties when it is applied to military patients. In the first place, it is common for the affected veins to show the condition of *ectasia* rather than true varicosity, and veins of this type do not respond at all well to injection methods. Secondly, regular or systematic treatment is often quite impossible, owing to the continual movement of troops, re-postings, etc. A large proportion of soldiers reporting sick with varicose veins have had a few haphazard injections at irregular intervals; these may have had no effect whatsoever, or the benefit conferred was only temporary—a fact that has not escaped the soldier's notice and encourages him to distrust or to refuse further injection treatment.

Any form of operative treatment recommended must be considered in the light of its effect on the man's efficiency as a soldier, and precedence must be given to the method which is most likely to make him fit for full duty within the shortest possible time. Extensive radical excisions (Payne, 1941) have no place in the treatment of military patients. Apart from the long period of convalescence required, the scars which remain often form a basis for continued complaints.

The Trendelenburg operation, when it is not combined with injection, is frequently most disappointing. There may be little or no diminution in the size of the varices, or, alternatively, any improvement noted may be only temporary, as the affected veins dilate again, owing to the opening up of collateral anastomoses with the deeper channels. When combined with injection, the Trendelenburg operation has many advocates, and a 90% cure has been claimed (Oldham, 1941) for this method of treatment. Many workers, however, including the writer, have not been so successful in the results obtained, in that the thrombosis is apt to be incomplete and patchy in distribution. Furthermore, a formal Trendelenburg operation is not to be undertaken lightly, and there is no question that military patients must be admitted to hospital.

Subcutaneous Ligature combined with Injection

The accompanying photographs illustrate this method. In the case treated the varicosity involved the whole of the great saphenous system and had been present for 12 years. Complete thrombosis of all the dilated veins was obtained from one treatment.

In the method of subcutaneous ligature, a stitch is passed round the vein, and is tied over a swab placed on the skin surface. Except in cases where the varicosity extends right up to the saphenous opening (see below), the vein is ligatured *at its highest visible or palpable point.* This may be situated in the thigh (often at the junction of the upper and middle thirds) or at the medial side of the knee. In the former case a second ligature is applied at knee level. Very occasionally a third ligature is required.

An injection of sclerosing solution is made into the vein immediately below each ligature. The injected fluid takes effect in a "closed" and relatively small segment of vein, where the blood is almost completely stagnant and there is no dilution from backflow. As the result an effective thrombosis is invariably obtained.

Technique of Ligature.—The ligatures are most easily applied with the patient standing up. Silkworm-gut, threaded on a fairly fine curved skin needle, is employed. The needle is passed round the vein, transfixing the skin about 1/4 in. on each side of it, and the gut is tied over a small roll of gauze the thickness of a finger. A local anaesthetic is quite unnecessary.

Injection.—On the suggestion of Lieut.-Col. S. Sokolowski of the Polish Army Medical Corps, 20% saline solution has been used. This has the great advantage of being readily obtainable, and it has been most effective. Up to 50 c.cm. can safely be injected at one treatment, so that a widespread thrombosis can usually be obtained. Ten to 20 c.cm. i injected below each ligature, the amount depending upon th extent and varicosity of the veins under treatment. Crampin pain is felt in the limb about 15 seconds after injection ; i may be fairly severe for 30 seconds, but usually passes of completely within 2 minutes.

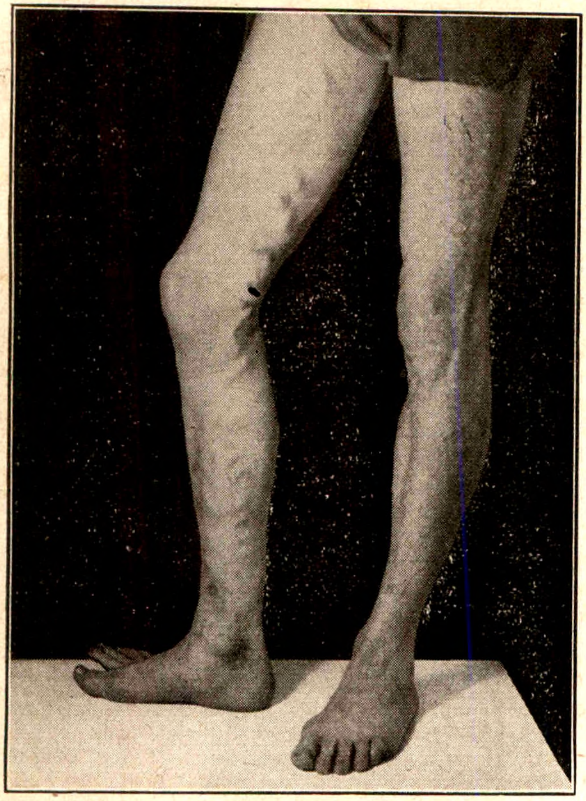

FIG. 1.—Showing the extent of the varicosity.

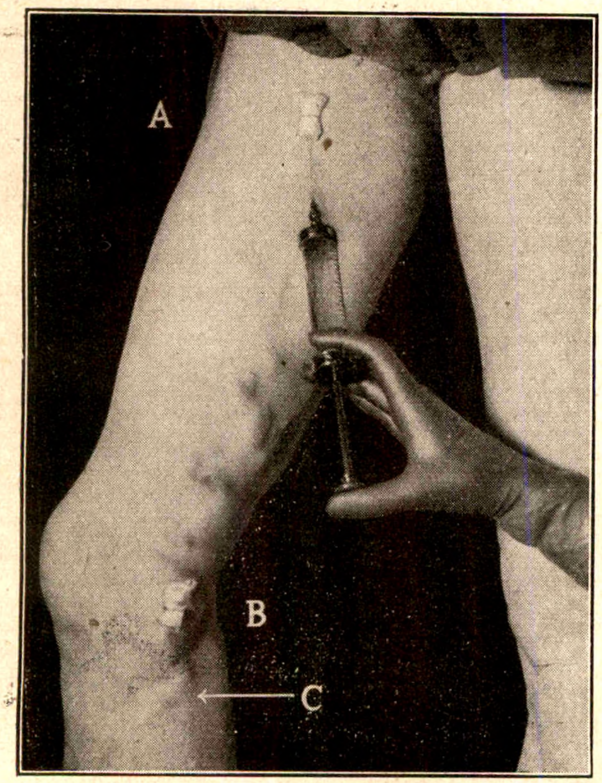

FIG. 2.—Subcutaneous ligatures at A and B. The first injection was given as shown, and the second at the point marked C. 20 c.cm. of 20% saline was injected in each situation.

If the dilatation extends right up to the saphenous opening subcutaneous ligature is impracticable ; an open ligature i therefore carried out, but no widespread dissection is attempted The vein is exposed by a 1/2-in. incision at its highest point, anc is divided. Ten to 20 c.cm. of saline solution is injected intc the cut lower end before this is ligatured.

After-treatment.—The presence of the ligatures *in situ* causes comparatively little discomfort, and, considering the extent o the thrombosis produced, the reaction is not severe. It is customary, therefore, to return the patient to his unit, with a recommendation that he be excused all duties for 48 hours and that he be kept on light duty until he reports back for removal of the ligatures in 7 days' time. Patients whose veins are very dilated are detained in hospital for one or two nights. During this time the limbs are firmly bandaged to compress the veins and to reduce the size of the ultimate thrombosis. Open ligature of the vein at the saphenous opening does not necessitate hospitalization provided that, in contrast to a formal Trendelenburg operation, it is done through a small incision and no extensive dissection is attempted. After removal of the ligatures a further period of light duty may be required, depending upon the reaction present, but most patients can return to full duty within two weeks of the original treatment.

Results of Treatment.—The immediate results are excellent. Of 150 soldiers treated by this method the great majority required only one treatment for each affected limb. About half the patients had two ligatures applied—one in the thigh and one at knee level. The rest, in whom the varicosity or ectasia did not extend above the knee, were treated by a single ligature at this level. As already stated, most of the patients returned to full duty within 2 weeks of the original treatment. The late results cannot at present be assessed, owing to the difficulties of follow-up in Service patients. It has not been possible to re-examine more than 30 patients, and these at intervals of from only 2 to 9 months after treatment. In these, however, the affected veins had all contracted down to hard slender cords, in which any possibility of re-canalization seemed to be quite out of the question.

Discussion

It is maintained that the method of subcutaneous ligature combined with injection is particularly suitable to the treatment of military patients, in whom injections alone are unsatisfactory and all forms of radical operation are contraindicated.

The method is not, of course, a new one (Russell, 1941 ; McCurrich, 1941), and I am aware that it has been extensively criticized (Eckhoff, 1941 ; McAusland, 1941 ; Schick, 1941 ; Oldham, 1941), mainly on the grounds that the saphenous vein cannot be ligatured at its highest point. Treatment by ligation at any lower level is stated (Schick, 1941) to be followed eventually by as high a percentage of recurrences as after simple injections alone, and it has suffered the sweeping condemnation (Oldham, 1941) that it is as futile as would be the removal of the distal half of a hernial sac. The first assertion is at least open to question ; the second can be categorically denied. Complete thrombosis of *all* dilated veins in the great saphenous system can usually be obtained *at one treatment* by two well-placed ligatures with an injection below each. Most patients return to full duty within two weeks of treatment, and hospitalization is rarely necessary. No claims are made regarding the late results. Fresh varices may undoubtedly develop in the years to come, as they may with any form of treatment. It is suggested that this, like other post-war problems, does not require serious consideration at the present time.

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Medical Memoranda

Primary Cerebral Sinus Thrombosis

In view of the interest recently shown in this subject, especially in this *Journal* (see bibliography), the following non-puerperal case of "primary" cerebral sinus thrombosis seems to merit publication.

Case Report

The patient, a single woman aged 30, of asthenic build, was admitted to hospital suffering from restlessness and mental confusion. She had been in bed for 2 to 3 weeks at home with "bronchitis." Whilst in bed she developed left and, subsequently, right femoral thrombophlebitis. Mental symptoms were present during the last few days. There had been no vomiting and no previous illness. She had recently changed her occupation, and was depressed and "run down" owing to unhappiness at work.

On examination her condition was as follows: conscious but confused; headache severe; temperature 101°, pulse 106, respirations 28; slight residual swelling of ankles; no acute phlebitis; both knee-jerks slightly exaggerated; blood pressure 115/70; ears and fundi normal. Nothing else abnormal was observed in any system. Investigations on June 11, 1942, showed:—Lumbar puncture: pressure increased, Queckenstedt's test normal, C.S.F. examination normal in every respect. Nothing abnormal in urine. Non-protein nitrogen 26 mg. per 100 c.cm. Blood Wassermann reaction negative. Blood culture, coliform bacilli. All agglutination reactions negative. By June 15 she had developed a positive Kernig's sign, slight neck rigidity, and left extensor plantar response. Limb movements were apparently completely normal. Radiographs revealed skull and chest to be normal. A differential white count disclosed marked lymphocytosis. Pyrexia continued despite sulphonamide therapy. On June 17 lumbar puncture showed: pressure increased; C.S.F. contained numerous red cells, but otherwise was completely normal. Blood film, normal. Faeces, nothing abnormal.

The persistent normality of the majority of the investigations was puzzling, especially in view of the complete absence of any sign of paralysis or convulsions, but the possibility of thrombosis of the superior longitudinal sinus was entertained. The patient, however, became very considerably weaker and more drowsy, and she died on June 24.

Post-mortem Examination.—C.S.F. yellowish, not turbid; no evidence of meningitis; massive thrombosis of superior longitudinal and both lateral sinuses (apparently an aseptic thrombosis); bilateral thrombosis of superficial cerebral veins; no changes elsewhere in the brain; no necrosis, no hydrocephalus. The thromboses gave a definite impression of having originated in the superior longitudinal sinus, and of having spread thence to the lateral sinuses and to the superficial cerebral veins. Ears, nose, and throat, normal. Chest: purulent bronchitis, lungs normal. Abdomen: bilateral thromboses of common and external iliac veins, continuous with clot in both femoral veins; kidneys somewhat fibrosed; spleen normal; liver contained focal necroses. Bone marrow somewhat hypoplastic. Other organs normal.

Discussion

This case seems to bear out the interesting suggestion of Martin (1941), arising out of the work of Batson (1940): the possibility of "metastatic" thrombosis of the cerebral sinuses, via the vertebral veins, arising from the pelvic veins. Batson specifically mentions that this would be apt to occur during coughing—it is noteworthy that the initial complaint in this case was "bronchitis." The absence both of convulsions and of paralysis is distinctly unusual; this may perhaps conform to the impression gained at necropsy that the venous thrombosis developed subsequently to the superior longitudinal sinus thrombosis, possibly only immediately before death.

I should like to express my thanks to Dr. H. C. Haslam-Fox, medical superintendent, for permission to publish this case, and to Dr. R. Y. Dawbarn, who performed the necropsy, for the pathological reports.

R. H. M. Stewart, M.B., Ch.B.,
Resident Medical Officer, Ormskirk County Emergency Hospital.

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Reviews

WAR INJURIES OF THE *CHEST*

War Injuries of the Chest. Edited by H. Morriston Davies, M.Ch., F.R.C.S., and Robert Coope, M.D., F.R.C.P. (Pp. 131. 6s. plus 6d. postage.) Edinburgh: E. and S. Livingstone. 1942.

In the literature on war wounds in general there has been a gap covering the treatment of chest injuries which could only be filled, and that incompletely, by reference to scattered articles and papers. The editors of this book have attempted to remedy the situation and to produce a concise account of the treatment of chest injuries for the use of officers in the field and at casualty hospitals. In this they have partially succeeded.

The book is well arranged and begins with a useful account of the special anatomy, physiology, and pathology of chest injuries, but this is somewhat marred by inaccurate diagrams of the bronchial tree and the broncho-pulmonary segments. Later chapters are concerned with the treatment of special injuries and contain much that will be disputed by those who have had practical experience of chest casualties. For instance, the statement that "so long as a patient is in need of resuscitation he is not fit to be *x*-rayed" is not confirmed by experience, for an essential *x*-ray examination causes little disturbance if a portable machine is used. Again, the authors are unduly afraid of operating on a shocked patient and, in consequence, their indications for primary operation are too few; but experience has shown that with skilled anaesthesia and continuous resuscitation the patient's condition improves steadily during any operation which relieves his circulatory and respiratory embarrassment. The chapters on haemothorax leave much to be desired: few would agree that a sterile haemothorax should be washed out with saline, that a general anaesthetic is necessary for the first aspiration, or even that the aspiration of a haemothorax is "comparatively simple." No clear directions are given for the treatment of an infected haemothorax; instead a series of possibilities are presented which may confuse the inexperienced. The authors state that a blocked intercostal tube should be cleared by the injection of saline, without mentioning the danger of air embolism if the pleural space is at all rigid. They also advocate the use of atropine in the treatment of crush injuries and in pulmonary oedema, but in the former case it is dangerous owing to the production of sticky sputum while in the latter it is surely unphysiological. Finally there is a chapter on anaesthesia, which condemns nitrous oxide, although this gas is extensively used in chest surgery, and misrepresents the properties of trichlorethylene.

The great disadvantage of this book is that it fails to give dogmatic instructions. The medical officer dealing with chest casualties needs to be told as simply as possible what to do, and it is useless to present him with a number of alternatives unless the indications for each are given clearly and concisely. If these defects could be remedied in future editions this little book, which contains much useful information and which is a handy size for the pocket, would be a helpful companion to the casualty officer.

SCIENCE AND HUMANITY

The Values of Science to Humanity. By A. G. Tansley, F.R.S. The Herbert Spencer Lecture, Oxford University, June, 1942. (Pp. 31. 1s. 6d.) London: George Allen and Unwin. 1942.

Prof. A. G. Tansley's Herbert Spencer Lecture delivered on June 2 would have been approved by the sturdy individualist in whose honour the lecture was founded and, in these times, when the maxim *fas est ab hoste doceri* is reiterated with angry vehemence, brings to the discussion of a controversial topic a welcome urbanity. The concluding sentence of the lecture is the lecturer's inference from the evidence he has presented: "If we desire to keep alive and vigorous the ultimate springs of our material welfare, and—not less important—to maintain and extend the place of science in our culture, we must jealously guard its freedom and its independence."

Those who have emphasized the importance of scientific planning and organized research have, of course, many excuses for anger. It is only too obvious that few, if any, Ministers of State in this country know anything of science, pure or applied. Recently a Minister answered the rhetorical question whether it would not be better to teach boys the principle of an internal combustion engine rather than the elements of Latin grammar, with the bland remark that it might be hoped that a boy who had studied Latin would be able to take knowledge of the internal combustion engine in his stride. Also the historical fact that down to the end of the 18th century most fundamental scientific discoveries were made by gifted amateurs is subject to Macaulay's reply to the complaint that 19th century women knew less Latin and Greek than Lady Jane Grey. If Lady Jane Grey had not read the classics what was there for her to read? In the 18th century scientific research could be the pursuit only of wealthy amateurs or of men with courage to endure privations.

But it remains true that it is no more possible to plan or organize the work of a Newton, a de Moivre, or a Helmholtz than that of a Wordsworth or a Beethoven; that when we recognize or even suspect the existence of original power in scientific research, nothing should be done to divert the inquirer from the train of thought or work to which his curiosity attracts him. A great palaeobotanist or pure mathematician contributes more to the stock of humanity than a second-rate engineer.

The medical profession recognized this more than a generation ago. Men still living remember the time when the teaching of what are now called the fundamental sciences was mainly technological. Now the laboratories of medical schools contribute as actively to the output of "pure" research as those in which no medical students at all are taught. No great change is a wholly unmixed benefit; some may hold that the movement has gone too far; but all would agree that the good has predominated over the evil.

Prof. Tansley remarks that the statement "curiosity is a sublimation of the desire for power" is "just psychological nonsense." Curiosity is a primary instinct and tends in common speech to be depreciated because of the secondary meaning—"inquisitiveness in reference to trifles or matters which do not concern one." There lies the danger. It is so very easy for the eminent A to believe that *his* curiosity is of service to humanity while B's curiosity is mere inquisitiveness, and so we reach within the circle of science that childish arrogance which inspired the Minister's remark concerning Latin mentioned above. Our profession will be alive to the danger.

ELECTROCARDIOGRAPHY

Essentials of Electrocardiography. For the Student and Practitioner of Medicine By Richard Ashman, Ph D, and Edgar Hull, M.D. Second edition (Pp. 373. 21s.) New York and London: The Macmillan Company.

The second edition of *Essentials of Electrocardiography*, by Drs. R. Ashman and E. Hull, makes its appearance four years after the first publication. Most of the chapters have been rewritten and the volume is considerably enlarged. These changes and additions have resulted in the presentation of an up-to-date review of this branch of cardiology. For a volume which is not an exhaustive treatise there is perhaps undue emphasis on the physiological basis of the electrocardiogram; much of the third and fourth chapters will be outside the range of beginners in the subject and, indeed, of most general clinicians, and yet this book is specifically addressed to students and practitioners of medicine. The arrangement of the later sections of the book might be modified: discussions on the electrocardiogram in many and various non-cardiac maladies have been grouped together in three chapters on the electrocardiogram in diseases of the heart. More space might have been allocated to these aspects of the subject, since they represent an important part of the "growing edge" of electrocardiography. The bibliography must receive criticism: it is too sectional and not representative of the shares which have been contributed by many important sources to the sum of electrocardiographic knowledge. Much of the pioneer work has been done on the Continent, particularly on the metabolic background of cardiographic abnormalities; scarcely any references are made to these sources, while an unduly high proportion of the bibliography relates to American publications. Reproductions of 122 electrocardiograms show uniform excellence and they illustrate well the principles expounded in the text.

Notes on Books

There is much to be said for making the industrial worker aware of the general health problems in industry and for instructing him in elementary rules of hygiene, so that he may keep himself fit in both his own interests and those of the country. The same, of course, applies to other sections of the community, among whom on the whole there is a gross ignorance of rules of hygiene and no very great enthusiasm to apply what lessons have already been learnt. Nevertheless those who believe in health education must "plug" their story for all they are worth, hoping that in time a real health-consciousness in the public will be aroused. *Health of the War Worker*—a handbook prepared in co-operation with the Socialist Medical Association by the Labour Research Department (6, High Holborn, London, W.C.1; 6d.)—has one advantage in that the medical advice tendered is obviously that of someone who knows industry from the inside. The booklet acquaints the worker with those parts of the Factory Act relating to health, both personal and institutional. Nevertheless it is marred in places by an unpleasant nagging tone. The workers, for example, are frequently adjured not to be "put off by glib assurances," and there is one slightly comic distortion of fact when the writer says, in the section under heating, "fans are very plentifully distributed in West End clubs, but are much too rare in factories . . ." It is difficult to see how the puzzled worker will profit from a disquisition on the factory medical service, in which, he is told, "since doctors are liable to be called up for the armed services but not for industry, it is often the left-overs who find their way into factory jobs." And, again, to remark that the appointment of a doctor by the management "often leads to a feeling among the workers that the doctor is the management's 'yes-man,'" and to leave the worker without any assurance that this is in fact not the case, is hardly likely to help forward that co-operation between worker and doctor which the writer of this pamphlet considers to be desirable. In fact, if he had given a little more information about health and first-aid and a little less space to airing his views the value of the pamphlet would have been much enhanced.

Der Eisenstoffwechsel und Seine Klinische Bedeutung, by A. Vannotti and A. Delachaux, is published at 12.50 Swiss francs by Benno Schwabe of Basle. This monograph on the metabolism of iron and its clinical significance is an account of the researches of the Lausanne School and a review of the literature. It has been carried out with the support of the J. Macy Jr. Foundation of New York and will be of special value to biochemists and haematologists who are engaged in the study of this difficult problem. The authors have used a more comprehensive technique than other workers, estimating the iron in the serum in four different fractions. They stress the high iron content of the nuclear chromatin, and relate this to the manufacture of haemoglobin in the erythroblasts, of myoglobin in the muscles, and of cytochrome, oxidase, and catalase in the parenchymatous cells. We are now well informed about anaemia of the blood due to deficiency of haemoglobin, but anaemia of the tissues and deficiency of cytochrome and myoglobin due to lack of iron constitute a further possibility. In this way some of the epithelial and neurological symptoms of anaemia may be better explained and correlated with the similar effects of avitaminosis.

Lewis's Medical and Scientific Lending Library has issued a new Supplement to its main Catalogue, covering the period 1938-41. It may be obtained from 136, Gower Street, W.C.1. The price is 4s. (to subscribers 2s.).

Preparations and Appliances

PREPARATIONS OF VITAMIN B_1

Vitamin B_1-Boots conforms to the specification for aneurine hydrochloride described in the *Third Addendum* to the *British Pharmacopoeia* and is identical with, and has the same biological activities as, the natural vitamin. Vitamin B_1 is specific in the treatment of beriberi and has been recommended for a wide variety of conditions, including alcoholic neuritis and nutritional neuritis. Partial deficiency is likely to occur in patients on special diets—e.g., a diet for gastric and duodenal ulcers, high carbohydrate diets employed in nephritis, and restricted diets for obesity. Conditions of increased metabolism such as pregnancy and lactation increase the requirement for this vitamin. Vitamin B_1-Boots is supplied in tablets of 1 or 3 mg. for administration by mouth, and as a sterile solution in ampoules containing 5 or 25 mg. for intramuscular injection in cases of achlorhydria associated with vitamin B_1 deficiency.

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PHYSIOLOGY OF THE VOCAL CORDS

The study of the manner in which the vocal cords act and move to produce the voice was first made possible by the introduction of the laryngeal mirror by Garcia in 1854. Dr. Thomas French of Brooklyn made a notable contribution to this study by photographing the vocal cords in action, and published his results in 1886 in a paper entitled "The Laryngeal Image Photographed during the Production of Tones in the Singing Voice." French noted that different individuals often employ different mechanisms in the production of the voice and that the appearances of the larynx in similar circumstances are often very different. Therefore no single description of the position of the vocal cords for the production of any given tone can apply to every larynx or even to the same larynx in varying circumstances. There is, however, a general scheme, in the study of which Dr. I. I. Pressman[1] has made further great advances by the application of ultra-slow-motion photography, the pictures being taken during phonation at the rate of 4,000 frames a second, which represents a slowing to 1 : 250 in the normal rate of vibration.

It is pointed out that two persons with exactly the same range and with voices strikingly similar are not likely to produce the same tone in exactly the same way. If one uses less expiratory force than the other in producing an exactly equivalent tone the diminished air pressure must be compensated by a closer approximation or increased tension of the vocal cords. It may be necessary to bring the posterior ends of the cords into contact for damping, which was not necessary for the person using a greater force of expired air. Equivalent tones are thus accompanied by a different laryngeal appearance in one as compared with another, and a particular laryngeal picture cannot be ascribed to the production of *any* given tone. Nevertheless certain changes take place as an ascent is made to its highest possible tone from the lowest which a particular larynx can produce. The cords are adducted by the crico-arytenoideus lateralis on either side, the antagonistic posticus muscles relaxing reciprocally. The closure is partial, leaving a broad longitudinal opening; the tension of the cords is not increased. Further closure is caused by contraction of the interarytenoid muscles, which slide the arytenoid cartilages together and close the posterior commissure. The vocal processes of the arytenoid cartilages, however, remain still splayed out and need further rotation for complete closure. This is performed by the thyro-arytenoideus muscles, which rotate the muscular processes inwards so that the vocal processes approximate, this movement completing the closure of the vocal cords with the exception of a chink remaining anteriorly. At the same time the tension of the cords is increased. Complete closure is produced by the action of the cricothyroid muscles, which, tilting the cricoid and thyroid cartilages in opposite directions, further increases the tension, closes the anterior chink, and elongates the cords. The moving-picture photographs of the larynx taken at the Bell Telephone Company Laboratories show this elongation quite clearly. To produce these effects both the arytenoid and cricoid cartilages must be fixed. The arytenoids are fixed against the cricoid by the crico-arytenoideus posticus muscles, so that the cords can become tense and elongated. The cricoid itself is fixed against the spinal column by the inferior constrictor of the pharynx. The anterior fixation of the thyroid cartilage to maintain the tension is accomplished by the cricothyroid muscles. The moving pictures show that, contrary to the older teaching, a preliminary complete adduction occurs before the vibratory movements in the cords are initiated. In this position of adduction fine intrinsic movements of the cords occur independently of any arytenoid movements. These are movements of segments of the cords as contrasted with movements of the whole cord and are produced by selected fibres of the thyro-arytenoideus muscles, which pull apart equal lengths of each cord against tension to establish a final glottic pattern in which the vibrations will take place.

Thus the final position assumed by the vocal cords in producing a tone, in preparation for vibration, is the product of two muscular forces, one of which causes adduction and tension, and the other counters this over a varying length of cord, exerting a damping effect. The lowest tone, not ordinarily in use, is produced by a general relaxation of the cords, which are foreshortened, leaving a relatively wide gap, which is not so wide or definitely triangular as in inspiration. This gap extends from the anterior commissure but is much wider behind. In the ascent of the scale there is a gradual transition in which the cords become straighter and more tense. As the cords elongate the tension increases and the edges of the cords lie almost parallel, and finally exactly parallel. When the cords have become as taut and elongated as possible, a break occurs and the damping process comes into action to yield still higher tones. A varying length of the posterior part of each cord is damped and prevented from vibrating by being brought into apposition with the corresponding part of its fellow. The anterior segment is then foreshortened functionally and a higher tone is produced, for only these portions anterior to the damped segments can vibrate. Finally, the cords approximate for so much of their length that the glottic chink is only a tiny orifice anteriorly.

On mirror examination the vocal cords seem to move from the lateral to the median adducted position as rigid bands, but the moving pictures show that this is not the case. The movement is undulating, beginning anteriorly and passing as a wave to the posterior segments; the anterior segments approximate first, followed by the middle and then the posterior segments. The air escaping under pressure between the cords everts the free margins of the cords, which spring back by their own elasticity, thus producing vibrations apart from any gross movements of adduction and abduction. The ultra-slow-motion pictures show that at a low pitch the vibrations of the cords are very complex, becoming less so as the pitch is raised. The cords become firmer and longer during the ascent of the scale. They open from below, the opening continuing upwards and outwards. Closure likewise begins from below, and as the cords open and close a ripple passes laterally over the upper surface. At extremely high pitches only the edges close to the glottis are seen to vibrate, and as the pitch rises the vibrations are confined more and more to a diminishing anterior segment, while the posterior segments remain firmly in contact. In whispering the sliding movement of the arytenoid cartilage on the cricoid towards the median line does not take place, because the interarytenoid muscles do not contract. A wide triangular gap is therefore left in the posterior part of the glottis, and a pronounced leak of air results. The anterior segments of the vocal cords act as in ordinary speech. If the pitch of the whisper is raised the anterior oral hiatus becomes narrower and the cords touch at about the middle third, but the triangular chink posteriorly persists. This has a practical application, because it is apparent that whispering can be as harmful as shouting, for the vocal cords can meet and injure each other during whispering as well as during ordinary speech. Yet often whispering is allowed when ordinary speech is forbidden.

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[1] *Arch. Otolaryng.*, Chicago, 1942, **35**, 355.

PASTEURIZATION OF MILK

Pasteurization began to be used on a commercial scale in the large towns of this country about the beginning of the present century. Its object was to improve the keeping quality of milk, not to prevent milk-borne disease. It consisted usually of heating milk quickly to about 170° F. and immediate cooling—the "flash" process—and its product had the characteristic flavour of heated milk and a diminished cream-line. From the aesthetic point of view, therefore, it was unattractive, and rapid souring was not uncommon as the result of defects in many commercial plants. It soon became evident, however, that milk submitted to even this imperfect process was more seldom associated with the occurrence of epidemics than raw milk. The processes were under no Government control, and the first moves made by the Ministry of Food in 1918 toward the encouragement of high-quality milk—apart from the rather ineffective measures exercised by local authorities under the Diseases of Animals Acts, Milk and Dairies Regulations, the Public Health Acts, the Infectious Disease (Prevention) Act, and various local powers—aimed at the sale of clean and tubercle-free raw milk under special licence. The farming interests, backed by such disinterested enthusiasts as the late Dr. Stenhouse Williams of the National Institute for Research in Dairying, Reading, were strongly opposed to any statutory recognition of pasteurized milk. Nevertheless, when the movement passed to the Ministry of Health, pasteurized milk was included as one of the special designations in the Milk and Dairies (Amendment) Act of 1922. By this time the more fool-proof methods of "retarding" and "holding" had come into vogue, and pasteurized milk not only was a more elegant product but also gave reasonable assurance of freedom from pathogenic micro-organisms. Still the bitter opposition of dairy farmers and their supporters continued, so that when the British Medical Association began an expensive advertising campaign a few years before the present war, advocating safe milk in the public interest, it had the greatest difficulty in overcoming the reluctance of the daily press to accept the advertisements. During the present war the operations of the Ministry of Food, the Ministry of Agriculture, and the Milk Marketing Board have removed the economic motive behind the opposition of farmers, and, for the present, pasteurization is being rapidly extended without controversy. Perhaps these or similar purchasing arrangements will survive the war, but if they do not it is possible that the resistance will be resumed.

This prolonged controversy has presented an outstanding example of the disingenuous manipulation of scientific discovery to support a losing cause, and it has not been easy for medical practitioners and others who believe in pasteurization to put their finger on the flaws in the pseudo-scientific arguments used against it, with which the farmers and legislators have been well primed. This difficulty no longer exists. A most complete compilation and analysis of our knowledge of milk, its composition, and the effects of heat on it has been made by Prof. G. S. Wilson.[1] The contentions that pasteurization reduces the nutritive value of milk, that it reduces resistance to disease, that it predisposes to dental caries, that it removes an immunizing influence by destroying bovine tubercle bacilli, that pasteurized milk is unpalatable, that pasteurization fails to destroy pathogenic micro-organisms, that it removes the incentive to produce clean milk or eradicate disease in herds, that milk may become infected after pasteurization, and that pasteurizing processes are uncontrolled, are fully dealt with. The examination of all reliable, and some unreliable, scientific work on the various aspects of the subject is exhaustive. The number of articles referred to in the text runs to 333, and many of the facts they record are very fully discussed and criticized. Among the diseases which may be conveyed by milk Wilson makes no mention of poliomyelitis. Epidemics caused by milk have been recorded by American workers, and recent bacteriological and epidemiological investigations as to the general mode of infection in this disease add to the probability that these records are authentic. Apart from this there is practically nothing left that could be said on the subject, and what is said is most admirably expressed.

BLOOD TRANSFUSION IN THE U.S.S.R.

In watching, through the medium of communiqués and radio, the gigantic struggle between our Russian ally and the common enemy of mankind, medical men in Great Britain have a double concern. First, they share with the ordinary citizen a boundless admiration for the heroism of the ordinary Russian soldier and those who lead him. Secondly, medical men have a special concern in the suffering of Russian men and women and in the ways and means Russian medicine adopts to meet its Herculean task of caring for the sick and the wounded under conditions almost unparalleled in the history of civilization. We hope to be able, from time to time, to make British readers more fully acquainted with the aims and achievements of Russian medicine and Russian doctors, because we believe that one of the surest foundations of trust and friendship between our two great countries will be a close understanding between like professional groups. Understanding does not necessarily imply agreement. In this country doctors on the whole share the view of the brilliant group of men who met in London in 1645 to form the "Invisible College" that later became the Royal Society. At the height of our revolution in the seventeenth century they decided to bar "all Discourses of Divinity and State Affairs" and to confine themselves to "Physick, Anatomy . . . and Natural Experiments." The modern Russian doctor would probably not agree with this view of the men who contributed so much to knowledge under the guiding influence of John Wilkins, the Warden of Wadham College, Oxford. But we may be sure that there is much for us to learn from Russian organization of medical services, and that we in our turn also have much knowledge and experience to give that are of value. The one firm common ground we both share is the fundamentals of the science of medicine—"Physick, Anatomy, Natural Experiments," and on these can we enlarge the community of interest.

On another page in this week's *Journal* we are privileged to print an article on blood transfusion in the U.S.S.R. by Prof. A. Bagdasarov, Director of the Central Blood Transfusion Institute in Moscow. This Institute was founded in 1926, and from that date organization and research have proceeded hand in hand. In 1935, for example, the officially registered cases of blood transfusion numbered 22,000, and by 1940 this figure had risen to 200,000, exclusive of transfusions given on the Finnish front. In 1932 there were only 80 regional institutes, but by 1941 these had increased in number to 1,500. In a country that covers about a sixth of the land area of the world problems of collection, preservation, and transport of blood are indissolubly linked, and to find an answer to these was an urgent matter for scientists in the U.S.S.R. "Nowadays," Prof. Bagdasarov writes, "we consider it an ordinary matter to ship conserved blood by aeroplane over distances of hundreds and even thousands of miles into the most distant corners of the tundra and taiga, and into the steppes and deserts of the south-east regions of the Soviet Union." These, too, are matters of urgency for the British Empire, with its armed Forces spread over the surface of the globe, and a corresponding complexity of medical organization. For us the sea is what land is to the U.S.S.R., and for us the problem of sea transport is added to that of transport by aeroplane.

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[1] *The Pasteurization of Milk*, by G. S. Wilson, M.D., F.R.C.P., D.P.H. With a foreword by Sir Wilson Jameson, M.D., F.R.C.P., D.P.H. Edward Arnold and Co. (18s.)

Prof. Bagdasarov brings forward a number of interesting technical points. He finds that blood conserved in a glucose-citrate solution is suitable for transfusion up to 25 days, or 20 days when transported. There appear to have been no complications in the transfusion of large quantities of group O blood. "During the twelve months of war," he writes, "literally hundreds of tons of blood have been thus applied to wounded men in all stages of evacuation, and with truly tremendous success." Prof. Bagdasarov speaks enthusiastically of plasma as a transfusion agent, stating that it is used in the front line especially in cases of shock and in the treatment of burn cases. The red corpuscles left after the separation of the plasma are, so to say, refloated in a physiological fluid, and in this "modified I.P.K. 'fluid'" erythrocytes stored at 4° to 6° C. show no marked change up to 12 days. Such conserved red cells are transfused to cases of anaemia. Prof. Bagdasarov concludes with some interesting observations on plasma substitutes, and a note on the great army of donors who "have streamed into the numerous blood transfusion institutes and stations." His article will, we are confident, be widely read and with high appreciation of the great service rendered by the organization he directs.

EPIDEMIOLOGY OF THE COUNTRYSIDE

The Milroy Lectures of 1942 add another chapter to those annals of the countryside which Dr. W. N. Pickles is writing for our instruction and enjoyment. Dr. Pickles has much of the literary charm of Austin Dobson, and uses his skill with equal felicity in making a vignette of happy country folk travelling in a motor omnibus to the market town or a graphic story of an epidemiological event.

> "I do not think the country doctor, possibly in his ignorance, has any doubt about a true influenza epidemic. Our last visitation was in 1937. Its ferocity lasted but three weeks and the busy life we all expect in a scattered country practice was transformed into a nightmare. There has been no similar epidemic since, but the first three months of most years produce a number of cases of feverish colds. The spread of the epidemic in 1937 suggested a much more infectious disorder. Ten per cent. of the population were sufferers, and all in the short space of three weeks. Two per cent. only were sufferers in 1940 and these were spread over three months. In the epidemic of 1937 the onset of the illness was abrupt. Some will remember the influenza of the early 'nineties when people collapsed in the streets and had to be carried home, and I, myself, saw collapses of this sort at 'divisions' in a ship of the Royal Navy in 1918. Without these dramatic incidents the patients in 1937 did become ill and unfit for work with very little warning. In the illness of 1940 and similar years, the patients tell us that they have been battling for several days but have had to give up at last. As I have seen it, in true influenza there is great uniformity in the symptoms, the patient is prostrate, there is a short unproductive cough, the tongue is foul and coated, the aching in the limbs intolerable, and epistaxis is common. The febrile catarrhs of 1940 and other years I should summarize by saying that the chest symptoms were a great deal more and the general symptoms less alarming."

Dr. Pickles raises the interesting question whether "true" influenza may not be a genuine exotic and our recent immunity due to the closure of the Continent. There was an influenza in England in 1803, after the resumption of the war against Bonaparte, but none again during the war, indeed until 1831, but there was no European pandemic either. Dr. Pickles has seen 202 sufferers from chicken-pox and 87 from shingles in ten years, and contributes interesting examples of the interrelation. On May 6, 1937, a young woman began with herpes, and on May 7 a farmer in a distant village. The young woman, a friend of the farmer's wife, was at a sale a fortnight before and invited to tea; probably the farmer was present. On May 12 (Coronation Day) the farmer was present at the village celebrations; two children sickened on May 26 and 27, and a small epidemic of chicken-pox followed, including one sufferer from herpes. Dr. Pickles could trace two cases of diphtheria to an evacuee, but no other major infectious disease; impetigo, vermin, and scabies were the chief enemies. There were several instances of scabies in native children in homes where there were no evacuees; he thinks common towels in the schools were responsible. One is tempted to go on quoting from this charming paper. Dr. Pickles is happy in his work and his opportunities of contributing new and exact observations on the natural history of disease.

HEPARIN IN PRACTICE

The Scandinavian school of medicine has consistently pioneered the use of heparin, and a symposium[1] on heparin and thrombosis was held in Stockholm in December, 1940. Heparin must be given intravenously. The dosage by intravenous drip to maintain the coagulation time at three times the normal, which is the desirable level for most surgical purposes, is approximately 20 mg. per hour. The dose varies, however, with the condition of the patient, and more heparin will be necessary to raise the coagulation time to a given level after operation than before. To avoid the inconvenience of an intravenous drip and the danger of overloading the heart and the kidneys with excess fluid, some workers have preferred to give four separate intravenous injections of heparin a day, a typical dosage being 75+75+75+125 mg. daily. A further development is Olovson's heparin needle, which is designed to remain in the vein. It has a detachable cap with a rubber membrane, through which the injections can be repeated every four to six hours. Although heparin prolongs the coagulation time, it does not affect the bleeding time, and it can safely be given before or during operations in vascular surgery, such as embolectomy, without increasing the bleeding at operation. On the other hand, there is a very real risk of reactionary bleeding after heparin, and, with the exception of a few special cases, heparin should rarely be administered earlier than four hours after operation. These findings support the hypothesis of Macfarlane[2] that the immediate cessation of bleeding is brought about by capillary contraction, and that coagulation then seals the wound so that bleeding does not recur when the capillaries relax. Heparin has been used chiefly as a prophylactic against thrombosis after operation. The minimum duration for effective treatment is probably until normal temperature and power of movement have returned and the patient can leave his bed. Forty-eight hours has been proved to be too short, and it is doubtful whether the four days recommended by other workers is long enough. Results have been encouraging, though, on the one hand, heparin has been confined to special cases and, on the other, there has been a fall in the incidence of thrombosis even in untreated cases. Emboli large enough to endanger life can form only in the lower limbs, and Bauer has developed a technique to visualize the veins in the leg by radiographs after the injection of perabrodil. Absence of contrast in the deep veins provides evidence of the presence of a thrombus, and measures can be taken to deal with it before embolism occurs. In established embolism and thrombosis heparin treatment is on a less secure basis, though favourable results have been attributed to it in preventing the extension of the clot. Owing to the large amount of kinase released at the lesion, the therapeutic or medical dosage of heparin is very much greater than the prophylactic or surgical dosage, and the risk of accidents is proportionately increased. Haemorrhage and cardiac tamponade have occurred when heparin was administered in pericarditis, and for this reason the physician may well hesitate to use heparin in coronary thrombosis. In fact, a good deal of careful and controlled work remains to be done before we can assess the value of heparin in treatment. At present a manifest post-operative thrombosis means five to six weeks longer in hospital, and a reduction would be welcomed not only by the surgeon but also by the patient, who usually finds this unexpected setback so tedious and hard to bear.

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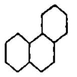
[1] *Acta med. scand.*, 1941, 107, 107.

[2] *Quart. J. Med.*, 1941, 10, 1.

THE STEROLS, THEIR STRUCTURE AND ACTION

A study of the correlation between the chemical structure and the pharmacological action of a group of compounds may suggest further modifications by which the potency may be enhanced or unwanted side-actions eliminated. Experience has emphasized the wisdom of a cautious estimate of the value of such correlations unless they are made on a very large number of similar compounds, and perhaps in no other field has the relation between structure and function been more obscure than among the sterols. Hans Selye[1] has endeavoured to produce some order out of this chaos by a study of 75 of the hormonally active sterols and their synthetic analogues, together with a very considerable survey of the literature. The importance of the phenanthrene derivatives is shown by the fact that narcotics of the morphine group, bile acids and cholesterol, vitamin D, the sterol hormones, and many carcinogenic hydrocarbons have a phenanthrene nucleus. The subgroup which comprises the sterols consists of modifications of the cholane ring. Selye observed the effect of these modifications upon six different types of action, which he calls folliculoid, corticoid, luteoid, testoid, gonadotrophic, and anaesthetic, and which are independent of one another He distinguishes between such independent actions and subordinate ones: for instance, all folliculoid hormones can stimulate the development of female secondary sex characteristics, causing enlargement of the uterus and breasts, and hypertrophy of the adrenal cortex as well as vaginal cornification. But any one of the six independent activities may be exhibited by a compound, irrespective of its other hormonal properties. Thus pregnanedione has the highest anaesthetic potency yet found, but is devoid of other activity. All sterols with a side-chain of two or less C atoms have some activity, either anaesthetic or hormonal, but the long side-chain derivatives are inert, so far as they have been studied. The commonest pharmacological actions are the anaesthetic and folliculoid, and in fact all but three of the sterols investigated showed some degree of folliculoid activity provided there was not a long side-chain. So the folliculoid and anaesthetic activities do not depend on any great specialization of structure. But the anaesthetic activity may be modified by changes in structure. In the simplest instance this may be due to changes in solubility. Oestradiol has some anaesthetic potency, but its esters, which are more slowly absorbed, have none. Oxygenation, if at either end of the molecule only, increases the anaesthetic effect, but further oxygenation is detrimental. Thus desoxycorticosterone acetate is more active than dehydrocorticosterone. A single double bond in ring A or B does not seriously interfere with the anaesthetic activity, but two or more double bonds in these rings or a double bond in ring D are detrimental. Thus pregnanedione, which is fully saturated, is slightly more active than progesterone, while oestradiol, which has an unsaturated A ring, is inactive. Two chrysopregnene derivatives, with a 6-membered D ring, were also studied, and were found to have both anaesthetic and follicular activity; so evidently the sterol nucleus may be modified slightly without interference with its characteristic properties. But it is more disturbing to find that stilboestrol, which bears no immediate relationship to the phenanthrene group, has an anaesthetic as well as its well-known folliculoid property. It may be that we are dealing here with a member of an entirely different series of compounds, and it would therefore be illogical to apply to it the general laws which have been deduced from a study of the sterols. Further investigation of the stilbene series as well of the sterols may well repay the labour, and emphasize the close association that is now required between the pharmacologist and the organic chemist.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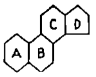
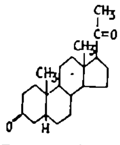
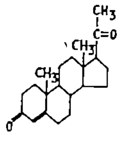


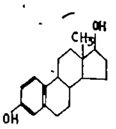
Sterol ring



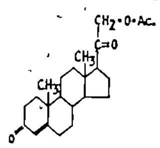
Pregnanedione



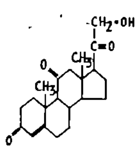
Progesterone



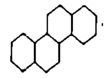
α-Oestradiol

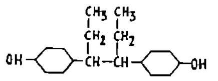


Desoxycorticosterone acetate



Dehydrocorticosterone


Chrysopregnene ring



Stilboestrol

At the invitation of the Managers of the Royal Institution, Sir Henry Dale, P.R.S., has accepted the Directorship of the Laboratories of the Institution, with the Fullerian Professorship, in succession to the late Sir William Bragg. Sir Henry has expressed the wish that his appointment should be limited to a period of three years, so that the Managers may then be free to consider their future policy.

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[1] *Endocrinology*, 1942, 30, 437.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

MALARIA IN WARTIME

BY

Sir P. H. MANSON-BAHR, C.M.G., D.S.O., M.D., F.R.C.P.

Malaria in wartime is a large subject, and may be a serious problem. It was so in the war of 1914-18 and probably it will play a part in the present conflict. Then, in the "side shows"—Iraq, Salonika, East Africa, and Palestine—malaria may be said to have been decisive—much more so than enemy action. The admission rates to hospitals which were published in the *Medical History of the War* give impressive figures. In the East African Expeditionary Force there were annually more hospital admissions than troops in the field; that for Salonika was 500 or 600 per thousand troops. Therefore it behoves us more than ever to try to keep in mind what malaria may be like in a war of movement.

There are four different species of intracorpuscular parasites causing malaria, but only two are really important in war; the others do not really matter, just being curiosities. The first causes benign tertian; the second, which may be predominantly important, causes subtertian or malignant malaria.

Unfortunately, scientists have given these parasites many names. I need not bother you with the scientific terms, but I should like to point out how the parasites differ, and how the fevers which they produce also can be distinguished from one another, for there is no doubt that different parasites produce different clinical types of disease. It is of no use at the present time saying that someone has got malaria, and leaving it at that. Research has shown that these fevers differ considerably not only in their clinical appearances but in their treatment also.

The Benign Tertian Parasite

First we have the benign tertian parasite. The ring form becomes attached to the blood corpuscles and then enters them, gradually occupying the whole; but the host cell enlarges when the parasite attains its maximum development as the sporulating form. Moreover, within the substance of the red cell there is produced a degeneration of the protoplasm known as Schüffner's dots, which are peculiar to this and to the *ovale* parasite alone.

Multiple infections of the corpuscle by more than one parasite are rare in benign tertian, although common in subtertian malaria. The sporulating body consists of eighteen to twenty-four spores, and breaks up and sheds the spores (merozoites) into the plasma. It is at this stage that the malaria rigor, or fever, takes place. In the case of the benign tertian parasite this recurs every forty-eight hours. There is another stage, the gametocyte or sexual form, in which the development runs parallel with the former, or asexual, cycle.

There is nothing else quite like a chart showing the classical appearances of the fever. Rigors recur on alternate days at exactly the same time. If the rigor began at 2 p.m. on one day the second rigor will also take place at the same time within forty-eight hours. It was Manson who suggested that any fever which began in the forenoon or early afternoon was more likely to be malaria than anything, more especially if it started with explosive suddenness. The classical features of a malaria attack are the cold, the hot, and the sweating stage, the last taking place when the temperature begins to fall. It is possible to get temperatures of considerable height—104°, 105°, or even sometimes 106° F. When a temperature suddenly shoots upwards so as to cause alarm it is much more likely to be benign tertian malaria than any other kind of fever. Moreover, it falls as abruptly, and afterwards drops to subnormal. The reaction to quinine given intramuscularly may be dramatic, but a subsequent attack cannot be prevented or aborted by one injection of this specific. It just depends upon the stage of development the parasites have attained when the quinine is given whether any further rigors take place.

The classical tertian periodicity is not observed in every case of benign tertian. One must expect fevers, especially in primary infections, which are atypical, resembling tuberculosis or typhoid. Quotidian rigors were formerly held to be due to two generations of parasites running concurrently, but that is not really the case. Rather they are due to the response of the body to a primary infection, because we now know that in experimentally produced malaria we do not get the typical tertian periodicity till the fever has lasted several weeks.

Subtertian Malaria

Benign tertian malaria may be likened to the ordinary rifle bullet, whereas subtertian (*Plasmodium falciparum*) may be likened to a high-explosive shell. The illness the latter produces is different; that is why it is misleading to use the term "malaria" as embracing all these diseases. This parasite does not enlarge the red blood corpuscle in which it lives; and, again, owing to some adhesive properties in the infected corpuscles, they tend to agglomerate, so that development mostly proceeds in the capillaries of the internal organs, and thus the parasite does not freely circulate in the peripheral blood as does the benign tertian. By taking blood slides from the finger one cannot see the complete cycle of development of this parasite in human blood, because a number of stages develop in the sinuses of the spleen, pancreas, brain, intestinal capillaries, and other internal organs of the body. The clinical appearances of the fever depend upon in which organ the maximum multiplication takes place. There is no more protean infection than subtertian malaria. It is a sort of conjurer, continually producing new tricks out of the hat. The parasite at the start somewhat resembles a very small flattened signet ring; next we find it plastered on to the edge of the blood corpuscle, and multiple infections of the cell are common. Irregularity in outline of the corpuscle will be observed, and there are differences in the staining properties of its protoplasm. The sporulating stage takes place almost entirely within the internal capillary vessels; the affected corpuscles agglutinate, forming thrombi, and in the security of their retreat the sporulating form develops. When this last stage is seen in the peripheral blood prognosis is grave, because it means that the patient has been overwhelmed with this parasite.

I will now describe what a blood film looks like in fatal cases such as were frequently encountered during the last war. We see here rapid multiplication of the parasite inside the red cell, and the two bifid nodules of chromatin which usually indicate a severe infection. We can see also large hyaline mononuclear cells which devour defunct malaria parasites. Thus one often finds in subtertian malaria pigmented corpuscles, and nearly always they are mononuclears.

With the subtertian parasite we do not get any dots in the protoplasm of the red cells, but little fissures or holes, which are known as Maurer's dots, or clefts, and they are distinctive.

With regard to the fever, subtertian malaria usually has a quotidian periodicity, but may produce almost any variety of temperature chart. Every now and again there is a sudden drop in temperature, and then it rises once again. In the benign tertian one may see what may be termed a "Salisbury Cathedral" type of chart, but in this case one frequently observes a double rise of temperature—that is, with a dicrotic notch. That is a very important point, and when you see a temperature chart of this description you should always think of this kind of malaria.

I mention this because many years ago I was summoned to a nursing home in London to see a young official who had travelled from West Africa via Barcelona and Paris. There he had partaken of oysters, and was overcome by vomiting and diarrhoea with grave weakness which had been diagnosed as "food-poisoning." With this diagnosis he arrived in London, and there, every day for three weeks, he produced rigors with a double crisis. He had been examined by several doctors and as many diagnoses had been suggested, till a blood culture was taken, and on a streptococcus being isolated he was given the appropriate serum; but still he did not improve. When I was called in I suggested that he must have malaria, to which the objection was raised that he had no enlarged spleen (but many cases of subtertian malaria do not exhibit this) and that no malaria parasites had been found in his blood. I was informed that thirteen blood examinations had been made already and therefore it was no help to suggest malaria. But in the first blood film I was able to demonstrate three parasites within one corpuscle. He took quinine and atebrin that night, and the fever defervesced and soon he was quite well.

Another curious feature of the subtertian malaria chart is that you may not get any fever at all. It is possible to find people in apparent perfect health walking about with this parasite in their blood, and many return from West Africa with this parasite lying dormant, ready to spring into activity and produce the most dire symptoms at the first opportunity on exposure to cold or exertion.

The Mosquito Problem

Now we come to the mosquito problem. What is an Anopheles, and what are you to do when you see one? The first characteristic of the Anopheles mosquito is its posture; it is said to stand on its head. Actually it does appear to stand in this uncomfortable position with abdomen raised in the air, while all other kinds of mosquito carry it in a horizontal position. This mosquito is usually found in nooks and crannies of the wall and ceiling. In wartime it can be discovered inside canvas tents, and whenever you see an Anopheles mosquito the best thing to do is to "swat" it. There are all sorts of minor marks of differentiation between this and other species. The egg of the Anopheles is one of the wonders of Nature. It resembles a primitive float, and, unlike those of other species, is laid singly. The larva on emerging lies with its body parallel to the surface of the water and has a short respiratory siphon. The Anopheles also has spotted wings, whereas other species generally have not, as exemplified by Ross's provisional description, "the dappled-wing mosquito." Several species of Anopheles in Great Britain have been described; indeed, there are probably just about as many individuals of this genus in Great Britain at the present time as ever, so that it is difficult to know why endemic malaria disappeared from this country. But there are different races even of the same species. Some prefer feeding on cattle or horses, others on humans; and it is only those which prefer biting human beings to biting cattle that are dangerous to man.

Next the elaborate cycle inside the mosquito's stomach must be considered; this, as is well known, was worked out by Ross at the instigation of Patrick Manson. It must always be insisted that had it not been for Manson's original hypothesis this would probably not have been worked out at that time. The copulation of the sexual forms of the parasite takes place inside the stomach cavity of the mosquito, and is known as the sexual cycle. Manson's original hypothesis was that there must be one particular type of mosquito, in which this took place; so that time and further work have not upset that original idea—that is, it is only in the genus *Anopheles* that this development may occur.

We have drugs which act upon this parasite in various stages. There are drugs which act upon the sporozoites from the salivary glands and others which act upon the sexual cycle, so that it is becoming more and more important that we should know of these researches because we may in that way eventually find the ideal malaria prophylactic. It is quite obvious that quinine does not fulfil this ideal, because it has been found to have no effect on the sexual cycle and has no influence on the sporozoites. On the other hand, there is plasmoquine, which, although it may not produce such startling results in man, can knock out sporozoites and destroy the sexual stages of the parasites. Then there is atebrin (quinacrine or mepacrine), which acts mainly upon one species (the subtertian), so that we have selective drugs for different stages of malaria parasites.

The Incubation Period

One of the great difficulties in studying malaria is the varying length of the incubation period. In benign tertian malaria it is not unusual for this fever to commence one year to fifteen months after the primary infection; therefore, one commonly meets patients who have been in India and have not had fever there, yet who a year or fifteen months after their return fall sick with an abrupt attack which proves to be malaria.

How long can the malaria parasite persist in the body? The old soldier will assert that he can feel malaria "in his bones." His colonel avers that the only thing is to "drown" it with whisky; he is convinced that he still has malaria thirty or forty years after quitting the Tropics. Are we to believe these stories? I say distinctly they are not true. The parasites have their limited cycle in the body of man. They have their life span just as any other creature. The shortest for subtertian malaria is one year: that of benign tertian is from three to three and a half years at the maximum. The statistics of the Ministry of Pensions show that the benign tertian malaria parasite disappeared within three years from the end of the last war. The quartan parasite is the toughest, because apparently it can hang about in the blood for a very long time. A fatal case was recently reported in London in a child transfused with blood from its father, who had quitted Ceylon twelve years previously. One German observer has even discovered it in the blood nineteen years after primary infection. How are we to explain these long latent periods?

The theory has been developed, backed up by some evidence, that sporozoites do not all immediately enter red blood corpuscles, but lie dormant in the skin, and then infiltrate into the blood stream from time to time, causing malaria. That is a plausible explanation, and may indeed be true.

The Sexual Stage

Next we must briefly consider the sexual stage of the subtertian parasite, or crescent. This looks like a miniature Zeppelin developing inside the red cell, the free edge of which may be clearly visible. It is the black pigment within the parasite that attracts attention, and it was really due to this that the malaria parasite was discovered by Laveran in 1880. While watching one of these parasites, then thought to be dead pigmented cells, he found that when the crescent was abstracted from the blood stream and chilled it underwent an amazing transformation known as exflagellation. This is really a sexual process, and it was due to Manson's explanation of this phenomenon that it was discovered to be a vital process in the life of the parasite. It is not, indeed, as formerly thought, a sort of swan-song of the malaria parasite; but from this amazing act the whole scheme of development of the malaria parasite in the mosquito was formulated.

There are two varieties of crescent—male and female. The latter simply becomes rounded off into a sphere, but the former becomes transformed into this flagellated body. It was Manson, too, who first demonstrated that the flagella broke away, abandoning the defunct body of the parasite, and that each flagellum had a definite structure; but it was McCallum who in 1897 saw the free flagellum impregnating the female. Thus was a vital stage in the elucidation of the life history of the malaria parasite demonstrated.

(*This paper will be concluded in next week's issue.*)

The National A.R.P. Co-ordinating Committee is arranging a one-day conference at Caxton Hall, Westminster, S.W., on Sunday, Oct. 25, starting at 10 a.m. There will be two parallel sets of lectures—one on organizational topics, including post-raid welfare and war damage, and one on more technical subjects, including anti-gas measures, fire defence, casualty services, and industrial defence. There will also be a show of the latest civil defence films from the Ministry of Information. The speakers include Prof. J. B. S. Haldane, F.R.S., Prof. J. R. Marrack, M.D., and Dr. K. W. C. Sinclair Loutit, former A.R.P. medical officer for Finsbury. Inquiries and applications should be sent to the Conference Secretary, A.R.P. Co-ordinating Committee, Faraday House, 8, Charing Cross Road, London, W.C.2.

TOWARDS CO-ORDINATION OF HOSPITAL SERVICES

The Nuffield Provincial Hospitals Trust and the Ministry of Health are collaborating in surveys, region by region, of the hospital services of England and Wales, and in due course the whole country will be covered. For some months past a survey in London and the surrounding area has been in the hands of Dr. A. M. H. Gray, president of the Royal Society of Medicine, and Dr. A. Topping, deputy medical officer of health of the London County Council, and another in North-West England and North Wales, for which Mr. Rock Carling, senior surgeon to Westminster Hospital, and Dr. T. S. McIntosh, one of the principal regional medical officers of the Ministry of Health, are responsible. More recently Prof. J. A. Ryle, Regius Professor of Physic at Cambridge, and Dr. A. E. Quine, another principal regional medical officer, were appointed to undertake a survey in North-East England. The announcement is now made that a fourth survey, to embrace the greater part of the three Ridings, is to be carried out by Mr. H. L. Eason, president of the General Medical Council, Dr. Veitch Clark, lately medical officer of health for Manchester, and Mr. W. H. Harper, house governor of Wolverhampton Royal Hospital. The survey of yet another large region is expected to begin shortly.

In a recent speech at Oxford, made under the auspices of the Nuffield Trust, the Minister of Health, Mr. Ernest Brown, discussed these surveys and the part they will play in the future co-ordination of hospital services. Inquiries of the kind now proceeding, he said, in the hands of experts of such distinction and experience, and based upon free and informal discussions with those who were tackling in different areas the problem of hospital organization, were more promising than any other course which could have suggested itself. They were designed to promote local consideration of problems having more than a local bearing and to encourage friendly co-operation in their solution. The object of the surveys was not to provide working drawings, but to set up a rich fund of knowledge and experience of which those who would presently have the task of producing such drawings might freely make use.

Object of the Surveys

The surveys will be directed in the first place towards obtaining information about existing facilities, their adequacy and efficiency. The starting-point of all inquiries and planning, said Mr. Brown, must be the needs of the patient. Inquiry will be made into the number and types of beds, the adequacy of the consultative out-patient departments, the range of equipment available, the nature and number of the medical and other professional staff, and the service areas of the hospitals. Other questions, such as methods of administration and accounting, purchase of supplies, record keeping, social work, and, most important of all, finance, will also call for consideration, but these are not relevant to the immediate objects in view.

The facts having been ascertained, those responsible for the surveys will formulate their opinions and advice. In the Minister's view the facts which had been elicited should have general publicity, but the conclusions based upon them, the recommendations issuing from them, should be treated as strictly confidential to the Ministry and the Nuffield Trust. What both the Ministry and the Trust desired was a full and frank report, not a report written with the constraint which was necessarily imposed in the case of a public document. Mr. Brown was explicit as to the procedure to be followed after the reports of the experts had been received by the Ministry and by the special committee of the Trust. Certain general conclusions would be formulated, together with the facts upon which they were based, and these would be laid before local authorities and the governing bodies of voluntary hospitals in each area for their full consideration, both separately and jointly. There would be no question of imposing a ready-made plan or of requiring local action to be taken in accordance with the conclusions emerging from the Minister's consideration of the reports.

The Minister anticipated, however, that in due course legislation would be necessary to give effect to the Government's policy of laying upon the major local authorities, in full consultation with the voluntary bodies concerned, a statutory duty to provide an adequate hospital service. In his speech at Oxford he promised, in the most categorical terms, that that projected legislation would be the subject of the fullest consultation with "all interested parties" before it was introduced into Parliament. The medical profession will welcome and bear in mind Mr. Brown's undertaking. It is to be assumed that it means that the results of the consultation will be available, not merely to amend any measure during its passage through Parliament, but to influence the preliminary drafting of it. It would also be desirable that sufficient time should be given for this consultation to enable representative bodies concerned to gather as wide an opinion as possible from their constituents, so that this legislation, which will be of the first importance to the health of the country, may go forward with the fullest measure of agreement.

Reports of Societies

EARLY DIAGNOSIS OF PHTHISIS

The first Varrier-Jones Memorial Lecture, on the early diagnosis of pulmonary tuberculosis, was delivered under the auspices of the Halton Medical Society by Wing-Commander R. R. **Trail** at Princess Mary's R.A.F. Hospital, Halton, on Sept. 25. Air-Marshal Sir **Harold Whittingham**, Director-General of Medical Services, R.A.F., presided, and, before the lecture was given, Sir **Walter Langdon-Brown** spoke on "Varrier-Jones: the Man and the Idea." The late Sir Pendrill Varrier-Jones was Medical Director of Papworth Village Settlement from its inception until his death in January, 1941. Concluding his tribute Sir Walter said: "Rehabilitation is a word on all our lips to-day, and here it is in being. All honour to the man who achieved this and converted occupational therapy into therapeutic occupation. With tuberculosis again increasing its inroads we may well reflect on this vision that became fact."

Wing-Commander **Trail** said that except in a disappointingly small percentage of cases we were a very long way from the diagnosis of early pulmonary tuberculosis, and had no cause for complacency. Progress in combating the disease had been made in certain directions during the past 20 years, but detailed analysis of the position to-day in respect of the number of sufferers and the extent of the disease at diagnosis was not so pleasant. Tuberculosis now claimed half the total deaths from all causes at ages between 15 and 24, an age group particularly important in national economy and the one in which the decline in mortality had continued at a slower rate than in any other. The lecturer then quoted L.C.C. figures showing that the best possible tuberculosis services with every modern equipment made no improvement towards earlier diagnosis in ten years, and added that by the extent of disease at diagnosis the majority of these unfortunates were unsuitable for modern methods of treatment and but few survived for 5 years following discharge from sanatorium. They showed a poor economic return and a minimal gain in social happiness for the care and expense afforded them. He attributed this state of affairs to the fact that it was only with the arrival of symptoms, and not always then, that the patient would seek advice. To ask the general practitioner, therefore, to diagnose at a stage prior to the symptoms for which his advice was eventually sought was to ask the impossible. Experience showed that by no means all cases of established phthisis had symptoms, and doctors had perforce to wait until the patient sought advice. Even then diagnosis was often too long delayed.

Mass Radiographs: Figures from the R.A.F.

After reviewing clinical methods whereby indications of tuberculosis could be detected, the lecturer referred to the value of x rays. "We have in x-ray examination something quite definite to the expert eye, something which, even at its lowest valuation, is a visual indication of abnormality calling for immediate and strict investigation. In other words we have to hand a method of approach to diagnosis which can reverse the present one. The doctor can seek out the patient. He need not wait until the patient seeks him." He then quoted figures derived from the examination of 40,119 R.A.F. and W.A.A.F. personnel by mass radiography. While the miniature film could weed the abnormal from the normal, for ultimate diagnosis a large film and full clinical and pathological examination were necessary whenever an abnormality was noted. This procedure had been followed in all the cases reported upon, and no case had been considered tuberculous where there was any reasonable doubt of the diagnosis as judged by accepted modern criteria. Despite this, and notwithstanding that all these 40,119 persons had been examined by National Service Boards some six to twelve months preceding mass radiography, and that all the men concerned had had a stricter medical examination within the previous six months with a view to selection for special duties, the results of the examination of these unusually "fit" subjects showed that 65 (or 2.2 per mille) of the 30,130 men exhibited signs of active disease, and that 108 (or 3.6 per mille) showed signs of inactive disease. In the case of the 9,989 women the figures were even worse: 38 (or 3.8 per mille) were in the active disease class, and 56 (or 5.6 per mille) in the inactive disease class. The highest figures per mille occurred in the age groups up to 25–29; the incidence in women being considerably higher than in men. "While the incidence of active disease is practically 1 per 1,000 more for women at the age group 20–24, the incidence for women under 20 is more than double that for men. . . . Similarly among inactive cases, the incidence of disease in women under 20 is four times as great as among men, and one and a half times as great in the age group 20–24, while the percentages approximate to equal in the age group 25–29."

The figures also showed that among the supposedly healthy adolescent and young adult population between 18 and 24 there were some 3 per mille who had unsuspected active tuberculosis and that more than 1 per mille was a potential source of infection because he had, unknown to himself, a positive sputum. The number of the population in these age groups by the last Census, corrected according to birth rates at the end of the last war, was, for England, Scotland, and Wales together, some five millions. The implication was obvious. In these age groups at the present time there were some 15,000 with unsuspected tuberculosis; all of them required at least expert supervision and advice, and many were in need of treatment for a period that could be determined only by close observation. These figures all related to patients without admitted symptoms, and it was a legitimate conclusion that some 25% more cases were found in the early stages of disease by mass radiography as against the present civilian methods of diagnosis.

Necessary Safeguards

The lecturer gave a warning that before any extension of mass radiography could take place much preparatory work must be done, because the adult worker associated *x*-ray examination with disease, and disease was economic disaster. It would be difficult to impress on him the benefits of early diagnosis. Legislation would have to protect him against victimization, loss of employment, and reduced standards of life for himself and for his family. Present circumstances worked against both the patient and the tuberculosis services; they hindered immediate treatment by worry and they militated against good end-results by compelling the quiescent case to return to employment before arrest of the lesion was attained. Wing-Commander Trail concluded that immediate hopes for the future control and treatment of pulmonary tuberculosis must be based on periodic mass radiography of the adolescent population; anything less comprehensive would fall short of the lessons indicated by the experience he had analysed. If they began now on a scheme of examination at school-leaving age and followed by annual review to the age of 30, those age groups on which morbidity and mortality fall most heavily would be covered. Initial cost would soon be offset by the saving of vast sums of money now spent on hospitalization of advanced cases.

A new medical centre for the United States Navy has been founded at Bethesda, Maryland, at a cost of seven million dollars, and will consist of a hospital, medical and dental schools, and a dispensary.

Correspondence

R.M.B.F. Christmas Gifts

Sir,—It is always with a feeling of hesitation, perhaps of fear, that I address this letter to you at this time of the year; hesitation and fear lest I should fail to state the cause effectively to your readers. But in my 25th year of office as President of the Fund and as an old man myself, may I once more appeal on behalf of old doctors and their loved ones that the Christmas Gifts Fund be continued in 1942. A gift of £2 to each of our beneficiaries on Christmas Day to bring some enjoyment, perhaps warmth or an unaccustomed comfort, to homes where every penny has to be considered, is my desire. Will all friends who have helped me in the past do what they can again this year, and will others come forward as contributors to take the place of those who have had to drop out?

All contributions should be addressed to the Hon. Treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, and cheques should be made payable to the Christmas Gifts Fund.—I am, etc.,

Thomas Barlow,
President.

Working for a Salary

Sir,—In his recent presidential address to the B.M.A. (Sept. 26, p. 357) Sir Beckwith Whitehouse is reported to have said that working for a fixed salary eliminates competition, stultifies individual effort, and therefore is a bar to progress. If Sir Beckwith had contented himself with saying that working for a fixed salary had always been distasteful to him there would have been nothing more to say about it, for *de gustibus non est disputandum*, but he went on to generalize in terms which the facts do not support, and I shall, if you allow me, call evidence to controvert him and to prove that the glitter of gold and the size of one's practice are not the only incentives to honest effort, and that working for a fixed salary need only eliminate competition whose results are as likely to be harmful as beneficial, need not stultify individual effort, and need not be a bar to progress.

Many years ago in a pathology class my fellow students and I sat enthralled while our professor told us the story—and what a story it is—of the four American army doctors, Agramonte, Lazear, Carroll, and Reed, whose courageous and self-sacrificing experiments proved the mosquito transmission of yellow fever and led to a great victory over that disease. These men were working for a fixed salary and were without Sir Beckwith's stimulus of competition, but will he say that their effort was stultified? A few years earlier Major Ronald Ross of the Indian Medical Service, encouraged only by Sir Patrick Manson and spurred on not by the hope of a fatter bank balance but rather by whatever it is that not rarely

> "the clear spirit doth raise
> to scorn delights and live laborious days,"

was fighting a hard battle against official obstruction, the heat of an Indian summer, and other difficulties such as a lack of literature and unfamiliarity with the technique of mosquito dissection, and he did not cease to fight until he had shown that malaria is transmitted by the anopheline mosquito and had charted yet another of the ways of "million-murdering death." Stultification of effort indeed!

A colleague of my own has had sleeping-sickness four times. I shall not name him here as he is a modest man. He had it first as the result of a natural infection contracted in the African bush in the course of his work. It was in the days when treatment was not so sure as it is now, but he made a good recovery. Of the three subsequent infections one was contracted accidentally in the laboratory while handling infected tsetse flies, and the other two were the results of experiments in which he used himself as the laboratory animal in order to find out if certain strains of trypanosomes were pathogenic to man. They were. Three other colleagues allowed themselves to be the subjects of similar experiments, and infected flies were fed on them. Infection followed in one case. All these men had reached the maximum salary in the service to which they belonged, but *pace* Sir Beckwith they were still men of active clinical and inquiring minds, and there is no evidence that their effort was stultified in any way unless someone will say that it was great foolishness to play the part of a rat or a guinea-pig.

Space will only allow me to mention Sir David Bruce (Malta fever and sleeping-sickness), Sir William Leishman (kala-azar), Sir Robert McCarrison (goitre and nutrition), and Sir Leonard Rogers (cholera, amoebiasis, leprosy), all of whom have added greatly to the sum of medical knowledge in spite of the "handicap" of working for a fixed salary.

I shall call no more evidence in support of my case, though I could summon a host of witnesses from unnamed thousands of members of the salaried medical services, whose daily work and achievement would confound Sir Beckwith Whitehouse even more than the evidence I have already called. Hippocrates once said that where there is a love of mankind there also is a love of the art (of medicine), and I contend that both of these are to be found in at least as great a degree among those members of our profession who work for a fixed salary as among those whose work is stimulated by that spirit of competition which Sir Beckwith Whitehouse says is necessary for the best work.—I am, etc.,

London, W.C.1. H. G. CALWELL.

The Non-touch Technique

SIR,—All surgeons, and in particular those of the present "older generation," will be grateful to Mr. H. A. T. Fairbank (Oct. 3, p. 388) for his timely article in especial relation to the making of an incision down on to a fractured bone. It is nothing short of a tragedy to "open" a "closed" fracture and allow infection to occur. To make such a contretemps still less likely it would be well to drop the archaic, in fact silly, expression "simple" fracture as used in the title of and throughout the paper, except once, when Mr. Fairbank uses the accurate and modern term "closed" fracture. It is more than a quarter of a century since "simple" became "closed" and "compound" became "open" in official nomenclature. All will agree that a "simple complicated" fracture reads as a contradiction of terms, but it is just as wrong to state that a "non-touch" operation on a closed fracture makes it a "compound" one when the fracture merely becomes an open one. Dr. Robert Anderson in his letter in the same issue (p. 406) has fallen into a similar error.—I am, etc.,

London, W.1. W. McADAM ECCLES.

Breast-feeding

SIR,—Is it not time that breast-feeding should be considered dispassionately? Breast milk is no doubt good, clean, and cheap. Its perfection depends on the mother's health. It is the best milk for the baby if the mother is passive, calm, and patient, qualities which are not always present and less so now than in peacetime. I dislike Dr. Violet Russell's psychological approach (Sept. 26, p. 377). Surely the feed should not be a sensuous orgy for the infant and a sexual experience for the mother? In Nature, the lamb for instance, with its almost brutal butting of the udder, soon makes one realize that he is going for the food supply pure and simple. We are told by our psychological brethren that the impressions and experiences of infancy may last and colour one's neuroses in later years. Is not keeping a baby suckling at a large pendulous breast up to nine months, when the father may be away on Service during the whole of this time, setting the foundation for a type of child or parental fixation of a not too healthy kind? This is only a random thought, and psychotherapists may be able to tell us whether or not some abnormal behaviours have been modified by breast-feeding.

To say, as Dr. David Gilmour does (p. 378), that breast milk is "far and away the best food he can possibly have" is surely an overstatement. If anything, Prof. McNeil's article (Sept. 5, p. 271) proves to me that doctors in general know so little about infant feeding. How many can work out at once the caloric requirement and scheme of feeding for the classical ten-pound infant? If Nature intended women to feed their young successfully, then they should adopt a more reasonable attitude and go on all fours! Could there be a more awkward position for the suckling babe than the arm of its mother to sit on and a large breast to hold on to? I would plead for common sense. Always advocate breast-feeding and be ready, fortified if necessary with the "alphabet," to talk intelligently about it. But if the doctor considers that from some local or general physical or psychological reason the baby and the mother would fare better on artificial feeding then he should be equally competent to advise. If artificial feeding were such a second-rate thing why are there not more miserable children in doctors' families.—I am, etc.,

Towyn. J. GORDON MATHIAS.

Circulatory Overloading after Rapid Intravenous Injections

SIR,—The letter from Mr. Oswald Tubbs on this subject in your issue of Oct. 3 (p. 406) indicates that Prof. Duval's teaching during the last war has been overlooked.

Mr. Tubbs relates the case of a patient who during an operation for lobectomy was given intravenously a pint of normal saline and 3½ pints of blood. Duval in his advice on the treatment of shock in chest wounds is explicit: "One must always avoid, especially in a case of pulmonary haemorrhage, lowering the head and giving subcutaneous or intravenous injections." He does not in his book *Les Plaies de Guerre du Poumon*[1] explain his reasons. But in conversation he pointed out that the reasons were obvious. The object of an intravenous injection is to improve the systemic circulation. In order that the fluid may reach the left ventricle it must pass through the lungs. If the pulmonary circulation is seriously interfered with by injury the right side of the heart will be overloaded and harm rather than good will result. Duval did not distinguish between a slow and a rapid intravenous injection. Mr. Tubbs has described in detail the ill results which Duval assumed that every surgeon would anticipate.—I am, etc.,

Bristol. J. A. NIXON.

Loneliness in Infancy

SIR,—Your annotation on loneliness in infancy (Sept. 19, p. 345) is, to my mind, the most important you have published over a long period. "In infancy loneliness may be not only undesirable but lethal." Doctors who are specifically concerned with physical diseases may think it odd that this particular leader should be picked out for emphasis, but if medicine is to interest itself in the emotional as well as the physical roots of health, simple facts such as those that are stated in this article are fundamental.

The value of long unhurried analyses of a few patients by highly trained psycho-analysts is, sociologically, only in the scientific results obtained, but the application of the advances of our knowledge of human emotional development has direct sociological value. No advance in this knowledge is more significant to-day than the recognition of the strength of the relationship between mother and infant, even newly born.

The sort of experience which Dr. Bakwin describes in the article which forms the stimulus for the leader indeed makes one shudder, and it is a matter for regret that it is as an indirect result of gross human error that your comments appear, instead of as a direct result of good understanding. Nevertheless, these comments are welcome, and the strength of the word "lethal" may perhaps draw attention to the fact that we cannot take mothers from their babies (for war work) without killing infants. The truth is worse than this. We cannot take mothers from infants without seriously increasing the psychological burdens which the next generation will have to bear. We even know that it is the psychotic defectives and the delinquents of the next decade who are being recruited by this, perhaps the worst of the many silly things Hitler is making us do.—I am, etc.,

London, W.1. D. W. WINNICOTT.

Enuresis in Children

SIR,—Dr. J. J. Walls wonders if the aboriginal races are normally enuretic (May 16, p. 622). Recently a Zulu woman brought her child to me for treatment for enuresis. She looked upon it as something abnormal. I quote the following from the section on infancy in a book (O. F. Raum, *Chaga Childhood*, p. 109) which describes a tribe living in Tanganyika Territory: "Enuresis calls forth a variety of measures. The steps taken with smaller children are magical. When a baby is about

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[1] *Les Plaies de Guerre du Poumon*, par Pierre Duval, Paris: Masson et Cie, 1917; *War Wounds of the Lung*, by Pierre Duval, Bristol: John Wright and Sons, 1918.

9 months old its mother collects drops of rain in the hoof of a goat or the involutions of a colocasia leaf. This she gives to the child as a medicine, saying, 'Take and drink this drug. It will keep you from wetting the bed!' A bigger child is shown the puddle and scolded. . . . Boys are warned that unless they mend their ways they will not be allowed to sleep in their father's hut. . . . But some children never learn to control urination, though they are scorned for their deficiency and told that this will be an obstacle to their marriage (enuresis is a ground for divorce)."—I am, etc.,

Pietermaritzburg HELEN F. H. RAUM.

Lister's Antiseptic Technique

SIR,—I think it was in 1867 that Lister introduced the antiseptic method of dealing with wounds in the wards of the Glasgow Royal Infirmary. He used carbolic acid as his antiseptic. Later, I believe, he tried the bichloride of mercury, but reverted to carbolic acid after his colleague, Prof. Crookshanks of King's College, London, reported more favourably on the use of carbolic acid.

Lister reduced the technique of a surgical operation to the utmost simplicity. He taught that a solution of 1 in 20 of carbolic acid, if used for the hands, the sutures and ligatures, the skin of the patient, and for the wound itself, would make the operation safe so far as sepsis is concerned. He even taught that for scalp wounds it was not necessary to remove the hair if carbolic acid was employed, as the hair had a strong affinity for the carbolic acid and became itself an antiseptic dressing. Lister went so far as to say that the solution (1 in 20) of carbolic acid could be made when the surgeon arrived at the operating room, that sutures, knives, etc., could be immersed in the solution, and that they would be then quite safe to use after a matter of 10 to 15 minutes.

Carbolic acid was the antiseptic used in the Western Infirmary, Glasgow, when I was a student in 1885-8. It must be confessed that the results there were not so good as Lister's, chiefly, I believe, because the eminent surgeons (except perhaps Hector Cameron, who had been assistant to Lister in Glasgow) did not whole-heartedly believe in the germ theory of sepsis, and taught in my time that even pus might be laudable, or not laudable, according to its colour, etc. Twice only in the three years I was a student at the Western Infirmary did I see the abdomen opened. One patient, who was operated on for a tubal pregnancy by Hector Cameron (later Sir Hector), recovered; the other died. The surgeons then believed that opening the abdomen was not a justifiable operation.

I believe the surgeons of the future will be forced to employ both methods in operation—the aseptic and the antiseptic technique—the aseptic to disinfect dressings and instruments, and the antiseptic to disinfect the skin of the patient, the sutures and ligatures, and the wound itself before closing it to prevent what I consider a serious defect in aseptic surgery—namely, aerial infection—which, I fancy, is responsible for many of those mysterious deaths that occur two or three weeks after a so-called successful operation.

I may say that, as a G.P., I have used during the last 50 years the bichloride of mercury (1 in 1,000 or 2,000) solution, and it has never let me down. It is the custom now to "débride" all ragged wounds. A boy ripped his foreleg with a bicycle pedal from the knee to the ankle. Having no one to give him chloroform, I swabbed out the wound thoroughly with bichloride of mercury solution (1 in 1,000), and, placing the sutures for several minutes in the solution, I put 12 sutures in the leg. Not a single drop of pus formed around the stitches. This was Lister's method, but with the bichloride of mercury solution instead of carbolic acid.—I am, etc.,

Dornoch. J. T. MACLACHLAN.

Fallacies concerning Rehabilitation

SIR,—Rehabilitation is fast becoming the popular tag in medical circles in this war, but, like similar tags on previous occasions, it is only too apt to become encrusted with misconceptions. Two such misconceptions are already gaining ground. The first is that rehabilitation represents some new method of treatment hitherto confined to a limited selection of mental and orthopaedic patients. The second is that it is essentially a post-hospital problem, best tackled in specially equipped rehabilitation centres. I think it is of the utmost importance that both these misconceptions should be vigorously countered.

Rehabilitation is not a new method of treatment at all. It is the application to all types of recent disability of those varied methods of supervised exercise which exponents of physical medicine have advocated for years. What is new about it—at any rate in some circles—is the discovery that these methods are best applied and with greatest hope of success during the very first days after injury or operation instead of following a long period of immobilization; that remedial exercises, muscular drill, weight and pulley tests, occupational therapy, and organized games can all make specific contributions towards the recovery of muscular tone and the restoration of painless joint movement; and the rehabilitation should be conceived as a single process in which all these various methods act in combination and do not follow one another in order of time.

The other fallacy, that rehabilitation should best be carried out at specially equipped centres after the patient's discharge from hospital, is dangerous, as it tends to obscure the essential fact that rehabilitation is as much part of the proper treatment of an injury or illness as is the setting of a fracture, the repair of a hernia, or the dressing of an empyema, and that adequate steps ought to be taken from the very outset, not merely to treat the complaint but also to anticipate and prevent any subsequent disability.

We have now had some months' experience of rehabilitation methods in this emergency hospital, and the advantages of carrying out such measures on the spot instead of waiting for transfer to a separate rehabilitation centre have been most striking. It has meant that supervised physical exercises have been planned for every type of patient and adapted to the particular disability to be overcome; that suitable muscular drill has been carried out in bed on thoracic and abdominal patients, cartilage operations, fractures, and the like; that results are already showing earlier and better union of fractures and more rapid restoration of muscular power and joint flexibility, all varying with the rapidity with which such exercises can be started after the injury; that the whole morale and spirits of the patients have been raised, as they have watched their own progress from day to day and kept their own graphs; and that patients have been leaving the hospital and rejoining their units at an earlier date and in far fitter condition than was previously the case. It is time that rehabilitation methods were accorded a place in the routine treatment of all hospital patients whose illness or injury predisposes to subsequent weakness or disability.—I am, etc.,

HAROLD BALME,
Medical Superintendent,
Pinderfields Emergency Hospital.

Splenectomy in Purpura Haemorrhagica

SIR,—My comment on Dr. Bruce Williamson's letter (Oct. 3, p. 407) must be that if a manual worker is unable to follow his employment or a young woman's life is jeopardized by menorrhagia because of chronic thrombocytopenic purpura, I should feel I had failed in my duty if I did not recommend splenectomy. This is not a question of clinical experiment but of orthodox haematology and therapeutics. Recent data and references are given by N. Rosenthal (*J. Amer. med. Ass.*, 1939, **112**, 101). It is true that the results of operation are sometimes disappointing, but Dr. Bruce Williamson paints far too gloomy a picture.—I am, etc.,

The Radcliffe Infirmary, Oxford L. J. WITTS.

SIR,—Under the above heading Dr. Bruce Williamson (Oct. 3, p. 407) refers to an article in the *Journal* of Sept. 12 (p. 309) by Prof. Witts. My experience of what is called "essential purpura haemorrhagica" and the effect of splenectomy as a curative measure does not agree with that of Dr. Williamson, as I have previously expressed at meetings of the Clinical Section of the Royal Society of Medicine, and more particularly in an article in your columns on Sept. 7, 1935 (p. 445). In the series of cases which are therein mentioned no case was accepted unless the capillary resistance test was positive, and Mr. Rodney Maingot, who collaborated with me, never regretted this attitude, for, so far as we can ascertain at present, all our cases in which splenectomy has been performed by Mr. Maingot have had no recurrence of symptoms, and it is 16 years since the first 3 were operated on. We can, however, only give this assurance up to the beginning of the war, but all the patients had promised to write to me if any further symptoms occurred. If one of our patients should show recurrence I should suspect the presence of a splenculus which had grown to full size and advise an operation to verify this statement and to remove the accessory spleen.

Under the heading of "Diagnosis," in the article referred to, I wrote: "One might describe essential purpura haemorrhagica as an idiopathic disease, which may be acute or chronic and intermittent. It is characterized by the appearance of purpuric spots on the skin and spontaneous haemorrhages from one or more mucous surfaces—often resulting in anaemia—in which there are prolonged bleeding time, distinct diminution in the number of platelets, a positive capillary resistance test, generally a normal coagulation time, and a flat blood clot. The differential diagnosis has to be made from haemophilia, aplastic anaemia, lymphatic leukaemia, scurvy, hereditary haemorrhagic telangiectasis, and also from symptomatic purpura and hereditary thrombasthenic purpura. The points of importance are the personal and family history, the clinical history of the case, the performance of careful clinical examination, complete blood investigation, and the various tests mentioned above, such as bleeding time, coagulation time, etc. A proper appreciation of the information afforded should determine the diagnosis." I publish this in full for I feel that some reporters of cases may be alluding to a different condition with certain similarities to the genuine cases.—I am, etc.,

London, W.1. BERNARD MYERS.

Foreign Bodies in the Alimentary Tract

SIR,—I have read Mr. G. O. Chambers's article (Sept. 26, p. 362) with great interest, for he has given details of a most remarkable series of cases, but I trust that his experience is unusual. I have made many *x*-ray examinations on persons who have swallowed foreign bodies and have been frequently responsible for their treatment, but I have known only 5 cases which were followed by perforation, and in all 5 perforation could be attributed to an error in diagnosis or treatment.

Any person who is suspected of swallowing a foreign body should be examined as soon as possible and the exact position of the foreign body determined. If it is held up in the pharynx or oesophagus it should be removed, for though it may pass naturally the patient is in imminent danger of perforation. The patient should never be given an emetic, for such actions as vomiting, retching, or swallowing may cause further impaction. Once the foreign body is shown to be in the stomach there is no immediate cause for anxiety, for the majority of foreign bodies, which are swallowed accidentally will pass naturally, as will many of those swallowed by mental defectives. So far as is possible the patient should live under natural conditions. Generally he can be allowed to go home, providing he is kept under daily observation and there is easy access to a hospital. His diet should be unrestricted, for food is the natural stimulant of alimentary movements, and on no account should he be given a purgative, for the irritation so caused may excite spasm and lead to impaction or perforation. In most cases the foreign body will pass through the alimentary canal within a week, but occasionally it may be held up.

Sometimes the foreign body is retained in the stomach. If it is quite free the hold-up is due to inability of the musculature to lift the body towards the pylorus, and this difficulty is usually overcome by keeping the patient lying on his right side, or by total starvation for 24 hours. A hold-up in the antral region of the stomach, the pyloric canal, the duodenum, or the proximal coils of the small bowel for 24 hours suggests impaction, for in these situations the bowel is normally vigorously active. Such a case should be kept under observation by a surgeon. A persistent hold-up in the terminal ileum is unusual, and is most apt to occur if the patient is starved or very constipated, and may be relieved by adjusting the diet or by a small enema. If the body is small enough to enter the appendix it may be retained there for years, but fortunately this complication seldom arises. A hold-up in the colon is usually due to starvation or constipation. The patient should take liberal quantities of vegetable foods but on no account be given a purgative or enema, for so long as the foreign body moves slowly along the bowel the patient is in no danger.

Two of the 5 cases previously mentioned were in children, in whom perforation of the oesophagus occurred, the foreign bodies having been missed owing to the *x*-ray examinations being confined to films of the abdomen. In one case there was perforation of the stomach, the patient having been given a purgative which made him sick; one was due to radium necrosis of the appendix 3 days after hold-up of a 1 mg. radium needle; and one patient had an ischio-rectal abscess from penetration of the rectum after an enema had been given.—I am, etc.,

Radcliffe Infirmary, Oxford. F. H. KEMP.

Narco-analysis for War Neuroses

SIR,—I have been very much interested in Dr. J. L. Clegg's experiences with pentothal narco-analysis (Aug. 1, p. 140) and in comparing them with my own. I am happy to find myself almost in complete agreement with his conclusions, though I "hand him the palm" for enthusiasm, as he has employed the technique in four times the number of my cases over a similar period.

Narco-analysis has, of course, a very limited application, and is to a large extent a confession that other psychotherapeutic efforts, quickly applied, have failed. I only use it or advocate its use in cases where a definite impasse has been reached in endeavouring to overcome a patient's resistance. A therapist's value to a psychological unit depends on his ability to overcome resistance. Dr. Clegg has probably found, as I have, that this ability on the part of his assistants and collaborators, whether as the result of inherent gifts of healing or of extensive postgraduate training, or both, is very unevenly distributed. It is extremely valuable in suitable patients to be able to fall back on a more objective method, by which results are then achieved and much time saved.

Hypno-analysis I have found extremely useful in many cases, particularly in hysterical subjects. My experience with acute and chronic anxiety states, which form a large proportion of our war neuroses, has been identical with Dr. Clegg's. These patients cannot give the concentration necessary for the induction of hypnosis, and are, therefore, more suitable for other techniques, including narco-analysis.

Narco-analysis is not in itself a means of producing a positive transference; it may often produce a negative one. If, however, a positive transference has already been established in early interviews it is not necessarily disturbed by the technique. Patients who have benefited often ask for repeated doses, and persuade their comrades to submit to the treatment.

It has been gratifying in this discussion to have the support of Dr. J. S. Horsley (Aug. 22, p. 230), who originated the term for this technique and was its pioneer in these islands. I share his hope that real progress will be made in the Services towards perfecting it, so that we may advance from the inadequacy of stereotyped methods. To Dr. H. Crichton-Miller (Aug. 22, p. 230) I am obliged for stressing the saving of time effected by this method and for illustrating by case histories how relatively unimportant it is whether hidden material is repressed or merely withheld. From the therapeutic point of view it does not matter whether the patient's amnesia is true or false. The important thing is to achieve "abreaction" and liberate pent-up emotions, be the suppressing or repressing forces conscious, semi-conscious, or unconscious.—I am, etc.,

J. F. WILDE,
Major, R.A.M.C.

Anaemia in Young Adults—Dietetic?

SIR,—May I, a surgeon, with all humility air a medical observation in your columns. During the past year I have had several cases among my out-patients of a fairly severe anaemia arising in otherwise healthy young adults. Most of the subjects were the victims of small accidents—a sprained ankle or cut finger—which brought them to my clinics. Two at least had had a simple appendicectomy. The complaints made were identical in all the cases: dizziness with weakness and aching of the legs. On examination the patients were pale with pallor of the mucous membranes, had a well-marked "bruit de diable" at the root of the neck, and had a blood picture showing an anaemia with a deficit of red cells of one to two and a half millions, a colour index well below 1, and no other significant changes. A short course of iron rapidly cured them all. Although my hospitals are situated in fairly poor districts, all the patients were above the poverty line.

With the exception of two housewives, all were in good jobs and all were on the young side of 40.

I should like to know whether this apparently dietetic anaemia has been noticed elsewhere, and would also like confirmation from the experts of my view that it is a lineal descendant of the old-fashioned "chlorosis" of our fathers. If this is so, and the condition proves to be at all widespread, might I suggest that it arises from the cutting down of our meat ration with a consequent shortage of organic iron of the right chemical constitution in our diet? Further, I would suggest that the Ministry of Food might well consider the rationing of such articles as liver and the starting of a campaign to popularize the consumption of "black pudding" and other blood foods.—I am, etc.,

Wimbledon, S.W. 20. A. J. Hobson, F.R.C.S.

Blood Donors

Sir,—I have read with interest Dr. L. W. Proger's article (Aug. 29, p. 252). In it he fails to acknowledge the help this scheme has had and still has from the large number of voluntary workers throughout the country. It was not until the war had continued for over a year that the Provinces at any rate received any help in their individual and uncoordinated endeavours to maintain an adequate transfusion service. Up to that time most of us had spent much time, trouble, and money in training ourselves and obtaining equipment for our own needs. Since then we have had in this area much help from our regional transfusion centre, but the assistance received from the Ministry in the way of money for expenses and publicity is pathetic. The maximum financial aid allowed is 6d. per donor per annum. This is said to cover clerical expenses. Nothing is received for travelling expenses of donors, refreshment, apparatus, and iron therapy. The work of the medical officers and their helpers has always been voluntary.

It is probably a common experience of us all, as Dr. Proger mentions in his article, that frequently 50% of donors who are asked to attend fail to appear. Such apathy could be counteracted by some full-blooded propaganda by the Government. So far this propaganda has been limited to the issue of a few very indifferent posters. Finally, I would appeal to the medical branches of the Services for the provision of donors. If the giving of blood incapacitates the fit soldier, it surely must have a more adverse effect on the hard-pressed munition worker. Personally, I can see no reason at all why the Forces who have so much interest in this service should not provide a large part of the raw material.—I am, etc.,

E. Biddle,
Transfusion Officer.
East Suffolk and Ipswich Hospital.

Sulphonamide Sunlight Eruptions

Sir,—With reference to the article on sulphonamide sunlight eruptions by Capts. R. G. Park and W. M. Platts (Sept. 12, p. 308), I should like to submit to you the following considerations.

Because of structural similarities, sulphonamides are substituted for *p*-aminobenzoic acid, an essential metabolite of micro-organisms, and become germicides consequently. But *p*-aminobenzoic acid is an important constituent of the host's organism as well, especially of the vitamin B complex. Thus sulphonamides belong to the group of poisonous substances interfering with the activity of B complex—e.g., indole, nicotine, and extract of ground fresh fish. Park and Platts emphasize: "In their power to cause an eruption in parts previously exposed to the sun sulphonamides resemble pellagra."

Impairment of B complex is dangerous because parts of the complex are components of enzymes and ferments; nicotinamide is part of cozymase of v. Euler and of the coferment of Warburg; thiamine pyrophosphate (cocarboxylase) is another important coenzyme; riboflavin phosphorylate attached to a specific protein is the yellow enzyme of Warburg-Christian.

We see that the components of B complex control respiration, metabolism, cell repair, cell reproduction, cell proliferation; they may be the pathogenetic source of many diseases of well-known and unknown aetiology, even of psychoses—e.g., schizophrenia—and cancer. That we may become able to turn the wrong cell metabolism to the right way is a hope, but partly a fact, as the reports of Spies (*J. Amer. med. Ass.*, 1939, **113**, 931), Sydenstricker (ibid., p. 1697), Cleckley (ibid., **112**, 210), and many other authors show.—I am, etc.,

Cambridge. G. Brock, M.D.

Tenosynovitis in Industrial Workers

Sir,—In their article on tenosynovitis (Sept. 26, p. 367) Lieut.-Col. R. E. Flowerdew and Dr. O. B. Bode bring out several points that can bear emphasis. As a works medical officer I see a fair number of these cases every year, and I have noticed the following points which may be of interest to others. With the influx of new workers into my industry tenosynovitis has increased, and I saw 50% more cases in 1941 than in 1940; the number of employees was approximately the same and the processes were unaltered. The tendons affected are usually the extensor ossis metacarpi pollicis and the extensor brevis pollicis, and the movements which produce the complaint appear to be a combination of grasping an object by thumb and fingers, followed by quick pronation, as in closing the lid of a box.

Newcomers to a repetitive, stereotyped job involving these movements are particularly vulnerable, but it is to be noticed that cases crop up among employees who have had years of experience at these jobs, particularly after returning to work following a holiday or sick leave. It is decidedly rare in my experience for a patient who has fully recovered to relapse on returning to the same job. The period of disability in my cases is approximately the same—namely, 7 to 10 days—but it is essential, if the period is to be kept at this figure, to insist on the patient ceasing work as soon as the diagnosis is made. I have never seen a patient recover if kept at the same job that produced the condition, whatever the local treatment adopted.

In my early days I saw many patients get worse, and they had to be put off work; in these cases the recovery period was nearly always much greater. I have no reason to change the opinion expressed by me in the *Practitioner* in 1938—namely, that whatever local treatment is used rest is essential. The treatment I use is to strap the affected wrist with elastoplast, starting with a couple of turns round the hand and working up the wrist until the swelling is covered. This strapping is left on for 1 week after the patient has returned to work. The condition appears to be an inflammatory response to excessive fatigue of various groups of muscles, particularly those crossing the dorsum of the wrists. It also occurs in the anterior tibial group and the tendo Achillis.—I am, etc.,

Cadby Hall, W. 14. W. Blood.

What is a Closed Profession?

Sir,—Apropos of the very welcome recommendation that nursing should be made a "closed profession," what, exactly, is a "closed profession"? Since any unqualified and unregistered persons are free to practise medicine, surgery, and midwifery provided they do not represent themselves as qualified medical practitioners, sign death certificates, attempt to recover fees in the courts, etc., is there anything to prevent a class of unqualified, unregistered women from "tending sick persons for rewards"—whether under the direction of a medical practitioner or not—notwithstanding the passing of a "Nursing Act": in other words, of standing in the same relationship to the nursing profession as chemists, herbalists, "health practitioners," and the rest, do to the medical profession? Is medicine a "closed profession"? If so, it seems to leak badly.

If the Government takes over all medical practitioners, lock, stock, and barrel, as some seem to hope, will unqualified practice still be permitted or will it be regarded as an infringement? Has the individual any common law right to be treated by an unqualified practitioner if he desires it?—I am, etc.,

Brookwood, Surrey. H. M. Stanley Turner.

Operations, and Workmen's Compensation

Sir,—In reply to Prof. H. Levy's letter (Sept. 26, p. 380) I think all I need say is that I am fully aware of the nature of the evidence given by the British Medical Association before the Royal Commission on the Workmen's Compensation Act; that I had read the report of the combined medical and legal meeting at the Royal Society of Medicine some months ago;

hat I have had practical experience of the interpretation and application of the W.C.A. for the last twenty-five years, not only in the county courts but for twenty years as chief medical officer in London for the South-Eastern and Chatham and ater the Southern Railway; that I am fully aware of the great value of the special methods employed in rehabilitation centres; that I hold no brief (as explained in my first letter) for the W.C.A.; and that my sole object in my last letter was to correct what I believe to be rather widespread misapprehensions as to the provisions of the Act.—I am, etc.,

London, W.1. H. GARDINER.

*** This correspondence is now closed.—ED., *B.M.J.*

Scientific Journals for Enemy Prisoners of War

SIR,—I was interested to note the facilities given to prisoners of war in Germany to submit an article on typhus to the *British Medical Journal.* It may not be generally known that in order to prevent mental stagnation among enemy prisoner scientists in this country some efforts are being made to send them unwanted reprints of scientific articles. The authorities have welcomed the scheme, realizing that when world law and order are restored some of these very able men may, by their skill, play some part by scientific discovery to mitigate the physical ills of mankind. J. R. Baker, in acknowledging copies of the *B.M.J.* sent to the Department of Zoology and Comparative Anatomy, University Museum, Oxford, writes: "These are *particularly* welcome, because most of the people concerned are medical men."—I am, etc.,

Kelly College, Tavistock. A. ADAIR.

*** Dr. John R. Baker, writing from Burnt Oak, Kidlington, nr. Oxford, to *Nature* (Oct. 3), appeals for reprints of articles or copies of scientific journals to be sent to him at that address. Donors should give their names and addresses, so that they may receive acknowledgment and a report on the progress of the scheme.—ED., *B.M.J.*

Tongue Sign in Louse-borne Typhus Fever

SIR,—The symptomatology of louse-borne typhus fever described by Capts. C. Donald and P. B. Barker (Sept. 19, p. 333), embodying their experiences in a German prison camp during February, 1942, recalled to my mind a sign to which we in Poland attached some significance. It is the tongue sign, first described by Sterling-Okuniewski in his monograph on typhus. The patient is unable to put out his tongue when ordered to do so, especially in cases where the central nervous system is involved. The reason is perivascular infiltration in the region of the nucleus of the hypoglossal nerve. We found this simple clinical test of great help in differential diagnosis, especially since epidemics of typhus and enteric fever often occur simultaneously in Poland.—I am, etc.,

London, W 1. H. KRYSZEK, M.D.Cracow.

Obituary

M. BODLEY SCOTT, O.B.E., F.R.C.S.Ed.

The sudden death of Maitland Bodley Scott on Sept. 29, at the age of 64, came as a great shock to his many medical friends; he had seemed perfectly well when operating at Blandford Cottage Hospital two hours before. He was a native of Bournemouth and had an extensive surgical practice in his home town and in the surrounding districts, particularly in the Blandford area. From Marlborough he went to St. Bartholomew's Hospital, where his father and grandfather had been and to which he sent his eldest son. Scott served on the active staff of the Royal Victoria and West Hants Hospital from 1907 until 1938, when, on reaching the age limit, he was elected consulting surgeon. While assistant surgeon he organized, and was placed in charge of, the orthopaedic department, and while senior surgeon he initiated and supervised the fracture department. He was also honorary surgeon to Blandford Cottage Hospital, in which he took a deep interest; it was largely due to his devoted work and organizing skill that this hospital rose to its present high standard of efficiency. When the last war started he went to St. Malo to organize a Red Cross hospital for the French wounded. When it was taken over by the French he joined the Royal Navy and spent two years in Russia, serving under Commander Locker-Lampson; on his return he transferred to the R.A.M.C. with the rank of major and served in Mesopotamia as surgical specialist in the "Dunsterforce." For the work he did there he was awarded the O.B.E. (Military). At the outbreak of the present war he resumed active work at the R.V. and W.H. Hospital. His organizing ability and unstinted energy played a major part in the Emergency Hospital arrangements, not only in Bournemouth but at Blandford and Fairmile Hospital, Christchurch, where he did excellent work. Despite all these activities he was a regular attendant at the local medical war committee meetings.

Scott, a man of few words, never courted publicity, but the obvious wisdom of his concise observations carried much weight at the many committees on which he sat. He had great manual dexterity and a highly developed mechanical sense; his main hobbies were carpentry and architecture: it is therefore not surprising that it was a pure joy to watch his bone surgery. He never hesitated during an operation; never handled the tissues roughly; never scamped detail or appeared to hurry; yet he was a remarkably quick operator. His loss will be deeply felt by all who came in contact with him; he pulled his full weight to the day of his death. He leaves a widow and six sons, five of whom are on active service with the Forces.

A. B. R.

G. A. EWART, F.R.C.S.

We have to announce with regret the sudden death on Oct. 2 at Weybridge of Mr. George Arthur Ewart, surgeon to St. George's Hospital. He was the only son of the late James Cossar Ewart, M.D., F.R.S., for 45 years regius professor of natural history at Edinburgh, and was born on June 1, 1886. He was educated at Cargilfield, Clifton College, Edinburgh University, and Christ's College, Cambridge (of which he was a Scholar), and took his B.A. with first-class honours in the Natural Sciences Tripos of 1909. At Edinburgh he had been awarded the Vans Dunlop scholarship in 1905. Coming to London for the clinical course he soon made a name for himself at St. George's Hospital, and eventually won the Brackenbury prize in surgery, the William Brown scholarship, and the Herbert Allingham surgical scholarship. He qualified with the English Conjoint Diplomas in 1912, and, after holding house appointments, obtained the F.R.C.S.Eng. in 1914. During the last war he served in France with the temporary rank of Major R.A.M.C.(T.) in the surgical division of the 54th (London) General Hospital, B.E.F., and in England at the 4th London General Hospital.

Ewart had been surgical registrar at St. George's before his election to the visiting staff, and in due course became lecturer in operative and practical surgery. During the past 20 years he contributed a number of papers on abdominal disease to the *British Medical Journal* and the *British Journal of Surgery.* He leaves a widow (the younger daughter of the late Sir George Turner, K.C.B., consulting surgeon to St. George's), and one son and two daughters. Shooting was his favourite outdoor pursuit in middle life, but he had been a good long-distance runner and ran cross-country for Cambridge in 1909.

DR. ANDREW LOWRY MCCULLY, one of the oldest medical practitioners in Huddersfield, died on Sept. 17 in his 71st year. After a very distinguished career at Queen's College, Belfast, he graduated M.B., B.Ch., B.A.O., in 1897, with first place in the first-class honours list at the Old Royal University of Ireland. After settling in practice at Huddersfield he was appointed to the honorary staff of the Royal Infirmary as surgeon, and later medical officer in charge of the male venereal clinic, and on his retirement became consulting surgeon; he had also been obstetric consultant to the Huddersfield Corporation and lecturer for the Central Midwives Board. During the last war Dr. McCully served with a commission in the R.A.M.C. as medical officer of the 1/5th Duke of Wellington's Regiment and specialist surgeon at No. 56 C.C.S. He was a life member of the St. John Ambulance Association and had been corps surgeon to its Huddersfield Division. He joined the B.M.A. in 1906, was chairman of the Huddersfield Division in 1922, and president of the Yorkshire Branch in 1925-6. He was also a past-president of the Huddersfield Medical Society and the West Riding Irish Medical Society.

Medical Notes in Parliament

Medical Services for Miners: Committee's Report

Speaking during a debate on coal supply on Oct. 1, Mr. **Tom Smith** said an interdepartmental committee had been set up, with himself as chairman, to examine the suggestion in a recent White Paper on coal policy that there should be a medical service for the miners, not merely to deal with the certificates of those who wished to leave the industry, but to deal with rehabilitation and remedial treatment. The report of that committee had been prepared, and he would outline it to the House. It suggested that in each mining region there should be appointed a full-time medical officer, making 8 in the regions and with an additional 1 at headquarters, making 10 in all. At present there was only one full-time medical officer, who had done well but had had an impossible task of surveying 1,900 to 2,000 pits. Each regional officer would survey such things as first-aid treatment and ambulance services. Then there were the investigating and preventive measures concerning occupational diseases and fitness. Nystagmus was on the decline largely because of extra illumination. Of silicosis the House was to hear more in a few weeks. As a result of an inquiry in South Wales, it was to be called pneumoconiosis. In certain pits men suffered more on the average from carbuncles and boils than in other pits. That should be investigated. There was evidence of dermatitis—not limited to one district. The regional medical officer should be a man able to go down the pits and ascertain both causes and necessary preventive measures.

The interdepartmental committee recommended medical inspection of juveniles in accordance with the recommendations of the Forster Committee. At present it would be impossible to carry out the annual inspection of youths in pits up to the 19th year. The committee suggested that at the moment any youth entering the industry should be examined as to fitness for the work. The question of an annual inspection would be discussed with the Mineworkers' Federation. As regards fractures and allied injuries, it was proposed that where a miner, on medical advice, went for out-patient treatment the whole of his expenses should be paid on request. They desired so far as possible to use existing facilities for rehabilitation. They had the offer of one of the best places in Scotland. Where there were no facilities they aimed at rehabilitation centres. These existed at Mansfield, Wigan, and Lanark. They wished this rehabilitation work to be initiated by the Miners' Welfare Commission, whose chairman was convinced it would be pleased to do the work.

Mr. Smith said the figures for medical certificates showed that in one quarter just under 20,000 applications to leave the industry were based on these certificates. About 25% came from men at work and who had remained at work in the industry. Roughly half the cases were from four districts—South Wales and Monmouth, Durham, Lanark, and Lancashire and Cheshire. When a man presented a certificate with an application to leave the industry on medical grounds it was first scrutinized by the lay staff of the Ministry of Labour. If vague it was then submitted to a medical referee, whose decision was final. The interdepartmental committee suggested that certificates relating to miners should be lodged with the regional medical officer, who would scrutinize them and, if need be, get into contact with the man's own doctor or the medical referee. This might deter some doctors from lightly giving certificates. He believed that under the proposed medical service cases could be brought under review where men, while not ill, needed certain treatment to prevent them from having to stay away from work. The report generally would check wastage and prove of permanent benefit to those engaged in the mining industry. Mr. Smith said there was at present a gradual decrease in the accident rate in the mines. In the rush for increased production there must be no weakening in anything which made the mines safer.

The debate was adjourned.

Committee on Medical Schools

On Sept. 29 Sir E. **Graham-Little** asked the Minister of Health who were the members of the Interdepartmental Committee on Medical Schools, what was its reference, and whether the universities and medical licensing bodies were consulted about its composition and subjects of inquiry before the committee was formed. Mr. **Ernest Brown** pointed out that names were given in his reply on March 26 to Mr. Jewson. The reply to the second part of the question was "No."

Chiropodists for the Army.—Sir **James Grigg**, replying to Mr. J. Dugdale, on Sept. 29, said that in the early part of the war regimental foot orderlies were provided for field units and were thought adequate, especially in view of the increasing mechanization of the Army. In view, however, of experience, which suggested that more skilled treatment might be desirable, he was now considering the attachment of fully qualified chiropodists to field medical units.

Diphtheria Immunization.—The returns regarding diphtheria immunization from local authorities at Sept. 30, 1941, showed that between Jan. 1, 1940, and that date the number of notifications in England of diphtheria in children under 15 was approximately 51,700, and that approximately 2,380 of these children had received a course of immunization. In the same period the total number of children immunized under local authority arrangements in England was approximately 1,889,000. By the end of June, 1942, this number had increased to close on 3,000,000.

Price of Insulin.—On Oct. 1 Mr. **Tinker** alleged that hardship was caused to diabetic patients by the increased prices of insulin and needles. Mr. **Brown** replied that prices had increased, but having regard to the free provision of insulin and the necessary appliances for administering it under the National Health Insurance and Public Assistance schemes, he did not think there was a case for any special measures to prevent any increases warranted by the conditions of production.

The Services

Temp. Surg. Lieut. M. P. Martin, R.N.V.R., has been awarded the D.S.O., and Prob. Temp. Surg. Lieut. T. P. Storey, R.N.V.R., the D.S.C., for gallantry, daring, and skill in the combined attack on Dieppe, and Acting Temp. Surg. Cmdr. W. B. D. Miller, D.S.C., Prob. Temp. Surg. Lieut. J. G. C. Murray, and Temp. Surg. Lieut. R. Wadia, R.N.V.R., have been mentioned in dispatches.

Capts. L. G. Alexander and F. W. Hayter, R.C.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the combined attack on Dieppe, and Lieut.-Cols. K. A. Hunter and G. L. M. Smith and Capt. B. Brachman, R.C.A.M.C., have been mentioned in dispatches.

The King has awarded the R.N.V.R. Officers' Decoration to Acting Surg. Cmdrs. J. B. Hutchison and D. W. Bawtree, R.N.V.R.

The King has conferred the Efficiency Decoration of the Territorial Army on Col. (Acting Brigadier) D. S. Middleton; Lieut.-Col. J. R. McDonald, M.C.; Majors (Temp. Lieut.-Cols.) A. L. Crockford, M.C., F. N. Foster, E. G. R. Grant, P. J. Stokes, and M. L. Sutcliffe; Major (Acting Lieut.-Col.) K. S. Roden; Majors A. O'Hanlon and H. R. Paterson; and Capt. (Temp. Major) S. P. Wilson, R.A.M.C.(T.A.).

CASUALTIES IN THE MEDICAL SERVICES

The *University of London Gazette* dated July 24 contained a Roll of Honour. Among the medical officers listed there are three whose deaths have not been recorded in this column—namely, Surg. Lieut.-Cmdr. J. G. Slimon, R.N., Surg. Lieut. G. L. Cutts, R.N.V.R., and Lieut.-Col. J. J. Rooney, I.M.S., all of whom had been students of Guy's Hospital.

Surg. Lieut.-Cmdr. **James Gillespie Slimon** was killed by a train in Dec., 1939, while on leave. He graduated M.B., Ch.B. at the University of Glasgow in 1929. After holding the post of health officer at Kuala Lumpur in the Federated Malay States he entered the Royal Navy as surg. lieut. early in 1934 and was promoted in Jan., 1939.

Surg. Lieut. **George Lambert Cutts** died, following an operation, on June 6, 1940. He took the L.D.S. in 1914 and qualified M.R.C.S., L.R.C.P. in 1919, after which he was house-surgeon at Guy's and at the Queen's Hospital for Facial Injuries at Sidcup. He obtained the D.P.M. in 1925 and entered the L.C.C.'s Mental Hospitals Service, becoming successively A.M.O. at Bexley and at Long Grove, Epsom, and deputy medical superintendent of Friern Hospital. He rejoined the R.N.V.R., in which he served as surgeon-probationer in the war of 1914-18, soon after the outbreak of the present war.

Lieut.-Col. **John Joseph Rooney**, I.M.S., who died on April 5, 1941, was born on Jan. 27, 1890, and graduated M.B., B.Ch., B.A.O. of the National University of Ireland in 1920. He entered the I.M.S. soon afterwards, and was promoted capt. in 1923, major in 1929, and lieut.-col. in 1937. The earlier years of his service were spent at Lahore.

Wounded.—Capt. J. L. M. Whitbread, I.M.S.

Prisoners of War.—Col. R. D. Davy, M.C., Capt. D. Foskett, R.A.M.C., Capt. J. Gendle, R.A.M.C., Capt. R. G. Main, R.A.M.C., War Subs. Capt. H. J. McPherson, R.A.M.C., War Subs. Capt. A. P. Norman, R.A.M.C., Lieut. L. W. Ashton Rose, I.M.S., War Subs. Capt. N. C. Rogers, R.A.M.C., Lieut. A. W. B. Strahan, I.M.S., Capt. J. J. Woodward, I.M.S.

Missing.—Lieut. D. Christison, R.A.M.C. (*corrected announcement*), Surg. Lieut.-Cmdr. D. N. Ryalls, R.N.V.R.

Missing, Believed Prisoners of War.—Temp. Lieut.-Col. G. F. A. Condon, I.M.S., Temp. Major S. G. O'Neill, I.M.S.

Universities and Colleges

UNIVERSITY OF OXFORD

The King has approved that Arthur W. M. Ellis, M.D.Toronto, F.R.C.P.Lond., be appointed Regius Professor of Medicine in the University of Oxford on the retirement of Sir E. Farquhar Buzzard, Bt. Dr. Ellis until lately held a professorship of medicine in the University of London as Director of the Medical Unit of the London Hospital. He was appointed in March last by the Medical Research Council to a whole-time position on its scientific staff as Director of Research in Industrial Medicine.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

Diploma in Medical Radiology and Electrology.—*Part II:* R. A. D. J. Bernhardt, A. B. Donald, H. R. Holmes, B. Kounine, A. Press, R. A. Williams, H. Wormald

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* substantial increases were recorded in the incidence of measles 358, scarlet fever 81, acute pneumonia 58, and dysentery 53 cases; for whooping-cough and diphtheria the notifications were 212 and 71 fewer.

Generally, the variation in the incidence within the counties was small. London and the south-eastern counties were responsible for the rise in scarlet fever. Lancashire, with 35 fewer cases, was the only county that showed a notable difference in the incidence of diphtheria; Yorks West Riding supplied the only local noteworthy change in the incidence of acute pneumonia, a rise of 37, and for whooping-cough 79 fewer cases.

The trend of measles to increase is not yet general throughout the country, being mainly in the northern section of the country; in the south the fall has not been checked. The largest increases during the week were recorded in Yorks West Riding 154, Leicestershire 92, Lancashire 83, and Warwickshire 61.

Owing to a duplication in the returns for enteric fever during the week ending Sept. 12 the published return was incorrect. The figure should have been 19 and not 37.

In *Scotland* the notifications of both measles and scarlet fever were 43 more than last week's total. While the higher incidence was due to a small general rise in the case of scarlet fever, the trend of measles was affected by only a few areas. The largest of the local increases in measles were those of the city of Aberdeen and the town of Paisley.

Dysentery

The number of cases of dysentery in England and Wales has increased for six consecutive weeks, and the 237 cases recorded during the week was the largest weekly total since the spring of 1938. No fresh outbreaks of any size occurred, and the increase of 53 cases this week was mainly due to an extension of the outbreaks which began last week in Essex and Yorks North Riding. In the former county notifications rose from 3 to 39, and in the latter from 8 to 25: 15 cases were reported from Hants, Droxford R.D., where the outbreak also began last week. In Oxfordshire and Norfolk, where the outbreaks have persisted for a month, there were 11 and 40 cases respectively during the week.

Small-pox in Fife

Small-pox has appeared in Fife. The cases were at first thought to be chicken-pox, and in view of this a warning has been issued by the Department of Health for Scotland to the local authorities that a thorough examination of all cases of chicken-pox should be made and any doubtful cases brought to the notice of the local medical officer of health. According to Press reports 10 cases have occurred in Methilhill and there have been 2 deaths.

Returns for the Week Ending October 3

The notifications of infectious diseases in England and Wales included the following: scarlet fever 2,423, whooping-cough 845, diphtheria 860, measles 3,801, acute pneumonia 508, cerebrospinal fever 61, acute poliomyelitis 33, dysentery 232, paratyphoid 5, typhoid 6.

No. 38

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	70	5	13	2	—	121	4	34	4	5
Deaths		—	1				—	1		
Diphtheria	807	43	209	64	23	957	40	237	15	19
Deaths	21	—	4	3	—	23	1	7	2	—
Dysentery	237	13	41		—	102	9	68	—	—
Deaths		—	—	—	—		1	—	—	—
Encephalitis lethargica, acute	2	—	—	1	—	6	—	—		—
Deaths		1	—				—	—		
Erysipelas		—	56	8	1		—	45	7	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				89						
Deaths	70	10	15	20	6	38	1	13	17	11
Measles	3,356	271	170	15	10	612	18	14	23	—
Deaths	2	—	1	—	—	1	—	—	—	—
Ophthalmia neonatorum	112	3	18		1	76	3	7		—
Deaths										
Paratyphoid fever	13	1	—			125	6	11		
Deaths	—	—	—		—	—	—	—		
Pneumonia, influenzal*	459	32	10		—	434	15	2		—
Deaths (from influenza)	6	—	—	—	1	8	—	—	—	1
Pneumonia, primary			125	11	2			140	3	
Deaths				3	6				4	2
Polio-encephalitis, acute	7	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	32	1	—	24	—	28	1	8	3	1
Deaths		—	—				—	—		
Puerperal fever	2	2	11	2	—	—	4	14	3	—
Deaths										
Puerperal pyrexia	159	7	15		—	134	4	15		3
Deaths										
Relapsing fever	—	—			—	1	—			—
Deaths										
Scarlet fever	1,963	135	394	54	41	1,140	24	195	48	22
Deaths	—	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever†	9	—	6	12	6	27	1	4	10	4
Deaths	—	—	—	—	—	—	—	—	—	1
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	938	77	21	56	3	2,289	196	106	45	30
Deaths	13	2	1	1	—	14	1	2	2	—
Deaths (0–1 year)	318	27	76	36	23	272	19	69	25	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,549	461	523	164	114	3,429	427	512	164	94
Annual death rate (per 1,000 persons living)			11·8	10·9	‡			11·2	10·9	‡
Live births	5,901	673	809	346	258	5,079	460	812	374	172
Annual rate per 1,000 persons living			16·7	23·1	‡			16·5	24·8	‡
Stillbirths	223	23	27			170	14	37		
Rate per 1,000 total births (including stillborn)			32					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The second Moynihan Memorial Lecture will be given by Sir Hugh Lett, Bt., ex-President of the Royal College of Surgeons of England, in the Riley-Smith Hall of the Students' Union building, University of Leeds, on Thursday, Oct. 29, at 3 p.m. Subject: "William Hey and After." Members of the medical profession are cordially invited to attend.

The first Bacot Memorial Lecture of the Lister Institute of Preventive Medicine, entitled "Bacot's Work on the Louse and Some of its Recent Developments," will be given by Prof. P. A. Buxton at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C 1, on Friday, Oct. 30, at 3 p.m

At the meeting of the Royal Medico-Psychological Association to be held at 11, Chandos Street, W., on Wednesday, Oct. 21, at 10.30 a.m., there will be a symposium on the incidence of tuberculosis and dysentery in mental hospitals.

A meeting of the South Yorkshire Section of the Institute of Chemistry will be held at Sheffield City Hall on Thursday, Oct. 22, at 2.45 p.m., when there will be a discussion on "The Chemist and Industrial Health," to be opened by Dr. F. S. Fowweather and Dr. M. W. Goldblatt.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, Oct. 22, at 4.30 p.m., when Lieut.-Col. W. W. Mansfield will read a paper on "Disguise in Handwriting."

The next meeting of the North-Western Tuberculosis Society will be held at the Tuberculosis Offices, 352, Oxford Road, Manchester, on Thursday, Oct. 22, at 3 p.m., when Wing Cmdr. R. R. Trail will give an address on "Mass Miniature Radiography," illustrated by lantern slides.

The National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality is arranging a conference on mothercraft teaching and education for parenthood, to be held on Thursday, Oct. 22, at 2 p.m., at Carnegie House, 177, Piccadilly, W.

A special *x*-ray unit of the most modern type and costing £3,000 is to be sent to Leningrad by the Joint Committee for Soviet Aid, at Madame Maisky's request. The honour of presenting this unit to Leningrad has been given to the Civil Service Clerical Association, who have sent £6,000 to the Joint Committee for its mobile *x*-ray unit campaign.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEPHONE No.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Infra-red Radiation for Migraine

Dr. E. VENN CLAYDON writes: A patient of mine some time ago had a motor accident, one result of which was a marked increase in frequency and severity of attacks of migraine, which had dogged him for 20 years. I have recently been giving him infra-red radiation to the back of the neck for "fibrositis." The patient reports a renewed feeling of well-being, absence of attacks, and is able to do strenuous brain work with far less fatigue than formerly. Is this a known treatment for migraine and would it be safe to irradiate the head also?

Aspirin for Asthma

Dr. B. BANETH (Worthington) writes: In your issue of Sept. 19 there was an inquiry about the curative properties of aspirin in asthma. Aspirin is well known as an anti-allergic drug and was included in one of Prof. Lichtwitz's prescriptions for all kinds of allergic diseases, especially for asthma. There are quite a number of authors who consider that the well-known curative effects of aspirin are due to its anti-allergic properties only. In fact, to my knowledge aspirin alone is not frequently used as a remedy for asthma, as in some allergic patients it may act as a powerful allergin with severe consequences; I remember a very unpleasant and persistent urticaria after its use. But the same may happen with other drugs efficacious in asthma. The good effect of aspirin in an attack of asthma is no surprise for the student of allergy.

LETTERS, NOTES, ETC.

A Maternity Service Scheme

Dr. ROBERT SANDERSON writes: May I briefly call attention to a suggestion in Dame Louise McIlroy's address (Aug. 15, p. 184) that efficient voluntary maternity services should be subsidized. Take, for instance, the Brighton and Sussex Maternity and Women's Hospital. This is an old charity. William IV was the first subscriber. As to its efficiency the rough figures for the year 1941 are as follows: 1,400 deliveries (600 in hospital; 800 in the various districts of Brighton and Hove). There were 60 Caesarean sections. There was one maternal death. That this charity is in a chronic condition of insolvency is a reproach to the community and the country.

Diagnostic Sign in Ruptured Peptic Ulcer

Dr. V. E. BADCOCK, *M.C.* (Cornhill-on-Tweed), writes: In the *British Medical Journal* of Feb. 2, 1918, Prof. R. J. Willan drew attention to a helpful diagnostic sign in ruptured digestive ulcers. This sign, though not always present, does not appear to occur in any other acute abdominal condition and is particularly useful in an atypical case. It is of such diagnostic value that I feel it deserves to be better known than it is. The sign consists of a transverse ring or band of constriction across the abdomen at the level of the lower margin of the ribs and extending into the flanks at either side. It is just as if an invisible string was stretched tightly round the abdomen, dividing it into an upper and a lower portion. Prof. Willan described two cases of ruptured pyloric and gastric ulcers where this sign was prominent, and I have now seen it in my last three consecutive cases of ruptured duodenal ulcers.

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journal* for October 15, 1842:

"To one of the most salubrious and delightful spots in England —the village of Malvern—has lately repaired one of the advocates of the water system, where he conducts an establishment upon the same plan as that of Priessnitz, in Germany; and, attracted by the *reports* of wonderful cures, thither flock 'the halt, the maimed, and the blind.' The same assurances of success are alike held out to all—to the gouty and well-fed alderman—to the poor, wan, and dejected creature, rapidly sinking beneath the strides of consumption—to the little infant, 'mewling and puking in the nurse's arms' —to him who has attained 'second childishness and mere oblivion' —to the unfortunate being who has never heard from his birth the sweet and varied sounds of nature, or whose heart has never been gladdened by the blessed light of day. That this water doctor performs many cures we do not for a moment doubt. But, on the other hand, we do not hesitate to affirm that the wholesale adoption of this remedy in indiscriminate cases has and will continue to be productive of the most serious and extensive mischief. And, in the first place, if we look to the instances in which hydropathy makes its most frequent cures, they will be found to be old chronic cases, for which the medical man previously in attendance recommended strong exercise, fresh air, bathing, nourishing and wholesome diet, with entire abstinence from all beverages of an exciting or inflammatory nature. But, the fact is, a physician finds it a very difficult thing to get his patients to do this. It causes too much trouble or expense, and they think that, in all probability, they shall recover without the adoption of such rigorous measures. The disease, however, is of a nature which will not admit of this; and so, if they do not get worse, at least they make no advances towards recovery. Then they hear of the *wonderful cures* of the water doctor, and away they go to his establishment. Here they are compelled to do that which was before recommended, for it is part of the system which builds its success solely upon a rigorous application. They rise early, walk the Malvern hills before breakfast, return home with the skin in a warm, healthy glow, eat sparingly, and drink nothing but water. Can anything be more beneficial than this to a person who has been a martyr to the gout, or to one who, from imprudence and intemperance, is frequently suffering from indigestion? Certainly not. But from its efficacy in one class of diseases is not to be assumed its efficacy in all."

⁎⁎ At the time the article from which the above extract is taken was published, hydropathy was very much in vogue. In the *Provincial Medical Journal* of September 24 and later, Dr. Charles Hastings, who was secretary of the Provincial Medical and Surgical Association (forerunner of the B.M.A.), was strong in his condemnation of the indiscriminate use of "the water cure," beginning one of his articles as follows: "It may well be doubted whether there is any country on the face of the earth in which quackery is so successfully followed as in rich and credulous England."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 24 1942

SOME ASPECTS OF CARDITIS*

BY

T. F. COTTON, M.D., C.M.McGill, F.R.C.P.

Physician to the National Heart Hospital

I shall describe in this paper certain symptoms and signs which have helped me in the management and treatment of patients, particularly children, with rheumatic heart disease. I have also some observations to make on prognosis, based on the after-history records of children over a 10-years period.

The symptom-complex of rheumatic fever does not present a uniform clinical picture. There is a monocyclic type with pyrexia, toxaemia, sweating, leucocytosis, and migrating polyarthritis; the heart may not be affected, and recovery is complete after a week or ten days of acute illness and three weeks of convalescence. In some these acute symptoms develop after a throat infection and two or three weeks of low-grade fever. There may be a second similar cycle of symptoms without cardiac involvement. Some have a persistent irregular temperature not rising above 100° or 101°, and there are rare cases with hyperpyrexia (Coburn, 1931).

Fever is the most constant of rheumatic phenomena. There may be no arthritis and no cardiac or other visceral manifestations of infection. Tachycardia, like pyrexia, is evidence of a general infection, and not necessarily due to the cardiac lesion; its relation to active carditis, except in advanced disease, may not be that of infection of heart muscle or valve, but the indirect effect of toxaemia on heart rate.

Temperature and Pulse

The temperature and pulse chart is an index of active rheumatic infection; it is not a record of the degree of cardiac damage. There are rare cases of hyperpyrexia in children, it is true, with severe carditis, and rapid heart action is common in heart failure; but high fever and a much-accelerated pulse with slight or no structural disease of the heart are not uncommonly associated. The case history of a boy of 6 illustrates this lack of parallelism between pulse rate and structural change. Three weeks after scarlet fever he developed pyrexia and a tachycardia of an unusually high rate with sinus rhythm; the heart was not enlarged, a systolic murmur audible over the mitral area was heard for the first time, and there was a profuse growth of haemolytic streptococci from septic tonsils. He was given sulphanilamide, and the temperature was normal in two days. He was discharged from hospital a week later with no abnormal heart signs. This was probably not a rheumatic infection, but will serve as an illustration of disturbed heart action of infective origin without structural disease. It is common knowledge that sino-auricular tachycardia is a reaction to infection; with a rise in temperature there is a corresponding increase in the pulse rate. When it is a reaction to heart failure there are always other signs of serious heart disease. In cardiac rheumatism active infection is more often the cause of a persistent rapid regular heart action at rest over a long period than myocardial insufficiency.

The sleeping pulse rate may be a guide to infection, but cannot be used to distinguish infection from heart failure as a cause of tachycardia, for in both conditions the sleeping pulse rate is raised, and approaches more closely the alert rate than in patients not actively infected or in failure. The pulse rate after exercise is increased by infection and by heart failure; this exaggerated reaction of heart rate may continue after the infection is quiescent and after recovery from heart failure. There are other factors involved in the response to effort which make the pulse rate after exercise an uncertain guide to infection or cardiac reserves. In early mitral stenosis, early aortic incompetence, and effort syndrome the rise in pulse rate after exercise may be the same, and is of little value in differential diagnosis. Tachycardia may be caused by nervous influences, infection, and heart failure; as an isolated sign it is unreliable evidence.

Dyspnoea

Dyspnoea after effort may be a symptom of infection, structural disease, debility, an abnormal nervous system, or some other quite different pathological process. Active rheumatic infection is usually absent when there is a valve lesion without enlargement of the heart. Few patients with either active or quiescent rheumatism complain of breathlessness at rest unless they have signs of heart failure. When these signs are absent, and the respiratory rate is raised, a heart lesion is not the cause.

When the heart with mitral or aortic disease is much enlarged, undue breathlessness after exercise, if there is no other known cause, is of cardiac origin. There is some difficulty in assessing this symptom when the valve lesion is not associated with an increase in the size of the heart; the myocardium has suffered slight injury, and carries an extra burden from the valve defects, but its reserve force is sufficient to meet the demands imposed on it by moderate exercise. Neurogenic influences may be the cause of the breathlessness, and not infrequently exercise tolerance is normal when these have been removed. The difficulties in dissociating breathlessness from the heart are much less when the valvular signs are of an equivocal nature; the systolic murmur as an isolated sign can be placed in this category.

Precordial pain is a common complaint of the patient with an inflammatory lesion of the heart; it is felt at rest, occurs more often after effort, and closely resembles the pain of effort syndrome. It is not anginal in character or distribution, and can easily be distinguished from the pleuropericardial pain of pericarditis by the cardiac signs. The precordial ache is a symptom of minor value in the diagnosis of structural disease.

Toxaemic Signs

There are signs of toxaemia which are not peculiar to a rheumatic infection but should nevertheless be treated with the greatest respect, for they serve as indirect evidence of structural change which may not be revealed by the heart signs. Pallor may be regarded as an important sign of infection in a rheumatic subject. A secondary anaemia of slight or moderate degree with a low-grade leucocytosis is the blood picture one expects to see in the active phases of carditis. It may develop rapidly, and the percentage of haemoglobin and

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* Part of the St. Cyres Lecture for 1942, delivered on June 16, 1942.

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the number of red corpuscles may reach extremely low levels, with anisocytosis and poikilocytosis, and with the colour index in most cases below unity

A girl aged 10 was admitted to hospital under my care 11 years ago in congestive failure, with moderate enlargement of the heart, aortic regurgitation, mitral stenosis, pericarditis, fever, and other signs of a rheumatic infection. The blood counts revealed a severe and progressive anaemia. The red blood cells fell to 2 millions, and the haemoglobin to 30%, with a colour index of 0.75; there were anisocytosis, poikilocytosis, and nucleated red cells. She was given liver by mouth in large quantities; she liked it and may owe her recovery to this strange taste. The red cell count rose to 5 millions and the haemoglobin to 90%. The tonsils were enucleated a year later. She now leads an active life, works in a munition factory, can walk four miles comfortably, and was married last year.

There may be rapid wasting, gradual but steady loss of weight, or failure to gain weight. This reaction of the body weight to infection will be influenced by the virulence of the infection or resistance to it, or such other factors as exercise, vomiting, diet, conditions of rest, and the age of the patient. The weight chart is a more accurate record of infection in children than in adults. The sedimentation rate is raised in active rheumatism, as in other infections, and may remain high when other signs of activity can no longer be detected. A very high rate is evidence of a severe infection. A low rate may be expected in the non-active phases of rheumatism. The rate falls with the onset of congestive failure, and is affected by the degree of anaemia; it is raised in thyrotoxicosis and in other diseases. It is a less reliable sign of infection in chorea than in other forms of rheumatism; it is comparable to the pulse rate, temperature, and weight charts in distinguishing between active and non-active carditis; it bears a close relation to the development and disappearance of nodules. Subcutaneous nodules and arthritis are characteristic phenomena of rheumatic activity, but they are also tissue reactions of rheumatoid arthritis, and cannot therefore always be accepted as unequivocal evidence of juvenile rheumatism. The absence of these signs does not exclude active infection.

Diagnosis of Active Carditis

I have so far described some important signs of rheumatic activity without reference to cardiac signs. It has been my object to show that it is possible, from a study of the reaction of the body as a whole to infection, to distinguish between the active and the quiescent phases of carditis. The correlation of these signs with those of structural disease of the heart is essential as a basis for prognosis and treatment. The diagnosis of active carditis from the cardiac signs alone is one not easily made. The disease may progress from recurring infection without any change in the quality of the endocardial murmurs. It is difficult to recognize reactivation of a chronic valve lesion from an acute infection, whether the signs are those of mitral stenosis, aortic incompetence, or mitral regurgitation. The development of a diastolic murmur not hitherto audible is an indication that inflammatory changes are taking place in the valve. The development of an apical systolic murmur has less pathological significance. It may be a sign of endocarditis, or a functional reaction to infection. The loud harsh murmur with slow heart rate is more often organic, but the soft bruit accompanying an overacting heart may be due to structural damage. The endocardial murmurs are unreliable signs of active carditis. The friction rub of pericarditis in the course of a rheumatic infection is unequivocal evidence of active structural damage to the myocardium. A wrong diagnosis of aortic incompetence is a not uncommon error, occasionally with grave consequences.

One expects to find some cardiac enlargement in acute rheumatic myocarditis; a close parallelism undoubtedly exists between acute rheumatic infection and an increase in the size of the heart. In a fair number of cases there is no enlargement, and other signs must be found before cardiac involvement can be diagnosed. Those who maintain that the heart is always enlarged when it has been attacked by rheumatism may have been misled by placing too much reliance on the uncertain palpable and percussion outline of an overacting heart. Even an *x*-ray examination has its limitations in determining slight changes in the shape and size of the heart.

The development of enlargement of the different chambers of the heart, of the aorta, and of the pulmonary artery can be determined by the radiological method, now regarded as part of a systematic examination of the cardiovascular system. Enlargement of the heart in the course of a rheumatic infection is a sign of myocardial injury; it is an early response to this infection, and is likely to be progressive when the rheumatic process is active. The size of the heart is related to the type of the initial infection. One expects to find the earliest increase in size, and the largest heart, among those who have had a severe attack of rheumatic fever. A mild infection may cause a valve lesion with little or no enlargement, and remain stationary in a long quiescent period of the disease. Enlargement is also a reaction to the extra load which the heart has to carry as a result of a valve defect. Changes in the shape and size of the auricles and ventricles may be a quick response to rapidly developing aortic regurgitation, or the gradual effect, from strain, of the slow sclerosing process of mitral stenosis. The degree of enlargement is a more reliable index of the virulence of the infection than is the valve deformity. Progressive enlargement is a more valuable sign of active infection than is a change in the character of the murmur

Heart-block

Electrocardiographic studies have demonstrated that in a large proportion of patients with active carditis there is a lengthening of the auriculo-ventricular conduction time. Cohn and Swift (1924) found that 84% of their cases with rheumatic heart disease showed some increase in the P–R interval. Keith's figures are approximately the same in those with carditis, and more than 50% in cases with chorea or arthritis without other signs of carditis (Keith, 1938). He concludes from his observations on the effect of atropine on the P–R interval that the mechanism responsible for the delay in conduction in all degrees up to complete heart-block is overstimulation of the vagus, and suggests that the exciting cause is the overactivity of the vagal nerve endings in the heart. Lengthened conduction may outlast all other manifestations of active infection for months. It is difficult to assess the significance of varying grades of heart-block in these circumstances. An arrhythmia of this type may be evidence of a localized pathological process in the region of the bundle, and a sign of active carditis; or it may be the residual effect of past rheumatism, a static situation not necessarily changing, like a murmur or enlargement of the heart. Transient partial heart-block can occur in association with vasovagal syncope; it may be a vagal effect without anatomical changes in the myocardium. The following two case records will illustrate how difficult it sometimes is to distinguish between active infection and residual myocardial damage on the evidence of heart-block.

Miss H., aged 20, had tonsillitis in July, 1939, and in August had well-developed symptoms and signs of rheumatic fever. In November there were no abnormal heart signs. In December the electrocardiogram showed heart-block with dropped beats, with no delay in conduction time after an exercise test and after atropine; the leucocytes were 11,200 per c.mm. and the sedimentation rate 5 mm. an hour. A diagnosis of active carditis was made on the evidence of heart-block and the history of recent rheumatism.

The other case is that of a young man aged 22. He had fainted in the past but had no return of this symptom for three years. His complaint at the time of examination was epigastric pain before meals. There was no history of rheumatism or sore throat. The heart was not enlarged and there were no murmurs. The electrocardiograms while in hospital showed partial heart-block with dropped beats and no delay in conduction after exercise and atropine; right axis deviation was present. There was no leucocytosis, and the sedimentation rate was not raised. Was heart-block in this case an isolated sign of active infection or residual damage from past infection? I did not think he had active carditis.

The development of auricular fibrillation is of great clinical importance, for it influences the course of rheumatic heart disease in the direction of heart failure and is therefore in close relation to the cause of death. It is a late manifestation of the rheumatic process, with an incidence of more than 40% among those who die, and the duration of life after its onset is less than three years in a large proportion of cases (De Graff and Lingg, 1935). Nutritional changes in the myocardium may be the cause of this disturbance of rhythm ; the part played by active infection as a causative factor in its production has not been demonstrated. There are some who hold the view that auricular fibrillation is sometimes an effect and not the cause of heart failure (Luten, 1936).

Interrelation of Heart Failure and Rheumatism

When we consider heart failure in relation to rheumatic infection there is a general recognition that these two conditions are interlocked. Acute or subacute rheumatic activity must be regarded as the chief cause of myocardial failure in rheumatic heart disease. Progressive enlargement is a constant feature of heart failure ; active infection may be responsible for progressive increase in size and failure. There are, among other contributory factors involved in these changes, a progressive valve lesion and auricular fibrillation ; both impose an extra burden on the heart and are closely linked with activity of infection. The heart failure of bacterial endocarditis is good evidence in support of the view that active infection plays a more important part in heart failure than mechanical strain.

Bacterial endocarditis is not evidence of rheumatic activity ; its relation to the phenomena of rheumatic disease is accidental (Coburn, 1931). It is a blood-stream infection which may present symptoms and signs easily distinguished from those of cardiac rheumatism. The temperature, pulse rate, and blood picture are not always distinguishing features of the two types of infection ; embolic phenomena may be absent, the fingers not clubbed, the spleen not palpable, and the blood sterile. In children, bacterial endocarditis is extremely rare, and consequently the difficulties of differential diagnosis do not often arise.

Prognosis of Carditis

I have some observations to make about prognosis, based on the after-history records of 200 boys with carditis, average age 11 years, over a 10-year period. These children were under my care in a special convalescent home, and the basis of treatment was rest in bed when there were symptoms or signs of active infection ; those without active infection were allowed to play games regulated to avoid undue breathlessness and over-fatigue. There are two consecutive groups of 100 ; in one group (Table I) the average stay in the home was four and a half months, and in the other (Table II), six months. The 200 cases are also dealt with as one group (Table III) by combining Tables I and II. They are classified as valve lesions in Tables I to III ; Table IV gives the degree of enlargement of cases in Table II. In Tables I to IV the numbers known to be alive or dead at the end of the tenth year are recorded.

Table I.—*Results of 100 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Untraced
Mitral disease: systolic murmur	57	36 (63%)	18 (32%)	3
Mitral stenosis	23	8 (35%)	14 (61%)	1
Aortic regurgitation and mitral stenosis	14	7 (50%)	6 (43%)	1
Aortic regurgitation .	4	2 (50%)	2 (50%)	0
Non-valvular . .	2	1 (50%)	0	1
Total	100	54%	40%	6%

Table II—*Results of 100 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Under Observation less than 10 Years
Mitral disease: systolic murmur	32	18 (56%)	8 (25%)	6
Mitral stenosis	34	16 (47%)	12 (35%)	6
Aortic regurgitation and mitral stenosis	24	9 (37%)	13 (54%)	2
Aortic regurgitation	6	3 (50%)	1 (17%)	2
Non-valvular	4	3 (75%)	0	1
Total	100	49%	34%	17%

Table III (*Tables I and II combined*)—*Results of 200 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Untraced
Mitral disease: systolic murmur	89	54 (60%)	26 (29%)	9
Mitral stenosis	57	24 (42%)	26 (46%)	7
Aortic regurgitation and mitral stenosis	38	16 (42%)	19 (50%)	3
Aortic regurgitation ..	10	5 (50%)	3 (30%)	2
Non-valvular .. .	6	4 (66%)	0	2
Total	200	103 (52%)	74 (37%)	23 (11%)

Table IV.—*Degree of Enlargement*

Disease	Living						Dead						Grand Total
	Blank	0	+	++	+++	Total	Blank	0	+	++	+++	Total	
Mitral disease. systolic murmur . .	5	5	9	5		24	1	2	2	3		8	32
Mitral stenosis .. .	3	0	12	6	1	22	1		2	7	2	12	34
Aortic regurgitation and mitral stenosis	1	1	4	5		11	1	1	5	4	2	13	24
Aortic regurgitation .			4	1		5				1		1	6
Non-valvular . .			3	1		4							4
Total	9	6	32	18	1	66	3	3	9	15	4	34	100
		57%						35%					

Table V.—*Under Observation 1-5 Years and 5-10 Years*

Disease	Dead in 1–5 Years						Dead in 5–10 Years					Grand Total
	Blank	0	+	++	+++	Total	0	+	++	+++	Total	
Mitral disease: systolic murmur . ..	1		1	1		3	2	1	2		5	8
Mitral stenosis ..	1		2	4	2	9			3		3	12
Aortic regurgitation and mitral stenosis ..	1	1	4		2	8	1	1	4		6	14
Aortic regurgitation .				1		1						1
Non-valvular								3	1		4	4
Total	3	1	7	6	4	21	3	5	10		18	39

The figures in Table I show that 54% are living, 40% dead, and 6% untraced. In Table II 49% are living, 34% dead, and 17% untraced. In Table III 52% survive, 37% died, and 11% are untraced in this 10-year period.

In Table I 63% with mitral systolic murmurs are living and 32% dead ; 35% with mitral stenosis are living and 61% dead ; 50% with aortic regurgitation and mitral stenosis are living and 43% dead ; with aortic regurgitation alone 50% are living and 50% dead.

In Table II 56% are living and 25% dead in the systolic murmur group ; 47% with mitral stenosis are living and 35% dead ; with aortic regurgitation and mitral stenosis 37% are living and 54% dead ; with aortic regurgitation alone 50% are living and 17% dead.

Table III shows 60% living and 29% dead with mitral systolic murmurs ; 42% living and 46% dead with mitral stenosis ; 42% living and 50% dead with aortic regurgitation and mitral stenosis ; 50% living and 30% dead with aortic regurgitation.

In Table IV it will be seen that 57% with slight or no enlargement are living and 35% are dead at the end of 10 years.

Table V shows that 21 died within 5 years and 18 died in the second 5-year period.

Summary and Conclusions

Observations are made on the prognosis in carditis, based on the after-histories of 200 boys, average age 11 years.

Rather more than one-half of the children with carditis are alive and slightly more than one-third are dead 10 years after from 4½ to 6 months' treatment in a special convalescent home. The larger number of untraced cases in Table II (17% as against 6% in Table I) prevents one from concluding that the prognosis is more favourable when the stay in a convalescent home is increased from 4½ to 6 months.

Rather less than half of those who die within 10 years live longer than 5 years after treatment in a special convalescent home.

The death rate in children with mitral stenosis and aortic regurgitation is much higher than in those with mitral systolic murmurs, over a 10-year period.

Children with moderate or considerable enlargement of the heart are less likely to live 10 years than those with slight or no enlargement

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REACTIONS FOLLOWING TRANSFUSIONS OF STORED BLOOD

BY

R. ARDEN JONES, M.B., B.S.

White Lodge E.M.S. Hospital, Newmarket

Two cases of blood transfusion reaction not due to incompatibility are here recorded. Though there is a lack of pathological data, they present such unusual features as to justify detailed clinical notes. The therapy employed in these cases invites criticism from many aspects. It is described rather fully, however, since the reaction to these measures involves interesting physiological considerations.

Case I

Woman aged 30. Six children. Rheumatic fever in June, 1940. Admitted for colpoperineorrhaphy. Haemoglobin 66%. Group A (II). Blood transfusion with Group O (IV) blood 4 days old, which was directly matched with the patient's serum and found to be suitable.

Nov. 19.—10.45 a.m.: Transfusion drip started. 11 a.m.: Complained of headache and vomited a little; chest felt tight. 11.30 a.m.: Felt cold and was a little shivery. At 12 noon, when 3/4 pint had been given, she complained of pain in the chest. The transfusion was stopped. Shortly afterwards colour was poor and pulse rapid and thready, 140 a minute. Resuscitation measures; omnopon gr. 1/3, heat cradle, and warm drinks were given, but vomiting became troublesome. Temperature rose to 102° at 2 p.m. and condition did not improve, the pulse remaining rapid and thready. The bed was blocked and rectal fluids were given. Coramine was administered repeatedly. Blood taken from a vein was sterile after 5 days' culture At 10 p.m. there was still no improvement. Lips cyanosed, eyes sunken, extremities icy, tongue dry, mentality clear, exposed veins empty, pulse almost imperceptible. Heart rate 140 regular: B.P. 40 systolic. Lungs clear. At 11.30 p.m intravenous saline was started, 2 pints being given rapidly.

Nov. 20—After the saline the B.P. rose to 75/55 at 12.25 a.m. and pulse was countable at 126. A third pint was run in more slowly, and at 4 a m. the B.P. had fallen to 60/45 and later to 50/35 One pint of plasma was then given rapidly (20 minutes), and at 5 a.m. the B.P. was 55/35. Further intravenous saline was given more slowly. Digoxin 0.5 mg. was injected intravenously, and D.O.C.A. 5 mg. was given Five hours later, at 10 a.m, the patient's condition was still that of profound collapse; T. 99°, P. 120, R. 20, B.P. 50/35. She was restless, sunken-eyed, and a little cyanosed; veins empty, a few crepitations at right base, no icterus. No urine had been passed since the transfusion reaction had occurred, nearly 24 hours previously Total intravenous fluid: 4 pints saline, 1 pint plasma. At 3.30 p m. 0.25 c.cm. pituitrin was given, and repeated in half an hour; the pulse, which had remained steady at 120 though poor in volume, fell to 100; but had risen to 120 by 6 p.m. Catheterization produced 7 oz. of highly coloured urine: albumin—moderate cloud; no blood, haemoglobin, or bile; pus, *B. coli*, and an occasional R.B.C. This urine may have been in the bladder since the transfusion was started. W.B.C. 23,000, R.B.C. 3,950,000, Hb 70%, blood urea 80 mg./100 c.cm. At 12 midnight, 24 hours after the intravenous saline had been started and over 36 hours since the reaction occurred, B.P. was still 55/35. T. 100°, P. 120, R. 28; hiccup, retching, very restless, neck veins not filled above the angle of Louis, lungs clear, no oedema. Eucortone had been given without improvement.

Nov. 21.—At 2.30 a.m. 0.25 c.cm. pituitrin was given, and repeated in half an hour as before; again the pulse fell promptly to 100. Respirations at this time had returned to 20. At 10 a.m., after a restless night, patient was slightly delirious. Hiccup persistent; P. 90, R. 30, B.P. 60/30. Slight dyspnoea, rhythm intermittent. Venous pulsation at root of neck but veins not filled above the level of the angle of Louis. Few basal rales. No oedema. Marked rigidity of all the limbs. Two pints of saline had been given in the previous 12 hours, making 11 pints in about 36 hours since the drip was started. Intravenous drip was discontinued. Urine, 4 oz., passed spontaneously at 6 a.m. (The first urine definitely secreted since the reaction had occurred—44 hours.) It contained albumin (heavy cloud); no blood or haemoglobin; pus cells but no casts in centrifugal deposit. Ephedrine gr. 1/2 was given by injection 3 times between 10.30 a.m. and 2 p.m., and thereafter gr. 1/4 every four hours. Urine, 6 oz., was passed spontaneously at 3 p.m. At 6 p.m there was definite clinical improvement Pulse had remained between 88 and 100 all day; B.P. 60/35, R. 24. At 12 p.m. pulse rate rose to 120, dyspnoea increased, patient became restless and delirious; B P. 75/40, R 30. Neck veins were not filled above the level of the angle of Louis. No oedema. Early failure was suspected, but ephedrine gr. 1/4 was continued 4-hourly, digoxin being given, 0.5 mg. b.d.

Nov. 22.—At 12 noon, 72 hours after the transfusion, patient was restless and wandering mentally. T 99°, P. 120, R. 30. Extensive herpes of lips, mouth sore, mucosa ulcerated, tongue dry and furred No icterus. Urine, 14 oz., was passed during the night. Casts, blood, and haemoglobin were absent During the day the pulse rate fell to 80 at 2 p m. and 66 at midnight, becoming grossly irregular. B.P., however, rose from 64/40 at 12 noon to 75/45 at 3 p.m. and 90/60 at 12 midnight. Definite congestive failure was now present, with 1½ in. of venous filling in the neck. Respirations 36–40; slight oedema of ankles and sacrum. The cardiac irregularity was considered to be due to auricular fibrillation in a fully digitalized patient. Ephedrine and digoxin were stopped. Urine passed during day measured 21 oz.

Nov. 23.—Diarrhoea with incontinence of faeces now occurred. Urine was being passed freely—65 oz. in 24 hours. Slow fibrillation continued, but signs of congestion had cleared. Hiccup was persistent. There was marked bruising of the skin at the site of injections and very slight icterus was thought to be present. Van den Bergh's reaction gave a very weak indirect positive. Blood urea 180 mg./100 c.cm. and urine urea 1.2% R.B.C. 4,610,000, Hb 80%, W.B C. 12,300, polys. 85%

Nov. 25.—Diarrhoea was still persistent though fluids alone were being given by mouth. Marked dehydration was present and fibrillation at 80 a minute continued. B.P 100/50 No icterus. At midnight dehydration was still pronounced, and patient was very reluctant to take fluids because of vomiting and ulceration of mouth and throat. I.V. saline was started.

Nov. 26 and 27.—Intravenous saline was continued, 16 pints being given in 48 hours. Urine passed during this period was 9½ pints in addition to that voided during a period of faecal incontinence. No sign of congestion or oedema developed, and on the 27th the pulse was regular at 90. Thereafter the patient recovered rapidly, and on the 29th B.P. was 115/75 and blood urea 50 mg./100 c.cm. Urine showed trace of albumin; pus cells and *B. coli* still present. No casts.

On Dec. 8 urea clearance was 70% of normal maximum clearance. Blood urea 36 mg./100 c.cm

Case II

Soldier aged 27. Admitted Dec 25, 1941, with gunshot wound of left thigh. During the week after admission repeated secondary haemorrhages occurred, which were treated by packing of the wound and compression bandages. Blood pressure ranged between 110/70 and 135/80. Temperature up to 100°.

On Jan. 1, 1942, R B.C. 2,750,000, W.B.C 26,000, polys 80%, Hb 50%. Group O (IV).

Jan 2—At 5.45 p.m. drip blood transfusion was started with Group O blood (citrated)—three days old—which had been directly matched with the patient's serum. No. 1 bottle (2/3 pint of whole blood) was given at a fast drip 60–100 a minute. At 6.10 p.m. severe rigor after about 1/3 pint Pulse 120. Blood drip reduced to 10–15 a minute. Adrenaline 5 minims and morphine gr. 1/4 given At 6.30 p.m. patient was shivery and complained of headache and pain in back of neck and chest. Vomited twice. No. 1 bottle was replaced by No. 2 bottle (though 1/2 pint still remained in No. 1), and this had run in by 8 p.m. without further reaction. Pulse remained at 120, but condition seemed better. The remainder of No 1 bottle was then given at 40–60 a minute and the transfusion was completed by about 9.30 p.m. without further incident. At 10 p.m.: Temperature 105°, pulse 160 and thready. Sweating profusely, vomiting at intervals and complaining of intense thirst Coramine was given and rectal saline started.

Jan. 3.—During the night he was restless and slept for short intervals only. He took large quantities of water by mouth and vomited repeatedly. Pulse fell to 100 at 5 a m.; volume improved slightly. Temperature 99° From 5 a.m. pulse rose gradually; at 9 a m. he was pale, grey, and the pulse was imperceptible. He was again given coramine. At 10 a.m.: T. 97°, P. 104, R. 28; pale and restless; pulse volume poor; B P. 50 systolic; no dehydration;

no icterus. There had been no bleeding from the wound. At 11.30 a.m. 4 oz. of urine was passed spontaneously, the first since onset of reaction 18 hours previously (16 oz. had been passed 2½ hours before the reaction occurred); S.G. 1020, trace of albumin; no blood or haemoglobin. At 2.30 p.m. condition unchanged; P. 120, B.P. 50 systolic, R. 26. Intravenous saline with 5% glucose started by a drip adjusted to 40 a minute. At 6 p.m. patient was still restless and was vomiting; T. 99°, P. 130, R. 36, B.P. 62/40. A little over a pint of saline had been given, but no further urine had been passed, though 85 oz. of fluid had been taken by mouth in the preceding 12 hours and only 18 oz. had been vomited. There was no sign of congestion despite slight dyspnoea and raised respiration rate. At 10 p.m. his condition had deteriorated further: B.P. 60/40, T. 98°, P. 140, R. 40. 36 oz. of I.V. saline had been absorbed since the onset. 1 pint of fresh blood (group IV) was then substituted for the saline and run in slowly at 10 drops a minute.

Jan 4.—During the night pulse fell to 106 though respirations remained at 40. Patient was delirious at times and very restless. Temperature 99°. At 4 a.m. (34 hours since onset of reaction) 14 oz. of urine passed. It contained albumin (moderate cloud); no haemoglobin; no R.B.C.s, occasional W.B.C.; fair number of granular casts. At 10 a.m. 1 pint of blood had been absorbed and the remainder of the original 2 pints of saline was given slowly. Intake for preceding 12 hours, 60 oz. by mouth; urine 14 oz.; vomit *nil*. Patient was restless and coughing repeatedly. No icterus. T. 98°, P. 120, R. 44, B.P. 80/60. At 12 noon a second pint of fresh blood was given at 15 drops a minute. At 4.30 p.m. B.P. 80/60; P. at 120 all day; R. 36-40; T. 99°. General condition slightly improved. Patient, however, looked extremely ill, pale, sunken-eyed, but not dehydrated. Persistent cough. Intake (12 hours) 58 oz.; output of urine 16 oz. At 10 p.m. signs of consolidation were detected at the right base and sulphapyridine was given. At 12 midnight the second pint of fresh blood had been absorbed and the drip was continued at 10 a minute with saline.

Jan. 5.—At 10 a.m.—64 hours since onset of reaction—intravenous saline was discontinued. Only 10 oz. had been given in the preceding 10 hours. (Total fluid given by this route in 44 hours was 2 pints blood and 2½ pints saline.) Intake by mouth 36 oz., urine output 19 oz. T. 100°, P. 116, R. 40, B.P. 105/70. Radiograph of chest confirmed consolidation at right base. Blood urea 130 mg./100 c.cm. W.B.C. 38,000—85% polys. Urine contained albumin and casts but no red cells or haemoglobin. At 5 p.m., T. 100°, P. 120, R. 40. Congestive cardiac failure was present with 2 in. of venous filling in the neck. B.P. 115/80. Liver just palpable; slight oedema. Extensive herpes of lips. Dry sore tongue, heavily furred. No icterus. Purulent sputum and signs of pneumonia at right base also noted. Diuresis had begun during the day, and 82 oz. of urine was passed during the 12 hours.

Jan 6.—The patient's condition had materially improved. Signs of congestion were fewer and diuresis continued. Sulphapyridine was continued up to a total of 25 g. Blood urea 130 mg./100 c.cm.

The patient thereafter proceeded to make an uneventful recovery. On Jan. 12 blood urea was 45 mg./100 c.cm., and concentration of urea in morning specimen of urine 1.7%. On Jan. 14 Hb 80%, R.B.C 4,000,000; urine contained no albumin, and no abnormal elements were present in the deposit.

Comment

The similarity of the reaction in these two cases is striking, and that they are unusual has been confirmed by both Prof. Arthur Ellis and Dr. Janet Vaughan (personal communications), who agree that intravascular haemolysis could be excluded. The dominant features were the absence of intravascular haemolysis, the extremely grave condition of the patients for over a week, and the sustained low blood pressure, being no higher than 60 mm. Hg systolic for over 48 hours in Case I. Marked nitrogen retention and a phase of congestive cardiac failure occurred in both cases.

Neither patient had been transfused before. The compatibility of the blood used in each case would seem to be satisfactory. The grouping of donors and recipients' blood was repeated and confirmed, and direct matching of serum from the recipients and cells from the donors was carried out in each case. Moreover, icterus and haemoglobinuria, though anticipated and looked for, were absent. The suspicion of slight jaundice on the fifth day in Case I could not be attributed to primary haemolysis of the transfused blood, and it was noted that there was extensive bruising at the site of repeated subcutaneous injections.

In both cases the blood given was less than five days old. It had been stored in a refrigerator at 4° to 8° C., and was macroscopically normal. No trace of haemolysis was visible above the surface of the sedimented cells, and microscopically the erythrocytes were healthy in appearance. In warming the blood care was taken that it was not exposed to an injurious temperature.

Infection of the blood cannot be excluded. Contamination of a batch of blood taken at another time did occur, though the infected specimens were in every case grossly abnormal macroscopically in under five days, and some 20 samples which were cultured and which appeared normal to the naked eye were not infected. That heavily infected blood may appear normal macroscopically is, however, recognized. Clearly, infection of the transfused blood is a possibility in both these cases, and the negative blood culture from Case I shortly after the onset of the reaction does not exclude this accident.

The nature of these reactions is uncertain, but an increase in the total vascular bed consequent upon a loss of peripheral vascular tone, with or without subsequent loss of fluid into the tissues, can reasonably be assumed. That this resulted from some substance in the transfused blood is probable, but whether this was a toxin of bacterial or other origin or an allergen is speculative. The prolonged duration of the collapse argues against a true anaphylactic reaction. The pneumonia in Case II suggests infection (Whitby, 1942), as does the leucocytosis.

The nitrogen retention would seem to have been the direct result of a loss of glomerular filtration during the period of hypotension, as with the recovery of the blood pressure diuresis set in. Hypertension did not occur at any time.

In the case of the milder reaction (Case II) more protein-containing fluid was given than in Case I, though in the latter excessive quantities of saline had been infused. In both cases a period of congestive cardiac failure occurred coincidently with the recovery of the blood pressure, but *some time* after the intravenous infusions had been stopped. This venous congestion, not directly attributable to a rapid overloading of the circulation with infused fluids, might be explained by the recovery of peripheral vascular tone on a blood volume which had been artificially raised above its normal level. The increased blood volume had previously been accommodated by an increased vascular bed. It is suggested that this occasionally occurs in cases of traumatic shock treated early by transfusion.

The infusion of large quantities of saline and proteinous fluid would seem to be irrational, and was clearly excessive in these cases. Though it certainly aided the circulation by maintaining the blood volume above its normal level it probably made subsequent congestion inevitable. For this reason saline was used in preference to plasma in Case I, but the danger of precipitating pulmonary oedema was thereby obviously increased.

Adrenal cortical extracts were given in Case I as an acute adrenal lesion was feared, but the response to this measure was negligible. Transitory response to pituitrin in Case I appeared definite. Ephedrine, though given in large doses by injection, could not definitely be shown to produce the desired effect, the blood pressure falling almost to its earlier level during its administration. Coramine was not effective. Veritol and other vascular stimulants were not tried.

Pituitrin is known to increase capillary vascular tone. Wenckebach (1932), in studying the effect of pituitrin on the cardiovascular phenomena of beriberi, showed clinically that this drug acts principally by constricting the capillaries. Its use, therefore, in cases such as those here reported would seem to be rational. It was not persisted with, however, for fear of embarrassing the cardiac circulation and so precipitating a fatal issue.

Summary

Two unusual cases of blood transfusion reaction, not due to incompatibility, are recorded, together with a brief commentary. Profound and sustained collapse with subsequent nitrogen retention and congestive cardiac failure occurred in both instances.

I wish to express my thanks to Mr. J. Preston Maxwell and Mr. John E. Rowlands for allowing me to report these reactions in their patients; to Prof. Arthur Ellis, Dr. Janet Vaughan, and Prof Ryle for personal communications; and to Dr. A. Morton Gill and Dr. Leo Pollak for helpful advice and criticism.

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BAGASSOSIS

AN INDUSTRIAL LUNG DISEASE

BY

L. I. M. CASTLEDEN, M.D., M.R.C.P.

AND

J. L. HAMILTON-PATERSON, M.D.

(With Special Plate)

Bagasse is the term applied to broken sugar-cane after the sugar has been extracted. This formerly waste product of the sugar-cane industry is now employed in the manufacture of board which, besides being an easily worked and durable material, has the property of insulating any cavity lined with it against sound and temperature changes. The many possible applications of these properties in building are obvious. At the present time the material is in demand for war purposes. The bagasse arrives at the board-making factory in open bales, which are then "broken"—i.e., the raw material is further crushed into small fragments. When manufacture was first started in England the bale-breaking was carried out under water. The process was slow, however, and about two years ago machinery was devised for breaking the bales in a dry state that proved to be much more rapid but gave rise to a great deal of dust, some very finely divided, in the air near the machinery.

Bagasse, which is largely composed of fibre, contains about 1% of protein and 5 to 7% of silica. Some of its cellulose content is said to be present in a crystalline form. The rest of the processes through which the bagasse goes are wet, an initial washing probably removing all the protein content, until the finished board is dried in a heated press at a temperature of 200° F. in the centre of the board, which would destroy any remaining protein. It is then cut and trimmed by circular saws, a process which again gives rise to a small quantity of dust containing silica but no protein.

Directly after the installation of the dry bale-breaking machinery, cases of respiratory illness began to appear among the workers engaged in this part of the process—namely, the labourers who fed the bales into the machine and the engineer who supervised its construction and running. No cases of respiratory trouble had previously occurred in the factory. Those workers who are engaged in the cutting and trimming of the finished boards are never affected. As soon as it was realized that the dust liberated at the initial stage of manufacture was injurious, measures were taken to suppress it. These consisted of a water spray and a suction draught applied to the site of its generation, and since the application of them no further cases of illness have occurred among the workers. The clinical features of four of these cases seen and the investigations made upon them are as follows:

Case I

A labourer at the factory aged 19, this patient had always enjoyed good health. There was no history of any chest trouble or of tuberculosis in himself or his family. He began work in the factory in Feb., 1941, and was exposed to bagasse dust as he fed bales into the breaking-machine. Since the end of March, 1941, six weeks before admission to hospital on May 4, he had had increasing shortness of breath and for four weeks a cough with scanty sputum that was sometimes blood-stained. He had been unable to work for ten days before admission.

On examination he was very dyspnoeic at rest, being hardly able to speak, but had only moderate cyanosis There was occasional cough with a scanty, frothy, sticky, muco-purulent sputum which was sometimes streaked with bood. There was no clubbing. The heart was normal and the blood pressure 140/60. The chest showed poor movement, with rather less on the right side than on the left. The trachea was central. The percussion note was impaired, with distant bronchial breathing in small areas at both bases. Vocal fremitus and vocal resonance were diminished at the right base. A few rales were present at the right base and scattered fine crepitations in all other areas. The abdomen, central nervous system, and urine were normal. A radiograph taken on May 5 (Plate, Fig. 1) suggested bilateral bronchopneumonia of influenzal type.

Progress—The temperature, which was 100.6° on admission, fell to normal in two days, at which it remained until the ninth day, when remittent fever began, lasting one week. The rest of the course of the illness was afebrile. The pulse rate varied between 104 and 144 and the respirations from 24 to 48 a minute until the patient was well. Cyanosis with extreme dyspnoea persisted for three weeks, then both gradually subsided over the next four weeks A radiograph taken on June 19 showed an increase in the area of consolidation (Fig. 2). The dyspnoea, which never had an asthmatic quality, was markedly relieved by oxygen, which was kept up continuously by nasal catheter for 51 days. Sulphapyridine appeared to have no influence on the course of the disease. Signs of patchy consolidation persisted in both lower lobes, varying in location and intensity for 7½ weeks, with rales frequently in other areas also. Finally the dyspnoea gradually ceased, oxygen was dispensed with for increasingly longer intervals, the chest began to clear by July 5 (Fig. 3), and the patient became subjectively well. He was followed up as an out-patient, remaining symptom-free, with further resolution of the lung lesions (Fig. 4), and five to six months after this last film was taken was admitted to the Navy.

The sputum was always scanty, muco-purulent, and at times blood-stained. The bacterial flora was varied, containing *M catarrhalis, Str. viridans*, and fusiform bacilli. *Staph. aureus* was grown on one occasion, and on another pneumococcus Type 14. Tubercle bacilli were not found. The cells in the sputum were epithelial, polymorphonuclear, and lymphocytic Eosinophils were never present

The blood count on admission was: red cells, 4,610,000 per c.mm.; haemoglobin 78%; colour index 0.87; leucocytes, 11,300 per c.mm.—neutrophils 83%, lymphocytes 14%, monocytes 3%, and no eosinophil cells. Subsequent white counts gave 9,200 and 9,300 cells, with normal differential counts containing 3% and 1% of eosinophils respectively.

Case II

This patient, an engineer aged 37 who had previously enjoyed good health except for an attack of influenza in 1936, had no history of chest illness in himself or his family, none of whom had had tuberculosis in any form. In March, 1939, he started work in the factory, where from Aug., 1939, to June, 1940, he was in intermittent contact with bagasse dust. From June, 1940, to Sept., 1940, he was in continuous intimate contact with the dust, superintending the construction and running of machines for the dry crushing process. In Sept., 1940, he became ill with a chest complaint which was called pneumonia, and was off work for 10 weeks. The symptoms of his illness corresponded to those of Case I—namely, shortness of breath, cough, and scanty sputum. During convalescence he was sent by his doctor, under whose care he had remained at home, to see the Tuberculosis Officer, who reported no P.T. In Nov., 1940, he returned to work, and in December began to be short of breath again. This shortness of breath rapidly and steadily increased so that by Jan., 1941, he was out of breath at the least exertion and was able to work one day only in every three. On Jan. 17, 1941, he attended hospital as an out-patient On examination there was seen to be early clubbing of the fingers. The chest was kyphotic, with many fine rales in all areas of both lungs anteriorly and at both bases Physical examination was otherwise normal. A radiograph taken on Jan. 18 (Fig. 5) showed a few apical scars and a little fibrosis in the right midzone. By May, 1941, his shortness of breath was extreme and painful, and he would collapse in the street from walking slowly. In one of these attacks of collapse he was admitted to another hospital, where a radiograph was thought to reveal bilateral apical tuberculosis. After this he continued at home with troublesome shortness of breath until he was admitted to hospital on Nov. 22, 1941.

On examination there was marked dyspnoea at rest with orthopnoea but no cyanosis. Clubbing of the fingers was present. The spine was kyphotic and the thorax rigid, and upon comment being made on this the patient stated that he had been becoming more "round-shouldered" since Jan., 1941 The trachea was central and the percussion note impaired at the left apex both in front and behind, with bronchial breathing and bronchophony. Crepitations were present throughout all areas of the left lung and at the right apex. The heart was

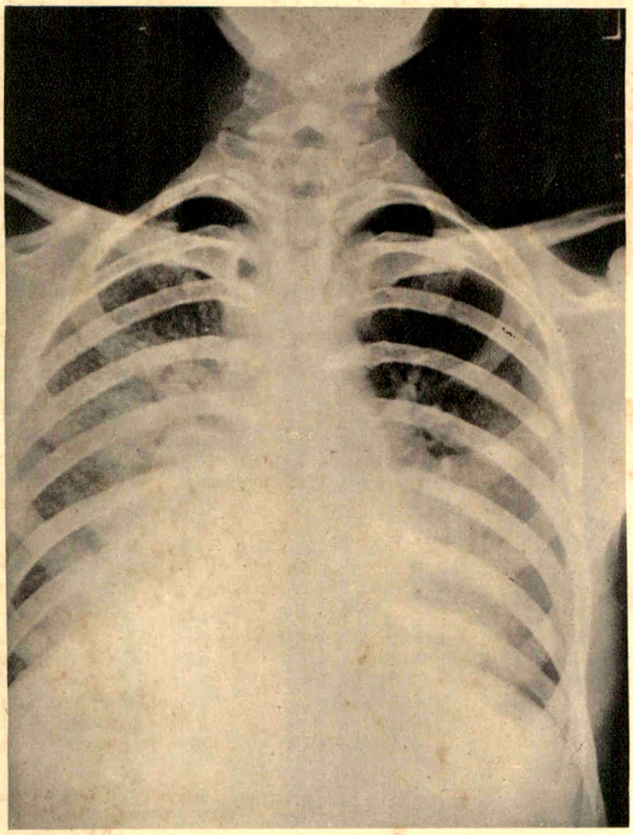

FIG. 1.—Case I (May 5, 1941). Bilateral basal mottling of bronchopneumonic type with enlarged right hilum gland.

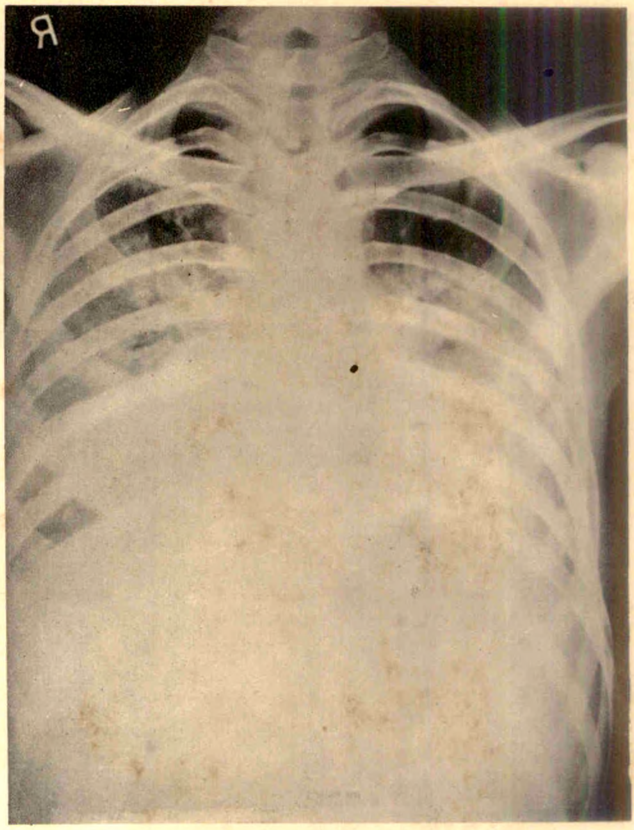

FIG. 2.—Case I (June 19, 1941). Extension of the lesions.

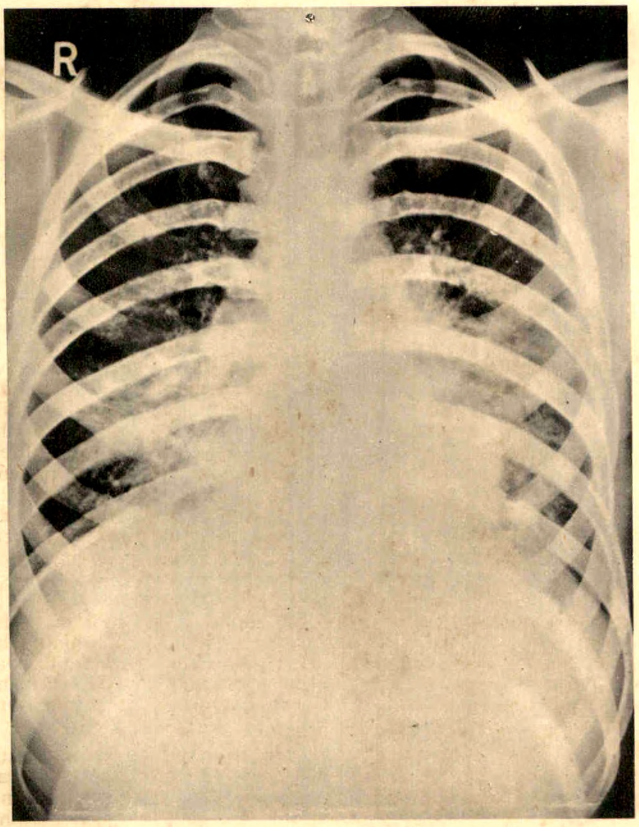

FIG. 3.—Case I (July 5, 1941). Resolution starting.

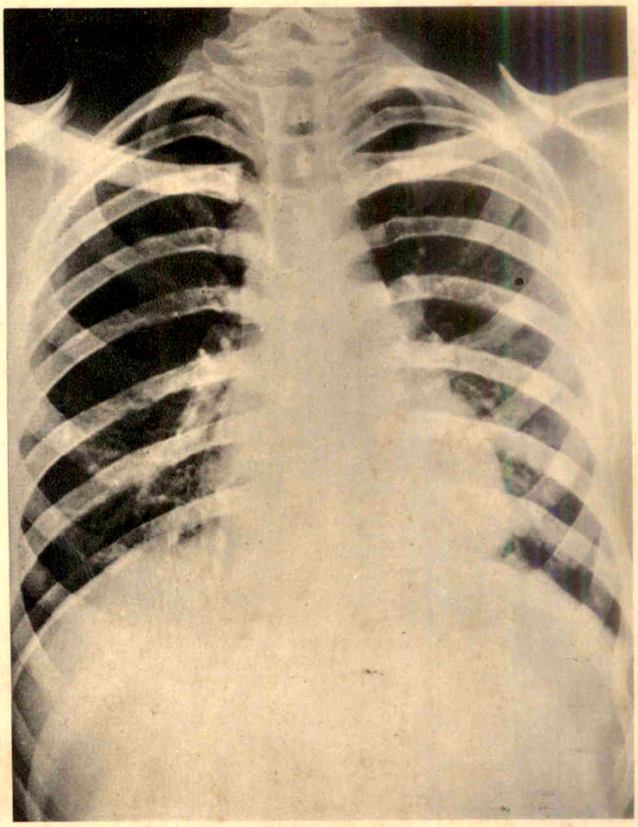

FIG. 4.—Case I (Aug. 29, 1941). Complete resolution of lung lesions except for a little basal striation.

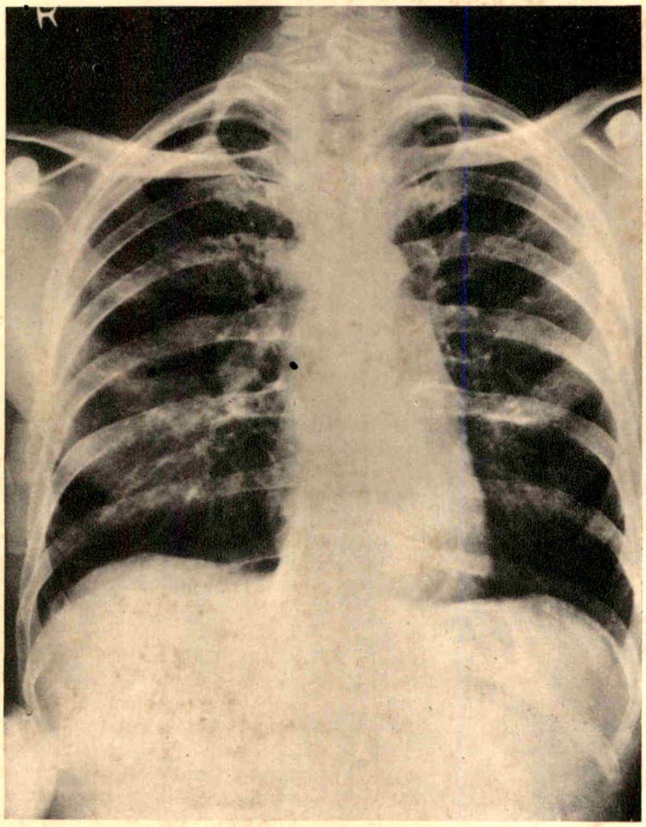

FIG. 5.—Case II (Jan. 18, 1941). A few apical scars and a little fibrosis in the right midzone.

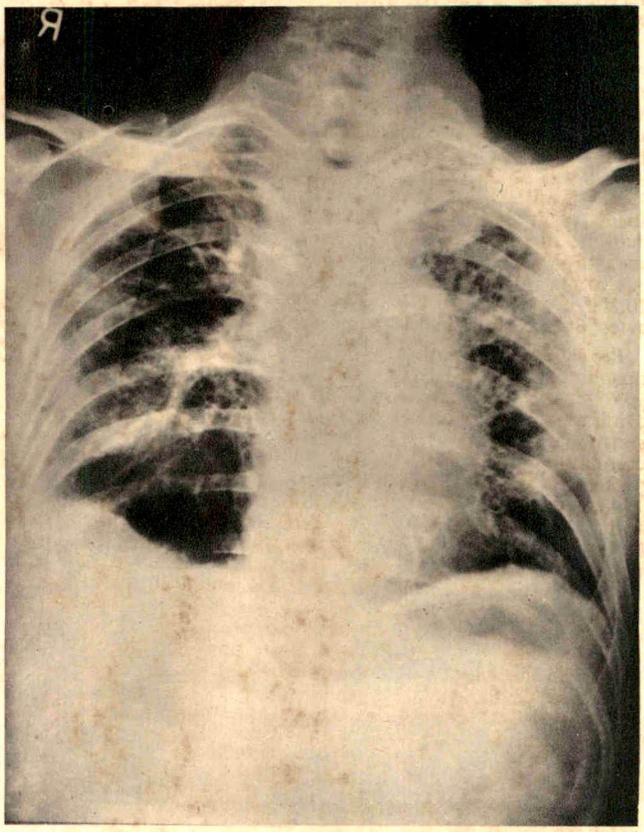

FIG. 6.—Case II (Dec. 5, 1941). Wide upper mediastinal shadow; irregularity of contour of right diaphragm with pleural thickening in costophrenic angle; streaky opacities of fibrotic appearance in both lungs.

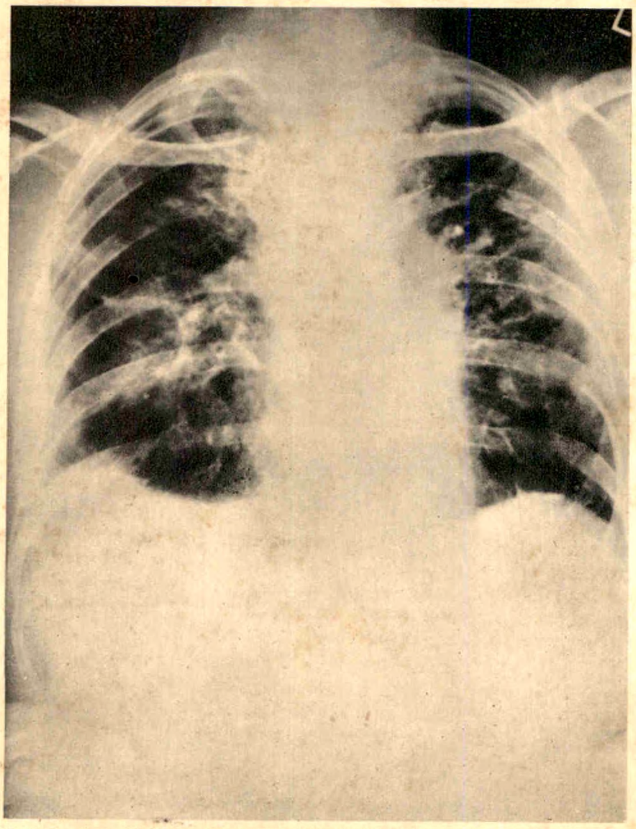

FIG. 7.—Case II (June 24, 1942). No radiological evidence of resolution.

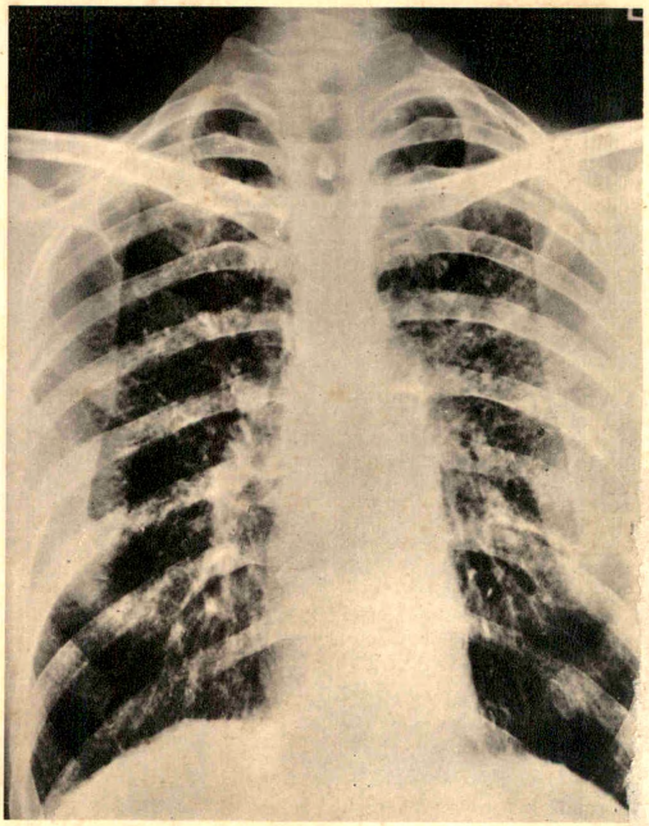

FIG. 8.—Case IV (June 15, 1942). General streaky opacity throughout both lungs.

normal and the blood pressure 110/70. The abdomen, central nervous system, and urine were normal. There were no signs of congestive cardiac failure.

The sputum was mucoid, viscid, scanty, but never blood-stained. The cells in it were polymorphonuclears and lymphocytes. Eosinophils were not seen. The bacterial flora was mixed, containing the usual mouth organisms, with occasionally haemolytic streptococci and pneumococcus Type 23. Tubercle bacilli were not found on repeated search. A special search was made for yeasts, moulds, and fungi, but none were seen. Radiographs taken on Dec. 5 (Fig. 6) showed appearances very much like bilateral pulmonary tuberculosis, and that the lung lesions had advanced since he had been seen as an out-patient. A blood count showed: red cells, 4,590,000 per c.mm.; haemoglobin 94%; colour index, 1.02; leucocytes, 10,200 per c.mm.—polymorphs 51%, lymphocytes 32%, monocytes 6%, eosinophils 11%.

Progress.—The patient was afebrile throughout his stay in hospital except for very occasional temperatures of 99° to 99.6°. The pulse rate was 80 to 100 and respirations 20 to 24 a minute. The dyspnoea gradually decreased and the signs of consolidation in the left upper lobe disappeared, but rales and crepitations persisted throughout the left lung, and were usually present at the right apex or base. On discharge on Feb. 15, 1942, he was able to get about with less dyspnoea than formerly, and has attended as an out-patient since with decreasing dyspnoea but with increasing kyphosis and occasional dragging pain in the lower part of his chest on the left side. He continues to attend as an out-patient and is unable to work. Radiographs taken on Feb. 2, March 16, and June 24, 1942 (Fig. 7) are all identical. They show some resolution of left upper zone shadows between Dec. 5, 1941, and Feb. 6, 1942; but thereafter the widening of the mediastinal shadow in the upper part, the peculiar streaky opacities in both lung fields, and the peripheral basal pleural thickening have remained unchanged.

Case III

A labourer aged 40 attended as an out-patient, complaining of shortness of breath. He was working at the same machine as Case I, and after one month at the job began to be short of breath, had a cough with scanty sputum and chest pains. He was off work intermittently, and was finally transferred to an open-air part of the factory, since when he has had less cough but his shortness of breath has continued. He had had no previous chest trouble. There was no history of tuberculosis in his family.

On examination he was slightly dyspnoeic. There was no clubbing of the fingers. The chest movements were poor but equal, with impairment of the percussion note at the left base and in the left axilla. The breath sounds were diminished in these areas. There were no added sounds. The heart, abdomen, and central nervous system were normal. The blood pressure was 140/90. The blood count was: red cells, 4,560,000 per c.mm.; haemoglobin, 100%; colour index, 1.1; leucocytes, 3,000 per c.mm.—neutrophils 43%, eosinophils 3%, basophils 1%, lymphocytes 49%, monocytes 4%. A radiograph of his chest demonstrated no lung lesion.

Case IV

A labourer aged 44 attended as an out-patient, complaining of shortness of breath. Sixteen months ago he had begun work at the factory and was exposed to bagasse dust when feeding the bale-breaker. A year ago he began to be short of breath and to have a cough without any sputum. He was able to work for increasingly shorter times before difficulties with his breath compelled him to stop. Finally he could manage to work only one to three days in each week. He was then transferred to outdoor work, since when he had been getting better but was still very short of breath on exertion.

He had had pneumonia in 1914, from which he had made a good recovery, but had had no other illnesses. There was no family history of tuberculosis. On examination there was moderate cyanosis with dyspnoea at rest. There was no clubbing of the fingers. The percussion note was impaired at the right apex, with diminution of the breath sounds in this area and at the right base. The breath sounds were normal in character. A few rhonchi were present throughout both lungs. The heart, abdomen, and central nervous system were normal. The blood pressure was 110/70. The blood count was: red cells, 5,010,000 per c.mm.; haemoglobin, 108%; colour index, 1.08; leucocytes, 6,600 per c.mm.—neutrophils 55%, eosinophils 1%, lymphocytes 40%, monocytes 4%. A radiograph taken on June 15, 1942, showed a general streaky opacity throughout both lungs (Fig. 8).

Discussion

The clinical appearance of these patients suggests an acute inflammatory lung disease with urgent and extreme dyspnoea as the presenting symptom but with little or no febrile reaction. On admission Case I was thought to be suffering from bilateral bronchopneumonia, which appeared to be of the influenzal type, but there was no epidemic of influenza at the time and he had already been ill for six weeks before admission—two facts which were against this diagnosis. There had been no case of psittacosis in this country for several years, and he had had no contact with birds of the parrot species. The alternative seemed to be that the lesion was tuberculous or was a form of chronic pneumonia (Scadding, 1936). The radiological appearances were more those of an influenzal bronchopneumonia than of a tuberculous lesion: tubercle bacilli were never recovered from the sputum, and he had long periods when he was afebrile with persistence of his symptoms and signs, so that some form of chronic pneumonia seemed the most likely diagnosis; but here again the absence of pyrexia was difficult to explain. His history of being employed in a dusty occupation naturally led to further inquiry concerning this. He said that some of his workmates had complained of cough and shortness of breath; but the medical officer of the works stated that although several of the employees had had respiratory illnesses about that time he had no reason then to connect them with the work upon which the men were engaged. The eventual complete resolution of the lesions with the return of the patient to normal health seemed to indicate their inflammatory nature, the aetiology of which remained obscure. There the matter rested until Case II was admitted to hospital. He also had the presenting symptom of extreme dyspnoea, and on his physical signs and the radiological appearances was thought at first to be suffering from bilateral active tuberculosis, but tubercle bacilli were persistently absent from his sputum, and he also had long periods when he was afebrile in spite of the apparent activity of the disease. The presence of persistent extreme dyspnoea called to mind the appearance of Case I, and upon inquiry it was found that his occupation, which was given as that of an engineer, concealed the fact that he had not only been working in the same factory as Case I but also had been exposed to the same dust. Contact was then made with the Factory Department of the Ministry of Labour and National Service to ascertain if workers at this factory were subject to an industrial dust disease. Dr. E. M. Middleton, one of the medical inspectors, kindly came to see Case II in consultation; he said that the illness was similar to others which had occurred in workers at the factory, and was probably bagasscosis (or, as we prefer to call it, "bagassosis"), a disease first recorded by Jamison and Hopkins (1941). These writers described an acute illness occurring in a young negro labourer who had been employed unloading bagasse at a board-making factory in America. His work was very dusty, and his illness was characterized by marked dyspnoea, cough with scanty sputum which was sometimes blood-stained, and physical signs and radiological appearances suggestive of bilateral bronchopneumonia. He made a complete recovery, and the lung lesions, after passing through a stage of "miliary mottling" radiologically, resolved, the clinical and *x*-ray appearances described being parallel to those of Case I.

Jamison and Hopkins were able to grow a fungus on two occasions from a concentrate of a 24-hour specimen of sputum in their case, and advanced the view that it was a fungous disease of the lungs. They reported their case at a medical meeting, at which Fasting (1941) stated that he had seen three or four similar cases, which he thought were due to a form of silicosis—a view which is shared by J. Freeman in this country (personal communication).

In the present series Case I had an acute illness with complete resolution of the lung lesions clinically and radiologically. Case II had an acute illness which was called pneumonia, which resolved clinically, and which, although not studied radiologically, must have left few if any traces in the lungs for him to be passed as normal at a tuberculosis clinic soon afterwards. He returned to fresh exposure to the dust, becoming ill again with lung lesions, which advanced between the time of his first being seen and his admission to hospital (Figs. 5 and 6) and which to date show no sign of resolution (Fig. 7), although he has improved symptomatically. Case III, seen once only as an out-patient, would appear to be in the stage of resolution; and Case IV, also seen as an out-patient, may be going to resolve or might progress to the fibrotic type of lesion seen in Case II.

It would appear that exposure to bagasse dust is capable of initiating a pathological process in the lungs, the complete resolution of which is possible with a return to normal (Jamison and Hopkins, 1941) as in Cases I and III, or which may progress to a lesion the nature of which is probably fibrotic—Cases II and IV. In this connexion it is noteworthy that Cases I and III had least and Cases II and IV most exposure to the dust in point of time.

Although bagasse contains silica in an amount capable of producing silicosis, the acute pneumonic phase of the illness which these workers experience is unlike any known form of silicosis previously described. Further, the men who at the final stage of the process are also exposed to a silica-containing dust are never ill. A pathogenic organism has not been isolated from the sputum in the acute stage of the disease, and an examination of 15 consecutive 24-hour specimens of sputum from Case II failed to isolate any yeast or fungus. It seemed possible that an allergic factor might be responsible for the disease, the workers becoming sensitized to a protein present in the dust of bagasse. Extracts for skin tests were therefore made as follows:

Twenty grammes of coarsely crushed bagasse was placed in 200 ml. of menstruum with 0.25% tricresol added, and allowed to stand five days with occasional shaking. Four extracts were made in: (1) N/10 NaOH; (2) N/10 HCl; (3) normal saline; (4) 30% alcohol in distilled water. After five days all were passed through a Seitz filter. Extracts 1 and 2 were neutralized with equal quantities of N/10 H_2SO_4 and N/10 NaOH respectively. In both a flocculent precipitate formed. This was used as a suspension. The others (3 and 4) were used as clear yellow fluids as they came through the filter. For each antigen a control was made of menstruum with 0.25% tricresol. The antigens so prepared were tested on Case II by the scratch technique, when all gave negative results. They were then retested by intradermal injection of 0.2 ml. Extracts 1, 2, and 4 all gave a wheal maximal in half an hour and thereafter subsiding, and a flare maximal in 36 hours measuring 35, 30, and 40 mm. respectively. The normal saline extract No. 3 gave no wheal, but a flare developed which reached a maximum of 40 mm. in 36 hours. It was also painless, whereas Nos. 1 and 4 were painful. Four laboratory workers, all of whom had handled bagasse and crushed it with the liberation of a quantity of fine light dust, were then tested with the saline extract by intradermal injection, and all gave negative results. Nine volunteers from the nursing staff who had never been in contact with bagasse were also tested, with negative results. Six employees at the factory were also tested. Four of these gave negative results; they had worked at various places in the factory but not at the bale-breaking machine, and two were as strongly positive as Case II, and were Cases III and IV. Of 20 individuals tested, therefore, the only three who gave positive reactions were Cases II, III, and IV. A similar saline extract was then made of light dust which had settled on ledges in that part of the factory where the board is sawn. This, as stated above, contains no protein, which is removed in process of manufacture. Tests with this extract made on Cases II, III, and IV all gave negative results.

It seems certain, therefore, that whole bagasse contains an antigen soluble in normal saline to which workers who inhale the dust can become sensitized. The acute phase of bagassosis is possibly an allergic response in the lungs to this antigen with, but more probably without, an infective element. The nature of the chronic pathological process is obscure. It might be due to: (1) a form of silicosis which supervenes upon the allergic phase during or after the latter's resolution; (2) a response on the part of the lungs to crystalline cellulose; (3) a chronic process of fibrotic nature occurring in tissues oedematous from their allergic response to the antigen. The conception of chronic allergy is foreign to pathological thought at the present time, but fibrosis is known to occur in lymphatic tissue oedematous for some time from any cause, and this explanation of the lung changes in these cases might be subsequently found to have a parallel in some of the more common diseases of chronic nature whose aetiology is at present obscure, such as rheumatoid arthritis.

Opportunities for the study of the morbid anatomy of the condition have not yet occurred, and attempts to reproduce the disease in experimental animals have so far failed.

Summary

An industrial lung disease is described and a theory of its causation which may link it with more common chronic diseases is advanced. It is suggested that the disease should be called bagassosis and not bagasscosis, as it has formerly been named.

Our thanks are due to Dr. J. N. Deacon, superintendent of the hospital, for permission to publish this paper, to the members of the pathological and nursing staffs who acted as normal controls, and to the management of the factory for details of their manufacturing process and facilities freely granted for visiting the factory and performing tests upon some of their employees.

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INTRAMURAL INTESTINAL HAEMORRHAGE

BY

D. CROMIE, M.B., B.Ch.Belf., F.R.C.S.Ed.
Honorary Surgeon, Newton Abbot Hospital

The following is an account of an unusual case occurring in a woman who was operated on because of signs of an acute abdomen. The peritoneal cavity was found to be full of blood, the source of the haemorrhage being traced to a haematoma of the wall of the caecum which had ruptured.

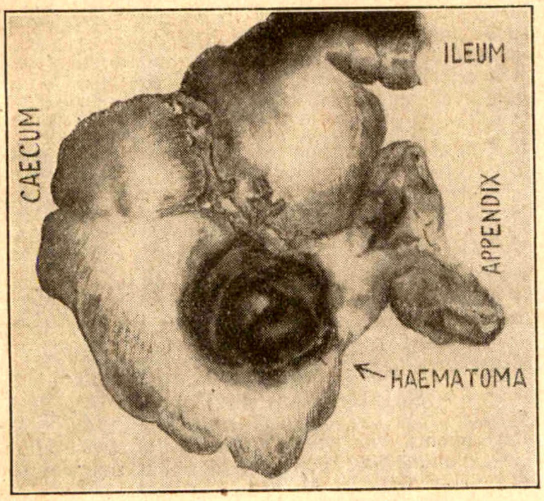
Case Report

The patient, a married woman aged 51, was admitted to Newton Abbot Hospital on Feb. 1, 1941. There had been no former illness of note. On Jan. 30 she had had sudden acute pain over the lower abdomen, had vomited, and had had a little diarrhoea. The temperature and pulse were slightly raised, and there was some abdominal tenderness but no rigidity. On Jan. 31 the condition was unaltered except that no further vomiting had occurred and the diarrhoea had stopped. On Feb. 1 the pain increased, settling in the right iliac fossa, and the right lower abdominal quadrant showed both tenderness and rigidity. The temperature was 99° F. and the pulse rate 90. In the afternoon the temperature rose to 100° F. and the pulse rate to 120. Acute appendicitis was diagnosed (pelvic variety), and it was decided to do a laparotomy, a right paramedian incision being made on account of the patient's sex and the unusual features of the case.

Findings at Operation.—The peritoneal cavity was full of blood, as in a case of ruptured tubal pregnancy. On exploration, however, this cause was excluded, but in the right iliac fossa a lump was found which seemed to be attached to the caecum. As the latter was mobile it was possible to deliver it, along with the tumour, through the abdominal wound. It was then seen that the appendix was thickened and inflamed and that there was a considerable deposit of fat in and around the meso-appendix. A groove separated its base from the tumour, which was a plum-coloured swelling, measuring 2 by 1½ in., situated on the lateral wall of the caecum (see illustration). Its appearance was that of a subserous haematoma, and the site of escape of the blood into the peritoneal cavity was indicated by a ragged tear in the serous coat, 1½ by 1 in. in size. On section the interior of the mass was found to consist of blood clot, and careful examination revealed no perforation into the lumen of the bowel. Around the tumour and beyond its confines the caecal wall was normal.

Operative Treatment.—There was enough space between the ileo-caecal valve and the base of the appendix to allow of resection of that part of the caecal wall which contained the haematoma and the base of the appendix. This was done, and the caecal wall was repaired with layers of sutures, the abdomen being closed without drainage. Except for a slight rise of temperature for 3 days, convalescence was uneventful and the patient made a good recovery, leaving hospital on Feb. 19.

Morbid Anatomy and Histology.—As already mentioned, the naked-eye appearances of the tumour were those of a subserous haematoma. On opening the caecum several small worms were noted lying free in the lumen ; these were afterwards identified as whip-worms (*Trichocephalus dispar*). Pieces of tissue were taken for microscopical examination from the centre of the tumour mass, and, after embedding and section, stained with haematoxylin and eosin. The sections of the appendix and intestine showed acute and chronic inflammation, oedema, and haemorrhage. The bleeding seemed to have infiltrated both muscular layers of the intestines and was also seen in the subperitoneal part of the appendix. The exact site of origin of the haemorrhage cannot be determined, and there was no evidence of tumour formation or of any specific granuloma in the sections examined (J. T. Quinlan).



Commentary

The condition described appears to be unusual, as a search of the literature failed to reveal an account of any similar case. The predominant feature was the large circumscribed haemorrhage in the wall of the caecum. Except for the inflamed appendix there were no other signs of infection, and no evidence of spread of infection along the base of the appendix to the caecum. Following upon the operation, investigations were made of the blood count, the bleeding, and the clotting time, but neither these nor other clinical manifestations gave any evidence of an underlying haemorrhagic diathesis. Moreover, the whip-worms, which were lying free in the lumen of the caecum, were clearly playing no part in the aetiology. These are common enough inhabitants of that organ. Three possibilities offer themselves as likely explanations, and these may be considered in turn.

Trauma.—There was no history of a blow on the abdomen or similar violent injury as one would have expected had the haematoma been caused by direct violence. Further, owing to the mobility of the caecum a lesser degree of injury, unnoticed by the patient, could scarcely have caused the haemorrhage.

Torsion of Caecum with Venous Congestion.—Embolism or thrombosis of the ileo-caecal artery could not be demonstrated at operation, and the naked-eye appearances did not resemble those of the case reported by Harris. If infarction was the cause it must have been in the terminal branch of the posterior division of the ileo-caecal artery. It is possible, however, that the acute inflammation of the appendix may have been associated pre-operatively with an incomplete torsion of the caecum, leading to venous congestion, capillary rupture, and haematoma formation, the condition of torsion then reducing itself before the abdomen was opened.

Infection.—The absence of any signs of an infective lesion involving either the caecum or the ileum has already been mentioned. I am aware, however, that haemorrhage into the bowel wall may occur in terminal ileitis, or "Crohn's disease," and it is possible that the findings in the above case might have some bearing on the causal factors involved in that condition. Jackman has cited instances of intramural haemorrhage in the disease. In these the terminal ileum was involved, and the haemorrhages were invariably small, scattered diffusely in the submucous and interstitial layers of the bowel wall, and distributed over a considerable length of gut, their cause and spread apparently taking the lines of least resistance. Regional and terminal ileitis may also involve the caecum, and some authorities advocate removal of the latter along with the terminal ileum. The preponderance of opinion favours conservative measures. The caecum may become so thickened and fibrosed, however, that mechanical obstruction results, making excision necessary. Had the serous coat of the bowel not ruptured and no operation been performed in the above case the haemorrhage might gradually have been absorbed and been replaced by fibrous tissue, the resulting appearance being similar to that of long-standing ileitis. Although in regional ileitis the appearance suggests a chronic infection and the distribution and size of the haemorrhages differ from those seen in the present case, no causal organisms have been found, and it is possible that the infective element may be secondary, the primary lesion arising in some such way as in this case, through mechanical causes such as incomplete torsion of the bowel and haematoma formation.

Summary

An unusual case of haematoma of the caecum, arising without trauma and probably due to incomplete torsion of the bowel, with venous congestion, is described. The possibility of such an accident giving rise to the changes seen in terminal ileitis is discussed.

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CHRONIC LEG ULCER IN MYELOGENOUS RETICULOSIS

REPORT OF A CASE

BY

CYRIL JOHN POLSON, M.D., F.R.C.P.
Lecturer in Pathology, University of Leeds ;
Pathologist to St. James's Hospital, Leeds

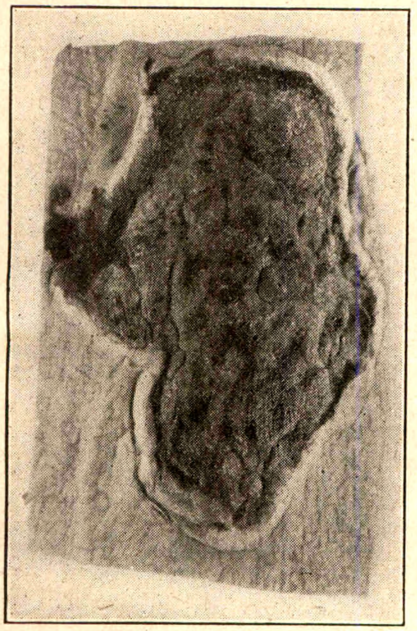
The coincidence of chronic ulceration of the leg and splenomegaly was discussed by Witts (*Journal*, 1942, **2**, 309) when he described two instances of chronic leg ulcer associated with purpura haemorrhagica. From his report it appears that chronic leg ulcer has not been described in association with myelogenous reticulosis. Furthermore, Witts said that "mere size of the spleen is not significant, inasmuch as ulceration is absent in the gross splenomegaly of leukaemia, and present with much less enlargement." An instance of chronic leg ulcer and considerable splenomegaly in a patient suffering from myelogenous reticulosis is therefore here put on record.

Case History

The patient was a woman aged 72 who had been "off colour" for three months, and had had a purpuric eruption beneath the skin of the legs and upper part of the chest. She also complained of painful swellings of the joints of the hands, loss of weight, poor appetite, and severe constipation. When examined in Oct., 1940, petechial haemorrhages were numerous beneath the skin of the arms, hips, left shoulder, and back ; some of the haemorrhages were ecchymoses. Splenomegaly was detected, the lower pole of the spleen being about two fingerbreadths below the left costal margin ; there was slight enlargement of the liver.

A series of seven blood examinations made during Oct. and Nov., 1940, showed that the haemoglobin percentage lay between 60 and 70 ; the red cells averaged three millions per c.mm.; the colour index was 0.87; and the mean diameter of the red cells was 7 μ. The leucocytes at no time exceeded 8,400 per c.mm., and on one occasion were as few as 3,000, 48% of the cells being neutrophil polymorphs and 52% lymphocytes; no abnormal white cells were seen. The Rehfuss test meal demonstrated free acid in the gastric juice, with a maximum level of 40 units.

The patient left the hospital on Nov. 18, 1940, and was not seen again until Dec. 16, 1941, when she was readmitted on account of ulceration, thought malignant, on the inner side of the leg. It was of uncertain duration, but was probably several weeks old. She was now pale and anaemic. The lower pole of the spleen was felt about 5 in. below the left costal margin, and its anterior border was almost in the abdominal midline. There was a purpuric eruption on the limbs and the anterior wall of the chest. An oval ulcer, 2¾ by 2¼ in., was present on the inner aspect of the middle third of the left leg. It had a circumvallate appearance, particularly in the lower half of the ulcer (see Fig.). The margin was regular around the greater part of the ulcer's periphery; it was approximately 1/10 in. broad, raised by 1/10 in., and covered by thinned epidermis; there was no appreciable induration of the margin. The ulcerated area was occupied by dark-red vascular tissue, which bled readily when handled. This tissue was somewhat nodular but not indurated; it was covered in most areas by a thin layer of opaque greyish slough. The initial impression of malignancy was countered, on consideration, by the peculiar margin, its regularity, and the general lack of induration. Moreover, radiological examination excluded bone involvement. Biopsy was undertaken, and is responsible for the dark irregular areas at the left centre and left upper portion of the ulcer margin, shown in the photograph. Squamous carcinoma was at once excluded. The outstanding change was a massive infiltration of the ulcer and the adjacent corium by mature and immature white cells of the granular series. The appearances were those of a myelogenous deposit. Blood examination confirmed the presence of myelogenous reticulosis and severe secondary anaemia. The patient now had 43,000 white cells per c.mm., of which 64% were polymorphs, 16% myelocytes, 11% myeloblasts, 5% smear cells, and 4% lymphocytes. Normoblasts were present in the ratio of 24 per 300 nucleated blood cells. No platelet count was made.



The patient was gravely ill when admitted, and died a fortnight later. Treatment was without influence on her general condition; the ulcer remained almost stationary during this final period of observation.

Post-mortem Examination.—In addition to the ulcer of the leg described above, the other pathological changes at necropsy on Dec. 31, 1942, were as follows: Spleen 1,350 g., 9 in. from pole to pole, maximum thickness 3 in.; the pulp was somewhat soft and greyish red in colour, and the Malpighian bodies were obscure. The kidneys were both pale, except that the middle third of the right was destroyed by a congested infarct. Small friable calculi, the largest 1/4 in. in diameter, were present in both kidneys, the largest lying over the pelvic orifice of the right ureter. There was a solitary cholesterol stone, and the gall-bladder showed slight diffuse cholesterosis. No abnormality of note was found elsewhere; the brain and bone marrow were not examined. Histological examination of the tissues demonstrated the usual appearances of myelogenous reticulosis in the spleen, the liver—where the changes were slight—in the skin, and the kidney, where they were accompanied by acute infarction.

Comment

At the time of her readmission to hospital the ulcer was established and she was unable to give a satisfactory account of its earlier phases; its genesis is therefore a matter of speculation. It may have originated in a subcutaneous haemorrhage. There was no evidence of old haemorrhage in the biopsy specimen, and, although slight recent haemorrhage, possibly caused by biopsy, was present in the corium, the abundance of white cells, and their arrangement, are not ascribable to haemorrhage alone. The interpretation preferred is that the ulcer was a result of devitalization of the skin by a subcutaneous myelogenous deposit.

I thank Dr. John Dick, medical superintendent of St. James's Hospital, Leeds, for permission to quote from the clinical records.

Medical Memoranda

A Filtration Method of Sterilizing Sulphanilamide Powder

After experiments with several methods of sterilization the following technique has been evolved. It is simple in operation and quickly carried out.

METHOD

Sterilize by dry heat at 140° C. for one hour an 8-oz. insufflator, the tubes of which have their outer ends plugged with cotton-wool. The jar must contain about a dozen heavy glass beads or marbles. A Seitz positive-pressure filter of 100 c.cm. capacity and fitted with an E.K. disk is sterilized in the autoclave at 15 lb. for 30 minutes.

The filter is washed out with about 20 c.cm. of acetone by pumping it through the disk. This is to remove any water of condensation. Dissolve 20 g. of sulphanilamide in 100 c.cm. of acetone and pour the solution into the filter. Pump this through direct into the sterile insufflator, the cap of which is then immediately replaced and securely clamped down. To the longer tube of the insufflator is connected a short length of rubber tubing, which is closed off with a Hoffman's screw clamp, without removing the wool plug. The outlet tube is then connected to a water-vacuum pump and the acetone evaporated under negative pressure. A slow current of carbon dioxide is passed over the solution during evaporation (which may be accelerated by standing in a water bath at 80° C.). When the contents have assumed the consistency of a thick paste the jar is agitated frequently in order that the beads may prevent the formation of large clumps of crystals. On drying, disconnect the pump. By further agitating the jar by a circular motion for 10 minutes or so the crystals will be broken down to a fine powder. To remove the last traces of acetone reconnect to the pump and alternately evacuate and release the vacuum by opening the clamp at intervals of 10 minutes for about an hour, shaking the jar occasionally. The powder will now be in a finely divided state, dry, and free-running, ready for use.

Samples of the powder obtained were subjected to sterility tests as follows: 0.5 g. of powder was introduced into each of three tubes of nutrient broth and three tubes of Robertson's cooked meat medium. The tubes remained sterile after 7 days' incubation. Further samples were sent for chemical analysis, which proved that the final powder showed no evidence of toxic oxidation products. We claim that this method is simpler than any other as yet described. It can be economically and practically carried out either on a commercial scale or in small cottage hospitals.

We wish to express our indebtedness to Mr. R. G. Minor, Ph.C., F.I.C., City Analyst's Laboratory, Cardiff, for his willing assistance.

W. J. SALTER,
Technician, Pathology Dept., Llandough Hospital, Penarth.
R. H. MORGAN, M.P.S.

Reviews

TEXTBOOKS OF HAEMATOLOGY

Clinical Hematology. By Maxwell M Wintrobe, M.D. (Pp. 792; illustrated. 45s.) London: Henry Kimpton 1942.

Disorders of the Blood: Diagnosis, Pathology, Treatment and Technique. By Lionel E. H. Whitby, M D, F.R.C.P., and C. J. C. Britton, M.D. Fourth edition Churchill's Empire Series. (Pp. 595; illustrated. 28s.) London: J. and A. Churchill. 1942.

Blood Disorders in Children. By I. Newton Kugelmass, M D. (Pp. 897; illustrated. 60s.) London, New York, Toronto: Oxford University Press. 1942.

he advances made in haematology in the interval between the wo wars have stimulated the production of a number of new extbooks. Wintrobe's *Clinical Hematology* is the latest and most complete of these and the one most likely to succeed to he position left vacant by the death of Naegeli. It has the ame wealth of physiological and technical detail, the same readth of treatment, and an even better bibliography. In fact ome 2,400 references are made in the text, so that it is easy o find chapter and verse for almost any statement. At the ame time, perhaps as a corollary of this deference to the literature, we miss the personal touches which made Naegeli's *Blutkrankheiten* so attractive. An account of the origin and evelopment of the cells of the blood is followed by descripions of the erythrocytes and leucocytes, and the platelets and oagulation mechanism. The author then discusses general physical and chemical considerations of the blood as a whole nd the principles and technique of blood examination. This s a subject to which he has made notable contributions, and ndeed the Wintrobe system of blood examination is standard practice in many laboratories in this country. After a general consideration of anaemia and its treatment Wintrobe proceeds o a clinical account of the various blood disorders. It is not possible to criticize a book of this kind fairly without seeing how it stands up to the test of being used in practice over a period of several months. Nevertheless we should conclude provisionally that it is the most exact and comprehensive handbook of diseases of the blood available in English. It is well llustrated, with seven coloured plates and a large number of clinical photographs and diagrams. All this is not to say that t could not be improved. British readers will feel that the space allotted to blood transfusion and the treatment of haemorrhage is far too small. The signal advances made in this field have been largely the work of haematologists, and it is essential hat they should be adequately reported in textbooks of haematology. The clinical grouping of the various blood diseases is capricious. The index is not full enough; it is, indeed, grossly misleading as to the contents of the book. The casual reader or the student in the library can hardly be expected o realize that many subjects are dealt with both in the physio-ogical and in the clinical sections and that there is not a great deal of duplication.

Whitby and Britton's *Disorders of the Blood* has won its way to a fourth edition. The publication of this after three years of war—and in spite of the blockade, the paper restrictions, and the manifold preoccupations of the authors—is in tself a triumph. The book has the same format as Harrison's *Chemical Methods in Clinical Medicine* and deserves an equally honoured place on the laboratory or consulting-room shelf. With 8 excellent coloured plates and nearly 600 pages of text for 28s. it is undoubtedly the best bargain in the department of haematological textbooks. It is not quite so detailed as Wintrobe, but contains as much as the average physician or clinical pathologist needs to know about the blood. The text follows orthodox lines in dealing with the physiology and the disorders of the blood, with an appendix on technique. The arrangement of the clinical sections is to our mind apter and more logical than Wintrobe's. New material in this edition concerns especially the blood pigments, haemorrhagic states, haemolytic anaemias of the newborn, and transfusion. The section on purpuric and haemorrhagic diseases is still the least satisfactory and will probably offer great difficulties to the beginner. It is unfortunate that textbooks do not give figures for the actual frequency of different haemorrhagic states or stress the predominance of the symptomatic ones. It is probably easier for the student also if all the hereditary tendencies to bleed are grouped together. Ligation of the splenic artery hardly deserves mention as a treatment for essential thrombocytopenia. The description of the estimation of prothrombin suggests unfamiliarity with the technique and contains at least one serious error. It is much easier to dry rabbit brain than human brain, and it is in fact very difficult to get a stable dry extract of human brain without using acetone; human brain is best used as a fresh emulsion. Hobson and Witts recommended adding lecithin to snake-venom, not to brain extract, which already contains an excess of the lecithin factor.

Blood Disorders in Children has nearly 1,000 pages and costs £3. Both figures seem excessive and are explained by the fact that it is stuffed with irrelevancies. A reader does not go to a book on disorders of the blood in childhood for details of how to do a white blood count or for diagrams of retention enemata or of fluid feeding by stomach tube. Dr. Kugelmass may like to take photographs of female technicians looking down quite ordinary colorimeters, but we see no reason why he should insert them in a book intended for public purchase. What the blood is like in psittacosis and Oroya fever also has nothing to do with the case. It is not merely that the irrelevancies swell the size and cost of the book; they distort the perspective. Under leukaemia accounts are given of eosinophilic leukaemia, basophilic leukaemia, megakaryocytic leukaemia, erythroleukaemia, and myelomatosis, all of which are excessively rare or do not occur at all in childhood, whereas the account of leukaemia as it actually occurs in childhood is in our opinion poor. The untutored reader might well get the opinion that polycythaemia vera was a common familial disease in children. He will see some quite unnecessary pictures of gloved hands inserting large needles into distended antecubital veins, but will learn nothing of the special tricks and techniques which have been devised for inserting blood via fine needles or catheters into small collapsed veins in infancy. All this is not to say that Dr. Kugelmass's book does not contain many pretty things. The quotations from the poets are apt and the historical notes are pleasant. But selection and compression are essential in scientific publications, and not a style which recalls James Joyce and the family scrapbook. This is a pity, because Dr. Kugelmass is a haematologist of experience. A good monograph on the special haematology of childhood is badly wanted, but Dr. Kugelmass must reduce his book to a quarter the size and price, and tell us more about blood disorders in childhood, before he can hope to fill the gap.

The supply of textbooks of general haematology now exceeds the demand and we must leave them for natural selection and the survival of the fittest. Again and again in reviewing these textbooks we have been struck by the necessity under which authors seem to feel to give long descriptions of the cytology and physiology of the blood. No other branch of medicine seems to demand so much repetition of normal anatomy and physiology. We have spoken before of the need for a cheap international atlas of haematology, and there seems to be equal need for a standard monograph on the physiology of the blood, to prevent all this duplication. Technique is already extremely well described by Regena Beck, whose *Laboratory Manual of Hematologic Technic* is perhaps not as well known as it deserves to be. It is worth pointing out again that the outstanding writings of the new haematology have all been monographs—Janet Vaughan's *Anaemias,* Claude Forkner's *Leukaemia,* and Engelbreth-Holm's *Leukaemia in Animals.* These have not been overloaded with physiology or technique or pictorial art, and we could do with still more precise monographs of the same type.

OBSTETRICS AND GYNAECOLOGY

Recent Advances in Obstetrics and Gynaecology. By Aleck W Bourne, M B., B.Ch, F R.C S, F R.C.O.G, and Leslie H. Williams, M D., M S, F.R C S., F R C.O G. Fifth edition. (Pp 363; illustrated 18s.) London: J. and A. Churchill. 1942

One might be forgiven for wondering if there have been enough recent additions to our knowledge of obstetrics and gynaecology to warrant the publication of a fifth edition at this stage of the war. It is true that the book contains very little that is new since its predecessor was published in 1939, but it is equally true that this 1942 edition is a good one. Much that could no longer be described as recent advances has been omitted, new material has been added to the remaining sections, and one new chapter has been added. It deals with post-natal care and explains the function of a post-natal clinic, the method of examination, and the suggested requirements in the clinic itself. This chapter gives timely emphasis to a most important aspect of preventive medicine. Dr. Rohan Williams has replaced Dr. Courtney Gage as author of the sections dealing with radiology. As might be expected, considerable space is devoted to the subject of *x*-ray pelvimetry, and a well-balanced summary of the present position emphasizes the fact that it is still the clinical examination which is of paramount importance. It is a little surprising that in reviewing the methods of pelvimetry no mention is made of the work of Nicholson of Moreton-in-Marsh, who has devised a technique which gives results of great accuracy. In the gynaecological section an excellent review is given of the present position in the treatment of carcinoma of the cervix. This edition has been very carefully prepared and will be widely appreciated.

X-RAY TREATMENT OF INFECTIONS

Roentgen Treatment of Infections By James F. Kelly, M D, F A C P, with the collaboration of D Arnold Dowell, M D (Pp 432; illustrated $6 00 or 33s) Chicago: The Year Book Publishers, Inc; London: H K Lewis and Co. 1942.

The infections dealt with in this book are gas gangrene (130 pp.), acute peritonitis (60 pp.), post-operative parotitis (14 pp.), and pneumonia (30 pp.), while but 30 pages are devoted to other inflammations. It is thus not a textbook, but rather a piece of special pleading directed at the doctor who may have these particular conditions under his care. In this light the reader will more easily forgive the inaccuracies of the section on *x*-ray physics and the repetition of similar clinical observations and case-management instructions in chapter after chapter. In spite of these defects, and in spite of a style which is neither fluid nor elegant, from these amply recorded clinical data the authors make original contributions to the subject which are of great importance. The reviewer is convinced of the value of *x*-ray therapy in reducing toxaemia, and in saving not only life but also limbs; of the need for starting *x*-ray therapy by means of a portable bedside unit as early as possible in an acute infection, and for giving small doses every 8 or 12 hours during the critical first two or three days of the illness.

The authors are alive to the implications of their work in military surgery, and plead for the use of airborne *x*-ray apparatus in advanced casualty stations. While the book should certainly be read by radiologists, it is particularly to be hoped at this time that the directorates of our medical war services will be impressed with the strength of the case for further investigation at least.

Notes on Books

The therapeutics of eye diseases is one of the finest and most delicate forms of medical treatment. The reactions of the eyes both to diseases and to drugs correspond in their variability with the exceeding delicacy of the tissues of the eye: of their muscles, nerves, and internal optical tissues. The *Handbook of Ocular Therapeutics*, by Dr. SANFORD R. GIFFORD of Chicago, has now reached its third edition (Kimpton, 20s.). It is an excellent book, clearly written, of wide range, and quite up to date. The section dealing with sulphonamides is some indication of this. Dr. Gifford writes very truly on the imperative need for close observation and repetition of all forms of eye treatment both old and new. He says: "A chance series of cases with a fortunate outcome may convert an ophthalmologist . . . into an enthusiastic advocate of a measure which . . . may later prove absolutely worthless. . . . A position of therapeutic nihilism, or of unreasoning scepticism with regard to new agents and methods, is equally fallacious."

A compact little annual which has made itself indispensable to the civil defence organization appears in a revised and enlarged form in the *Fire Protection and A.R.P. Year-Book* (Lomax, Erskine and Co., Ltd., Aldwych House, W.C.2; 7s. 6d., post free). A vast amount of information has been assembled, particularly concerning fire-fighting. Since the first issue of this yearbook the National Fire Service has been welded into a well organized and equipped unit of the defence services, and a feature of this edition is the maps of each region of the country showing the fire force area boundaries. Much information is also given about the resistance of structures to bomb attack protection against bombs, accommodation and equipment o shelters, and the manner of dealing with gas attacks. The boo is not a manual of first aid, but the schedules of equipment fo first-aid posts, wardens' posts, and stretcher and rescue partie are included. These are to be found in A.R.P. memoranda an in various circulars of the Ministry of Health, but it is usefu to have them embodied in a book which is also a directory o civil defence. This is a volume which we welcome but t which we do not wish many happy returns.

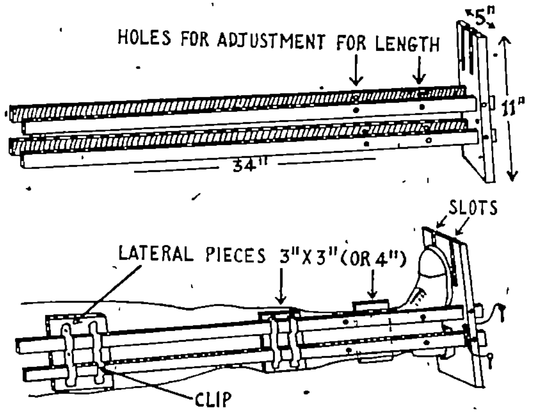
Preparations and Appliances

SPLINT FOR FIRST-AID TREATMENT OF FRACTURES OF THE LEG

Dr. A. P. PHILLIPS, Chaddesley Corbett, nr. Kidderminster writes:

The first-aid treatment of fractures of the lower leg presents problems which have not yet been solved so well as are those of fracture of the femur by the Thomas splint. Many splints suitable for first aid are available—plain wooden splints, Gooch's splinting, Cline's, Liston's (with or without foot-piece), Bryant's, Robert Jones's, and Nevill's. Every one of these, however, has its own limitation—size, width, length, weight, handiness, size of ring, or cost. Also, it is unusual to receive information as to the size and conformation of the patient, and it is surprising how rarely splints will fit patients efficiently and comfortably.

A splint is submitted here which conforms with the demands of surgical principles, is suitable for a wide range of legs, is easily applied, and can be made from plasterers' laths and pieces of wood measuring 3 in. by 4 in. and 11 in. by 5 in. It consists of a foot-piece and lateral bars, two on each side. Two pieces of wood are fitted on each pair of bars. They can be moved along the bars and maintain the bars in a parallel position and provide for pressure to be applied to the thigh and calf. The bars pass through slots cut in the foot-piece and can be adjusted for length by pegs which fit into holes drilled in the side of the foot-piece.



Slings are attached to the bars to support the leg at the lower third and at the knee. The foot is fixed to the foot-piece by a figure-of-eight bandage or a strap. Space between the leg and the bars is filled by padding or bags loosely packed with sawdust. Straps or bandages encircle the limb and splint at the calf and thigh. The slings are made by passing a triangular bandage round the left-hand top bar, under the limb, and over the right-hand bar. One end continues round the splint and limb; the other end is passed between the right-hand bars and brought over the splint and limb to tie to the first end.

Good points in the splint are these: The lateral bars give a good view of the leg. The foot-piece raises the limb from the ground so that the under surface is visible and accessible. The heel is protected from pressure. The slots in the foot-piece make it suitable for a large or small foot. It can be assembled in a minute and packs flat; weight 2 lb.

Very good suspension and encirclement can be achieved by the use of lengths of puttee. They can be fixed by rolling a wooden tongue spatula in the end of the sling, applying it alongside the bar, and securing it by metal rings which slide along the bars and slip over the ends of the spatula which project from the puttee sling.

The splint has been made for me by Mr. Foyle of this village, at his works.

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CLASSIFICATION OF DISEASES AND INJURIES

When a history of medical progress during the second quarter of this century is written an outstanding feature will be found to have been an awakening to the need for accurate knowledge about the incidence of disease. So long as disease was thought of mainly in terms of morbid anatomy and bacteriology, statistics of causes of death and of notifiable disease so nearly satisfied the demand for measures of unhealthiness in population groups that, with an occasional grumble that there was a lot they did not tell us, we made do with them. The shifting of interest from the end-products of disease to its beginnings, and from alleviation to prevention, brought in its train a realization that, when all has been said about deaths and notifications, a vast field of ill-health remains of whose trends and comparative incidence we have no measure and can merely form impressions. A few of our large hospitals have given us statistics of the diseases for which patients were admitted, but financial difficulties have blocked the way to any large-scale classification of hospital cases; and we are profoundly ignorant of the incidence of most diseases which are neither notifiable nor productive of considerable fatality, except in limited population groups such as elementary school children. In the early days of National Health Insurance a sample was taken of the records of panel practitioners and tabulated by the Ministry of Health according to a broad classification of ailments; and the Scottish Health Department went further along this line and provided complete tabulations for several years before the war. To our American friends, however, must be given the credit for whole-hearted efforts to penetrate the veil of obscurity, notably by house-to-house recording of illnesses in selected areas and by the preparation of up-to-date standard nomenclatures and classifications of diseases and injuries.

The American work on nomenclature was initiated by the New York Academy of Medicine in 1928, leading to national conferences and the publication in 1933 of the first edition of the *Standard Classified Nomenclature of Disease* with Dr. H. B. Logie as Editor. Apart from a few hospitals such as the Radcliffe, which have made extensive use of "Logie," and one official department which has found in it a mine of information, this notable work has not attracted in this country the attention it deserved. After the appearance of the second edition in 1935 the American Medical Association took over the responsibility for its periodic revision, and following a national conference in 1940 with Prof. Haven Emerson as chairman, we now have an enlarged and revised third edition edited by Dr. E. P. Jordan, which includes also the first serious attempt at a standard nomenclature of operations.[1] The Standard Nomenclature endeavours to include every disease which is clinically recognizable, to avoid repetition and overlapping and to distinguish diseases from their manifestations, thus removing some of the grave faults of most nomenclatures. It is based on a dual system of coding, topographical and aetiological, the first part of the code defining the portion or portions of the body concerned, while the second, separated from the first by a hyphen, defines the cause of the disorder. The first digit denotes the main bodily system, and the next two digits denote the tissues and anatomical sites; diseases of the knee-joint, for example, are prefaced by 248-, 2.. denoting the musculo-skeletal system and 24. joints in general. In the aetiological part of the code the first digit denotes the general category of causation and the remaining digits the subgroups into which each is divided; rachitic affections, for example, are denoted by 764, 7.. denoting diseases due to disorders of metabolism, growth, or nutrition, 76. vitamin deprivation, and 764 vitamin D deprivation. Deformity of the knee-joint due to rickets, therefore, has the code number 248-764.

For card-indexing of hospital cases and for research on specific diseases or manifestations of disease this system is admirable, but for the compilation of morbidity statistics in general it is unsuited and not intended. For the latter purpose we require a classification rather than a nomenclature, so constructed that it can be readily condensed into any groups likely to be needed in tabulations while providing enough detail for all save the most specialized statistical research on morbidity. In America two classifications of this type are under trial—the Classified List of Diagnoses prepared for hospital use by the Welfare Council of New York and the List of Diagnosis Categories for Morbidity Tabulations drawn up by the U.S. Public Health Service and Vital Statistics Division. The latter, built upon the framework of the International List of Causes of Death, is well suited for general public health purposes but is not sufficiently detailed to serve many research needs or for classification of war injuries.

The depth of our ignorance about the kind of injuries sustained by civilians in the present war, from a quantitative standpoint, led the committee responsible for preparing a medical history of the war to seek for a classification to apply to E.M.S. hospital records; and at an earlier date a similar search for a classification emanated from the Medical Advisory Council of the Nuffield Provincial Hospitals Trust at the instigation of Prof. G. E. Gask, who has for many years been interested in improving the utility of hospital records. The outcome was the appointment of a Medical Research Council Committee to draw up a classification to serve all such purposes, and this committee has virtually completed its work and will shortly publish the results. It must suffice to say now that it is based generally on the International List and is comparable with it, thus fulfilling the desires of successive international conferences whose delegates have looked forward to the introduction of morbidity classification. The application of the list to E.M.S. records has already started, and it is hoped that the Nuffield Provincial Hospitals Trust will try out the system in two or three representative regions with the idea of a national application if it proves successful. It would seem that we are, by compulsion of war, coming more rapidly within sight of another milestone in the history of medical statistics and research.

VITAMINS AND CAPACITY FOR WORK

It has long been known that certain vitamin deficiencies lead to diminished capacity for mental and physical work. It is not altogether surprising that a popular belief has lately grown, no doubt also fostered by some of those with an axe to grind or a vitamin to sell, that a superabundance of these vitamins may produce extraordinary stamina and increased well-being and vigour. Scientific evidence has so far been scanty and contradictory, but several papers have appeared lately which throw considerable light on the relation of vitamins to the efficiency of body and mind. Keys and Henschel[1] studied in the course of 10 months physiological and biochemical responses to severe exercise of 26 soldiers receiving the standard U.S. Army Post rations. During part of the study the men were given daily supplements of vitamins; during the remainder, placebos identical in taste and appearance with the vitamin capsules. The exercise consisted in marching in full kit on a motor-driven treadmill for 15 minutes to 3½ hours at a speed of 3.85 miles per hour and an angle of climb of 10% or 12.5%. Elaborate precautions were taken to eliminate effects of training, etc. Several series of experiments were carried out. The daily vitamin additions varied from series to series and consisted of 5 to 17 mg. of vitamin B_1, 100 mg. of nicotinic acid amide, 20 mg. of calcium pantothenate, 10 mg. of riboflavin, 10 mg. of vitamin B_6, and 100 to 200 mg. of ascorbic acid. The army ration itself supplied on the average 1.7 mg. of vitamin B_1, 2.4 mg. of riboflavin, and 70 mg. of ascorbic acid. The pulse rate, heart size, stroke output of the heart, oxygen consumption, respiratory quotient, the urinary excretion of nitrogen and of ketone bodies, and the concentrations in the blood of sugar, haemoglobin, and ketone bodies were measured. No evidence whatever was found of any effects of the vitamin additions on muscular ability, endurance, resistance to fatigue, or recovery from exertion. Keys and Henschel concluded that no useful purpose would be served by enrichment of present U.S. Army garrison rations with the vitamins studied.

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[1] *Standard Nomenclature of Disease and Standard Nomenclature of Operations.* Edited by Edwin P. Jordan, M.D. Chicago: American Medical Association.

Another group of American workers,[2] while accepting the correctness of Keys and Henschel's results, have expressed doubts whether these negative findings may be generalized, first because they dealt with only one type of work, and, secondly, because functions of the central nervous system had not been studied. Simonson and his co-workers[2] therefore set out to gather further evidence. They examined 23 people, all in good health. Twelve of them were given daily tablets, containing 6 mg. of vitamin B_1, 80 mg. of nicotinic acid amide, 8 mg. of riboflavin, 3 mg. of vitamin B_6, and a certain quantity of filtrate factors; eleven received placebo tablets, but believed that these were vitamin preparations. All carried on with their customary diet under usual working and living conditions. The following reactions were studied: Endurance in dynamic work, endurance in static work, recovery of working capacity, maximum muscular force, fatigue of maximum voluntary effort, heart rate, maximum frequency of finger movements, Kraepelin's test for mental work, subjective sensations, and finally the fusion frequency of flicker—that is, the rate of successive light stimuli necessary to produce an effect equal to continuous illumination. According to Simonson and his colleagues[2] there is evidence that this test reflects the general fatigue of the central nervous system. The results showed that the supplements administered did not improve the performance of any of the different types of muscular work, and the results of the Kraepelin test were doubtful. The fusion frequency of flicker was increased, however, in 8 out of 12 persons taking the vitamin tablets, and there was no change in any of the controls. Subjectively, 8 people out of 12 felt more alert after vitamin supplements. In 3 of the 4 who did not the fusion frequency of flicker was also not improved. In the control group subjective improvement was reported by 1 person. Simonson and co-workers feel that as their subjects were perfectly healthy and normal it would be reasonable to expect a favourable effect of an increased intake of the vitamin B complex on the capacity for mental work of the majority of normal people. In their opinion additional vitamin B would benefit the working capacity in the manifold occupations where fatigue is primarily due to fatigue of the central nervous system. It is regrettable that no information was given about the vitamin content of the diets used in this study. Though they are unlikely to have been of the same standard of excellence as the American Army diets, they may well have been at least equal to the wartime ration of the population of this country. It is not known which factor of the vitamin B complex was primarily involved, but work done at the Mayo Clinic underlines the importance of vitamin B_1. Williams and Mason[3] studied there the behaviour of women partaking of diets low in vitamin B_1 (supplying only some 150 i.u. daily), but little different in this respect or in general composition from the diets of thousands of American families with the exception that all other known vitamins were added in liberal amounts. Apart from anaemia which developed in five of the women, all became depressed, irritable, and quarrelsome. They were inattentive to details of their work, confused in thought, uncertain in memory, and lacked manual dexterity. All these symptoms disappeared when, unknown to the women, vitamin B_1 was added to their diet.

With the introduction of flour of 85% extraction the vitamin B_1 intake in this country is probably on an appreciably higher scale than in the Mayo experiments. Yet for heavy manual labour, long hours of work, and the nervous strain of war, even this may not be optimal. The effects of rationing of meat and milk on riboflavin and nicotinic acid in our diet must be carefully watched. It is imperative to make sure that the vitamin content of our rations is adequate to support the sustained mental and physical effort we are all called upon to make, and it is gratifying to learn that the necessary scientific inquiries are already taking shape.

RECTAL GLUCOSE

The administration of fluid by the rectum is a well-established procedure, and there is no doubt that if care is taken to master a few details in technique it provides a valuable means of giving fluid. The method is chiefly used where oral feeding is inadequate or impossible, as in cases of dehydration—"drying" (*pace* A. P. Herbert) is hardly the apt word here—and severe vomiting and after operation, and the temptation to "doctor" the fluid in the hope that the rectal route may provide a means of feeding the patient or administering drugs is almost irresistible. Unfortunately, however, this is not as easy as might have been hoped, and a paper by Garrer, Groen, and Hallen[4] on the absorption of glucose from the rectum comes as a timely reminder that we may not only deceive ourselves as to the benefit derived by the patient from glucose per rectum, but also, in days when every grain of sugar is of value to the country, we may be going to much trouble and expense to no good purpose. The authors describe a series of experiments performed on four healthy adults in which amounts of glucose varying from 5 to 40 g. in 40 c.cm. of distilled water were introduced into the rectum and retained for periods varying from one to two hours. The rectum was then emptied by spontaneous defaecation and subsequent lavage, and the amount of glucose returned was estimated. An initial series of control experiments was made to satisfy the investigators that by this method nearly 100% of the glucose was recovered after immediate defaecation. Small enemas were used, as it was intended that they should emain in the rectum and not ascend into the sigmoid. Blood-sugar determinations were made at half-hourly ntervals for four hours. The results showed that glucose s absorbed from the rectum only very slowly, at less than one-tenth the rate of absorption from the duodenum, and a very large proportion of the sugar is recovered in the rectal washings. In no case was there any significant rise of the blood sugar. The extremely slow rate of absorption, less than 1 g. per hour, together with the fact that glucose, galactose, and laevulose are absorbed at a uniform rate, suggests that the absorption of glucose takes place by simple diffusion only.

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[1] *J. Nutrit.*, 1942, **23**, 259.
[2] *J Industr. Hyg.*, 1942, **24**, 83.
[3] *Proc. Mayo Clin.*, 1941, **16**, 433.
[4] *Acta med. scand.*, 1941, **107**, 1.

These findings correspond with those of most other investigators in this field. In the small intestine, on the other hand, absorption of glucose is much faster and appears to be an active chemical process, which is specific for the different sugars and requires the function of living cells; an essential step is the phosphorylation of the molecule. There is practically no phosphatase present in the rectal mucosa, but it is abundantly present in the small intestine. The few observers who have noticed a significant rise of blood sugar after giving glucose per rectum have either used large quantities of fluid, in which case the enema certainly reaches the colon and may even regurgitate into the ileum, or have used massive doses of glucose. In practice the former method is unsuitable for ward administration, and, though the latter may be justified in certain selected cases where the intravenous route is contraindicated, it is notoriously difficult to retain the enema, and the method will always entail a large wastage of glucose. Avery Jones and Naunton Morgan[5] found that tap water was the most satisfactory solution to administer by rectum, though to avoid depletion of sodium chloride it was perhaps better to add one volume of normal saline to four volumes of tap water. In any event, we should do well to abandon any idea of rectal feeding, while realizing the enormous value of rectal administration of fluid in the treatment of dehydration.

HAEMORRHAGE FROM GASTRITIS

Gastric haemorrhage may often give rise to great perplexity when, in spite of careful investigation, no obvious cause for the bleeding can be found. Not infrequently cases of severe and repeated haematemeses are seen in which history and radiography can with some certainty exclude at least chronic peptic ulcer. E. B. Benedict,[6] writing on this subject, reports one such case in which nine severe or moderately severe gastric haemorrhages occurred during a course of six years in a patient who had had a gastro-enterostomy performed at the age of 16. In this case no ulcer was found, and subtotal gastrectomy, which was finally carried out, demonstrated chronic gastritis. Such severe bleeding from gastro-jejunitis has been previously noted by others, including Hurst, Faber, and Montier, and most practitioners are able to call to mind "obscure" cases of perhaps severe and sometimes repeated haemorrhage for which no quite satisfactory explanation has at the time been offered. Since the introduction, however, of the flexible gastroscope more precise knowledge as to gastric haemorrhage has been available. Benedict now reports the findings in 213 cases of gastritis, among which there was bleeding in almost exactly 20%. Among his interesting observations are the following. Of 42 patients with gastroscopic evidence of gastritis (all of whom had bled), in only 9 was there radiological indication of any pathological gastro-intestinal change. Among these 42 patients all types of gastric mucosal changes were seen—superficial, atrophic, and hypertrophic—which, as Benedict points out, must often be difficult or impossible to demonstrate radiologically. In a further series of 24 cases in which gastritis and peptic ulcer were thought to be present together, Benedict suggested that bleeding was in fact the result of gastritis rather than of the ulcer, because some of these showed no clear evidence of active ulceration, and all had gastroscopic evidence of gastritis.

Post-mortem evidence of gastric haemorrhage and gastritis is notoriously difficult to assess, but the combination of careful clinical examination with negative *x*-ray findings and a positive gastroscopic report leaves little doubt as to the occurrence of bleeding from simple gastritis. But a "normal" *x*-ray report does not necessarily exclude peptic ulcer, and it is well known how rapidly an ulcer may heal after severe haemorrhage; negative radiographic findings two or three weeks after the bleeding had ceased are therefore inconclusive. Benedict's figures are, however, of importance as indicating the relative frequency with which non-ulcerative gastritis may bleed, and as explaining the cause of some at least of the often unexplained haematemeses which the sceptical may still wish to think of as "gastrostaxis." Superficial erosions, mucosal inflammation, and ulceration may all heal rapidly, and an acute sudden gastric haemorrhage may leave little trace even gastroscopically when examined within only a very short time of the bleeding. Even such common drugs as aspirin may provoke mucosal bleeding, and the increasing evidence of gastroscopy is gradually lowering the incidence of "spontaneous" gastrostaxis to smaller and smaller proportions. It is not yet sufficiently realized that in gastritis the stomach may bleed and bleed severely, that the symptoms may be slight, the physical signs few, and radiological demonstration impossible.

CAUSTIC BURNS OF THE EYE

Caustic burns of the eye present a difficult problem, for the late results are nearly always much more severe than would be expected from the immediate effects of the injury. It is possible that some of these late results are inevitable, owing to delayed appearance of irreversible damage produced at the time of the injury. A more hopeful approach was suggested by the work of Denig, who held that the thickening of the cornea that develops in such cases was brought about by the irritating effect of damaged and necrotic conjunctiva. With this in view immediate mucous membrane grafting of burnt conjunctival surfaces was practised by him, a procedure that has met with only partial success in the hands of other surgeons. The technical difficulties of mucous membrane transplants on a damaged septic surface are not altogether insignificant, and death of the transplant is not uncommon. Although the view that corneal damage is due exclusively to the irritative products of the burnt conjunctiva may not be substantiated, there is much room for technical improvement. A useful study on these lines has come from A. L. Brown.[1] In the experimental rabbit he showed that burns of the conjunctiva, particularly of the palpebral conjunctiva, have a disastrous effect on the cornea. Whenever two burnt surfaces are in apposition—and this holds good of the skin of the rabbit as well as the cornea and conjunctiva—the sequelae are always more severe. Some control of the necrosing process in the cornea could be obtained by the introduction of a layer of tissue separating the burnt conjunctiva from the cornea. Brown used rabbit's peritoneum for the purpose. This procedure, applied clinically, gave good results. It is a fairly simple matter to introduce a strip of peritoneum into the conjunctival sac and to keep it *in situ*; and judging by the clinical results in four cases the procedure has much to recommend it for the protection of the cornea, though of course it does not influence scarring and contraction of the lids to any extent. Brown's results are supported by two other observers, E. L. Bulson[2] and R. J. Masters, who obtained substantially the same experimental results, though they leave open the question whether rabbit's peritoneum is the best protective membrane. It seems essential that if peritoneum is used it should be as thin as possible and free from adherent tissue. One possibility that suggests itself is the use of amniotic membrane.

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[5] *St. Bart's Hosp. Rep.*, 1938, **71**, 83.
[6] *Amer. J. Roentgen.*, 1942, **47**, 254.

[1] *Arch. Ophthal*, Chicago, 1941, **26**, 754.

MICROGLIA AND NERVES IN POSTERIOR PITUITARY

Although it has been asserted that notwithstanding the existence of microglia in all other parts of the central nervous system it is absent in the posterior lobe of the pituitary body, a clear demonstration of its presence in the pars nervosa has now been achieved by Dr. E. Vasquez-Lopez,[4] working in the laboratories of the Imperial Cancer Research Fund at Mill Hill. Hitherto research workers have failed to demonstrate beyond doubt microglial elements in the neurohypophysis, partly owing to technical difficulties and partly because their attention was directed chiefly to the glandular part of the organ. Vasquez-Lopez has worked principally on the neurohypophysis of the horse, which he has found to be well suited for the purpose owing to the looseness of its texture. He has, however, obtained confirmatory evidence from the pituitaries of the ox and the rabbit, notwithstanding the greater density of the glial tissue in these animals. He has also shown that the microglial tissue of the pars nervosa is continuous through the stalk with the microglial elements of the hypothalamic centres to which the organ is anatomically and functionally related. The form assumed by the microglial elements is characteristic of the initial stages of mobilization of these cells, and transitional stages between the fixed and mobile states are represented in the pars nervosa, tuber cinereum, and supra-optic nuclei. Moreover, between the epithelial cells of the pars intermedia, near its junction with the pars nervosa, there are peculiar cells which the author believes to be migrated microglial cells. This is interesting not only because, in his opinion, these cells may be migratory phagocytic cells, but also, from the genetical standpoint, because cells in this position may be related to the normal outgrowth of tubular diverticula into the surrounding vascular tissue from the apex of the infundibulum in Lepidosiren which constitutes what is known as the "infundibular gland." Further study of the microscopical structure of the neurohypophysis in Lepidosiren and other genera in which this organ is more highly differentiated than in mammals might yield valuable results with respect to its structure, nerve supply, and function in mammals, in which this part of the hypophysis appears to be undergoing regression.

Notwithstanding the demonstration by Cajal more than 50 years ago of the existence of nerve fibres in the posterior lobe of the hypophysis, their presence there has been regarded with much scepticism. The existence of nerve fibres in the posterior lobe has now been conclusively demonstrated by Vasquez-Lopez,[5] [6] and he has also confirmed the view that morphologically the pituicytes are only neuroglial cells; the nerves of the hypophysis do not, as has been thought by some, end in relation to the pituicytes, and the way in which they end does not correspond with the usual mode of termination of secretory nerves. It is thus considered that these nerves may be afferent sensory fibres such as those leading from the carotid body and carotid sinus. The terminal nerve fibres end in bulbous swellings, club-shaped structures, and menisci, and in the horse the nerve filaments with their end-organs form a network round the vessels in the fibrous capsule covering the distal pole of the posterior lobe. These terminal bulbs are spoken of by the author as "terminal meningeal corpuscles," and he believes that the impulses arising in them are conveyed by the nerves of the posterior lobe to the tuberal and supra-optic nuclei of the hypothalamus. Whether all these nerves are afferent in nature, or whether some are sensory and others efferent secretory nerves, remains to be determined, and it is possible that research by modern histological methods in those animals, such as Heptanchus and Petromyzon, in which tubular outgrowths from the infundibulum penetrate the pars intermedia may throw more light on this difficult problem.

A REVIEW OF THE PUBLIC HEALTH

The second wartime summary of the work of the Ministry of Health, for the year to March 31, 1942,* has appeared with commendable speed after the first, which, though it covered two years, was not published until last February. The year surveyed in the latest report was less eventful than the preceding two, and was mainly one of consolidation and adjustment of the Department's activities. On the credit side the Ministry can report no major epidemic, no falling off in nutritional standards, no increase in mental diseases, no great variation from the normal in either the incidence of or death rates for scarlet fever, measles, influenza, and enteric fever, and a slight fall in the notifications of cerebrospinal fever (11,077 against 12,741), which, however, still remain abnormally high. Notifications of and deaths from diphtheria increased, however, the former from 46,281 to 50,797 and the latter from 2,480 to 2,641, but it is recognized that no substantial improvement can be looked for until at least three-quarters of the children of the country have been immunized (up to June, 1942, well over 3,000,000 had received prophylactic treatment). There was a sharp rise in the year under review in the number of new cases of syphilis, the increase being 40% over the figure for 1940 (civilian and Service cases together), making an increase of 70.5% in the total of new infections during the war. As regards tuberculosis, since the Ministry's report was prepared we have published (Oct. 10, p. 436) the main findings of the Medical Research Council's Committee on Tuberculosis in Wartime, to which reference should be made. The Ministry states that special precautions have been taken against the introduction into this country of typhus fever, also of malaria by possible carriers from malarial regions abroad. Maternal and infant mortality figures showed a slight increase for the year, the maternal death rate being 2.76 (2.60 in 1940) and the infant death rate 59 per 1,000 live births (56 in 1940), but the rate for infections during childbirth and the puerperium fell to 0.47 per 1,000, the lowest yet recorded. All these are the routine facts and figures issued annually by the Department, but the report this year contains an interesting section on hospital development, including a brief history of the E.M.S., a statement of Government policy for the future, and some account of the special treatment centres for head surgery and nervous diseases, and rehabilitation and vocational training schemes. Finally progress is reported in the compilation of the official Medical History of the War under the editorship of Sir Arthur MacNalty.

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[2] *Arch. Ophthal.*, Chicago, 1941, 26, 767.
[3] Ibid., p. 768.
[4] *J. Anat.*, Lond., 1942, 76, 178.
[5] *Thirty-ninth Annual Report* (1941-1942) *of the Imperial Cancer Research Fund*, p. 8.
[6] *Brain*, 1942, 65, 1.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

MALARIA IN WARTIME*

BY

Sir P. H. MANSON-BAHR, M.D., F.R.C.P.

The Quartan Parasite

The quartan is a parasite of children rather than of adults. It is a very local infection. We found a certain amount in Salonika and in Palestine in the last war, but among the troops it amounted to only 1% of the total. It is truly the most beautiful of all malaria parasites. The corpuscle in which it lives does not enlarge; its cycle of development is seventy-two hours, in contradistinction to the benign tertian, and therefore it typically produces fever every four days. If we can believe Sydenham, quartan malaria must have been rife in Westminster in his day, and most of the Members of Parliament were often precluded from their duties by recurrences of this fever. He realized too that it was associated with marshy districts such as prevailed in Westminster at that time.

Another point about the quartan is its ability to split the red corpuscle in twain. There are only eight spores formed, instead of the eighteen to twenty-four in the case of the benign tertian and eighteen to thirty-two in the case of the subtertian. The pigment is rather blacker. Little spots develop inside the corpuscular protoplasm, but they are not Schüffner's dots. In this country they are known as "James's dots," which are little blue specks, not red like Schüffner's. In this form of malaria we do not always see the classical quartan temperature chart, and this is due to the fact that there may be two generations of parasites in the blood, producing a rough kind of quotidian fever.

Plasmodium ovale

The latest arrival in the malaria family is *Plasmodium ovale*, so called because the corpuscle in which it lives tends to become oval in shape. It was discovered in 1922, and was at first looked upon as a freak; but now we know it is a common parasite in West and Central Africa, and it had been confused with the benign tertian because of its tendency to produce Schüffner's dots. The corpuscle becomes ragged, frayed, and oval in shape, presently losing its rounded contour. The parasite has only eight spores, and produces a harmless infection. It is said to have been observed in Central Asia and in Central America, but the general idea is that it is peculiar to Central Africa. *Plasmodium ovale* is now much used in malaria therapy, and is the "star turn" at present at the malaria centre at Horton, Epsom, because it produces efficient rigors when artificially inoculated and does not require any prolonged or drastic treatment, but just fades away directly small doses of quinine are administered. I have seen only one patient who was really seriously ill with this variety.

Drugs used in Treatment of Malaria

With regard to drugs in the treatment of malaria, before the last war we were told—from the teaching of Prof. Dixon in Cambridge—that the most specific-of-all drugs was quinine. Yet as this war progressed we began to disbelieve more and more in its specificity, and had to modify our fundamental ideas. We believe now that quinine is an extraordinarily valuable drug but is definitely selective upon certain stages of the malaria parasite. The species of the parasite on which it acts most quickly is the benign tertian, but we cannot entirely banish it from the human body by one or two or even three doses of quinine. The plasmodium has a way of side-tracking and slipping away into the interstices of the bone marrow and the spleen, ready to emerge again at the next opportunity. This selective action of drugs was brought out strikingly when plasmoquine (pamaquin) was discovered in 1925; but it is not, as you may have thought from reading the literature, an attempt by Germans to synthesize quinine, but is a by-product of methylene-blue, which was employed by Manson in China as a febrifuge many years ago. He formulated the idea—a very clever one—that if there was a selective action of a stain for a particular blood parasite it could be surmised that the same substance might also exert a therapeutic effect, and compounded a combination with borax (Manson's stain), which he proved to be selective for malaria parasites.

When the blood is full of subtertian crescents and plasmoquine is given in sufficient doses this stage of the parasite, which is not amenable to quinine, rapidly disintegrates. The parasites burst at various points; the chromatin degenerates, and finally they vanish from the blood stream.

Atebrin (or mepacrine), an acridine compound, is another dye derived from methylene-blue. It does not affect this crescent stage at all and has no effect upon exflagellation, but causes the pigment to collect in the centre of the parasite.

Diagnosis

It is the differential diagnosis of malaria which is so important. Malaria usually causes enlargement of the spleen, but whether you can tell that this is so or not depends on your skill in palpation. In subtertian malaria the spleen becomes rounded off rather like a tennis-ball, but it is only after repeated malarial attacks that the classical hard edge can be detected. It is therefore not safe to say that a man has not got malaria because the spleen cannot be palpated. There are various ways of performing palpation, and new-comers have to learn the correct technique; and the question arises: When is a spleen not a spleen? The answer is: When it is a kidney! An enlarged left kidney is sometimes mistaken for an enlarged spleen. I recall a major in the Indian Army who drew a pension for eighteen years on the ground of enlarged spleen when in fact what he had was a large left polycystic kidney; and I have even seen this misdiagnosis made when assisted by uroselectan and radiography. There is also splenic pain, which may be significant.

In the diagnosis of malaria the great point to remember is that in a malarious country it may simulate almost any other disease. Subtertian malaria is the greatest mimic. Quite commonly it produces cerebral symptoms—cerebral malaria, due to the congregation of parasites in the brain, sometimes leading to coma and death. I remember how some soldiers marching from Jaffa to Jerusalem in 1918 fell out by the side of the road waiting for the ambulance, and before it could reach them they were dead. Very often in the Near East the worst forms of malaria are found in the winter-time. Mosquitoes once infected remain so, and in winter tend to congregate in buildings and nooks where there is warmth and then descend upon anyone they can find. These dire cerebral forms may crop up during the winter months and may be mistaken for other forms of cerebral disease. In the summer the patient may go down with hyperpyrexia, and so the case may be mistaken for heat-stroke.

I would especially warn against confusing alcoholism with malaria. In a malarious country a man may be accused of being drunk when he is suffering from malaria.

Mania is another thing which may be misleading: the patient may be suffering from subtertian malaria delirium; and, on seeing a sudden epileptic fit, do not jump to the conclusion that it is true epilepsy, for it may be malaria simulating that condition. Then there are attacks simulating cerebrospinal meningitis with pain and stiffness at the back of the neck. There is an appendicular form of malaria that is due to sporulating forms of the parasite which select that particular part of the intestinal canal in which to congregate. When the patient's temperature rises with rigor to 104° F. as a sequel to an abdominal operation, you will want to ask whether malaria parasites were not in the blood before the patient was subjected to operation or whether the operation actually incited the rigor. Cholecystitis is also a dangerous primary diagnosis. Why should an epidemic of cholecystitis in healthy young men suddenly arise? The explanation lies in the hepatic congestion in subtertian malaria, with an acutely distended gall-bladder.

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* Concluded from p. 462.

Then there is malarial dysentery, or colitis. Malaria is frequently accompanied by diarrhoea; in fact, often there may be diarrhoea and nothing else to guide one. It is very common to see patients from West Africa who have suffered from diarrhoea on the voyage and, owing to this, doctors have prohibited them from taking quinine. I have seen such cases develop cerebral malaria and fatal coma the moment the boat has docked.

In Egypt subtertian parasites have been demonstrated in scrapings made from the bowel. "Malarial dysentery" with blood and mucus in the stools simulates acute bacillary dysentery. It is possible to get such an acute diarrhoea with malaria that it resembles cholera. There were several cholera scares in the last war, but they were due to a choleraic form of subtertian malaria. Then we may meet the icteric forms; but malarial icterus is not a really true obstructive jaundice. In subtertian malaria it is almost diagnostic to get urobilinuria with sherry-coloured urine, and this may sometimes be taken as an index of infection, even in the absence of subtertian parasites in the blood.

I remember in 1916 being asked to see a soldier who had come down from Khartum intensely jaundiced. He was evidently dying. I was then in charge of the laboratory, and found that I had examined his urine and serum, and carried out agglutination tests; but the one specimen that had not been examined was the blood film, which was crammed with subtertian parasites. By the time this was done, however, it was too late! One can meet with forms resembling acute pancreatitis in which the pancreas is affected; others resemble intestinal obstruction, with profuse vomiting. One may even see cardiac forms with generalized oedema, which were frequently encountered in the last war, or, again, pulmonary forms associated with bronchitis or pleurisy. Further, there may be some resembling acute nephritis with blood and cells in the urine; or a cutaneous rash with multiple haemorrhages in the skin, somewhat resembling typhus or measles.

Blackwater Fever

Finally, there is the most dramatic sequel—blackwater fever, solely associated with subtertian malaria. It probably represents an anaphylactic phenomenon due to hypersensitivity to toxins of this parasite. Blackwater fever occurs only in those parts, such as the Jordan Valley, Macedonia, and West Africa, where the subtertian parasite is prevalent. The prevention of blackwater fever is closely linked up with the prevention of malaria, so that if a man does not get infected with the subtertian parasite he will not develop blackwater. If a laboratory service is maintained by which in all cases the blood is examined for malaria the moment the patients fall ill, then the onset of blackwater fever will be prevented. In the years immediately succeeding the last war I never treated less than 4 or 5 cases of blackwater fever here in London every winter; they were usually acute dramatic cases, and the death rate figured between 25% and 50%; but since the rule has been established that all must have their blood examined directly they land in this country from West Africa, blackwater has not been observed. A patient is exposed to the danger of blackwater fever once he has had acute malaria—usually up to nine months. It is apparently a case of supersaturation with this parasite, so that blackwater seldom results after a primary infection. It occurs mostly in the old residents of the Tropics who, on returning to this country, have been exposed to cold and wet or some shock which causes a sudden multiplication of parasites. Then the red blood corpuscles break down and become haemolysed, and the victim may die from blocking of the kidneys with products of their disintegration. If, therefore, this process can be prevented from taking place, then blackwater fever will not ensue. Treatment depends upon the alkalinization of the blood and upon prompt blood transfusions.

The Importance of Blood Examination

The diagnosis of malaria depends upon correct blood examination. The diagnostician must be familiar with all stages of the malaria parasites: he should be so sure of his premisses that he can recognize them as readily as Smith, Brown, or Robinson. But can ordinary unsophisticated folks learn to distinguish these appearances in a reasonably short time? The answer is that they can be taught to do so. In Central Africa there are native dressers who are proficient in spotting parasites. In the last war when put to the test we had to improvise an organization for the detection of malaria at the earliest possible moment for treatment in the field. There originated the diagnosis stations which have now been included in the Army service. Orderlies were chosen from the ranks, some of them with little previous education, and by six weeks' intensive training, by making them look at and stain blood films, we got them sufficiently accurate in discerning malarial parasites to be of great service. A number of these men are still employed here in London at the present time. Those thirty men who were trained were responsible for diagnosing 417,000 blood slides in the last year of the war in Palestine.

Prevention and Treatment

How are we going to prevent malaria in the field? Quinine in large doses is a poison; it may produce amblyopia in some people, and they may become blind. Quinine in enormous doses, as a means of preventing a malarial attack, is a broken reed. It has been shown that one can inject quinine together with malaria parasites into the blood of the recipient and yet produce malaria. On the West Coast of Africa most officials cling to the belief that 5 grains of quinine will prevent malaria and blackwater. It probably modifies the acuteness of the malarial attacks and thereby the proclivity to blackwater fever, but when you give soldiers who are operating in open country 5 grains of quinine a day it has little visible effect in reducing the incidence of malaria. For prevention on a large scale the chief line of defence is the mosquito net. The next best method is to kill the mosquitoes.

With regard to drug treatment of the actual attack, however, quinine still remains the standard. It is most effective in benign tertian malaria and it has also a great effect upon subtertian. But it is necessary to remember that quinine given in big doses to a patient with a large number of subtertian malaria parasites is likely to precipitate blackwater fever by the sudden dissolution of the parasites, and the patient may die within twenty-four hours. For benign tertian malaria, quinine should be given in doses of 10 grains three times a day, and the bowels should be freely kept open. One must go on giving the quinine in decreasing doses for about six weeks, though even this continuous therapy will not extirpate the infection from the body entirely; but to inject quinine intramuscularly to everybody indiscriminately is to ask for trouble, as abscesses and indurations are apt to form in a certain number. At the same time I never hesitate to give quinine intramuscularly when it is necessary as a remedial measure in severe infections. The results are magical if it is given in the right way and injected deeply into the gluteal muscles, but it should never be injected below the folds of the buttocks.

You cannot treat malaria scientifically unless you control treatment by frequent blood examinations and can recognize the changes in the parasites when acted on by quinine or other drugs. Intravenous quinine is reserved for the most severe forms of subtertian malaria. From 5 to 7 grains dissolved in 5 c.cm. of distilled water is quite enough. With regard to plasmoquine, remember also that this is poisonous. When it was first introduced we gave it in too big doses, and were thereby producing poisonous effects. It is now recognized that small amounts of plasmoquine in tablet form—known as plasmoquine compound—are beneficial, each tablet containing 1/6 grain, with 2 or 3 grains of quinine. This, given as a regular course, has been found by the Army in India to be the best method of treating benign tertian malaria and of preventing further relapses. In such cases a start is made with the quinine and continued with plasmoquine compound, the dose of which is two tablets twice a day for a week, amounting to four courses of seven days, with a break of four days between each. This means that about 2/3 grain of plasmoquine is given a day, in addition to 20 grains of quinine. With this method the relapse rate in benign tertian malaria has fallen from 40% to something like 8% in the Army in India.

Plasmoquine and atebrin go badly together, but atebrin and quinine work well in combination. The dose of atebrin is 1/10 gramme three times daily for seven days. It is a yellow tablet which is given by the mouth; but there is also a soluble form which can be injected. It is active especially in the treatment of subtertian malaria, and I have seen only one case in which blackwater fever supervened after atebrin, so it is useful in this direction. I do not believe, however, that it is nearly as effective in treating benign tertian malaria as the method I have outlined. Certain disadvantages of atebrin have been pointed out, and it is well to warn people that they may acquire a somewhat yellowish tinge. I have never seen anybody go "off his head" when taking atebrin, but acute mania in native races has been described after taking it in therapeutic doses, though this certainly does not seem to be common in Europeans.

RECEPTION OF CASUALTIES IN AN E.M.S. HOSPITAL

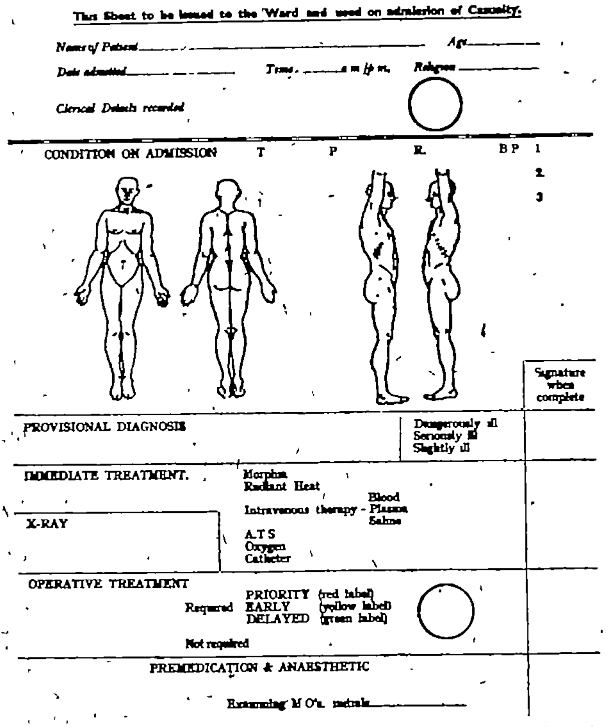
BY

STANLEY J. FIRTH, M.D., M.R.C.S., D.P.H.
Medical Superintendent

AND

HAROLD PARK, M.B., F.R.C.S., F.R.C.S.Ed.
Resident Surgeon
The Municipal Hospital, Brighton

The sudden influx of a number of wartime casualties, whether Service cases or civilian, calls for a procedure different from that used for ordinary peacetime admissions. These casualties are the immediate concern of several separate hospital departments, and it is therefore important that each section should be supplied with the necessary data in the simplest form. With this in view we prepared an urgency admission sheet which has worked very well in actual practice and which, having been thought deserving of praise in high medical quarters, we consider worthy of publication.



This Sheet to be issued to the Ward and used on admission of Casualty.

Name of Patient ________________ *Age* ________
Date admitted ________ *Time* ______ a.m./p.m. *Religion* ________
Clerical Details recorded ○

CONDITION ON ADMISSION T P R. B P 1 2 3

Signature when complete

PROVISIONAL DIAGNOSIS

Dangerously ill
Seriously ill
Slightly ill

IMMEDIATE TREATMENT.
Morphia
Radiant Heat
Intravenous therapy - Blood / Plasma / Saline
A.T.S
Oxygen
Catheter

X-RAY

OPERATIVE TREATMENT
Required PRIORITY (red label) / EARLY (yellow label) / DELAYED (green label) ○
Not required

PREMEDICATION & ANAESTHETIC

Examining M.O.'s initials ________

This sheet, the front page of which is here reproduced, is hung at the foot of the bed in a temperature-chart holder, and consists of a single piece of paper about the size of the printed page of the *Journal,* printed on both sides. A description of the back of the sheet can be given in a few words. It is divided into two sections, one half being for the operative findings, the other for the post-operative instructions. This side is completed by the anaesthetist during the operation.

The front of the sheet is a record made up of the following sections. It is headed by the name, the Service No. of Service cases, age, date and time of admission, and religion. Immediately below this is a space for the use of the clerical staff, who, having recorded the details which concern them, denote this by affixing their stamp. Next comes a section in which are entered the temperature, pulse, respiration, and blood pressure of the patient, together with a pictorial record of the injuries, which are roughly sketched on a series of anterior, posterior, and right and left lateral diagrams of the body. The section that follows provides a space for the provisional diagnosis, together with three headings denoting the severity of the patient's condition. The immediate treatment occupies a section below this, and consists of a list of modern resuscitative procedures which the surgeon orders by eliminating those not required. Radiographic instructions are provided for, and the succeeding section indicates whether operation is required or not and gives the preferential order for cases to be taken to the theatre. A coloured label is affixed according to whether this preference is (*a*) priority (red), (*b*) early (yellow), or (*c*) delayed (green). This classification has proved to be a great asset in dealing with a ward full of casualties. It is a guide to the radiographer as to the cases to take first and as to the order of their transfer to the theatre. Thus, those with the red label are first to go, being followed by the yellow label cases; the green label cases can usually be left till next morning for operative treatment, the immediate dressings being done in the ward.

Value of a Simple Sheet in Hospital Practice

The advantages of this type of sheet to the various hospital departments can best be shown by a brief statement of how the system works in our own hospital.

Medical.—We have found that a surgical team can, on an average, deal with 25 casualties. The idea of rushing new arrivals to the operating theatre has been generally discarded since the days of Dunkirk, it being realized that methods of resuscitation and procedures to counteract shock are of paramount importance. The surgeon in charge of a group of casualties has therefore adequate time to go the round of his cases, provided the treatment can be clearly indicated with the least possible delay. For this reason copious note-taking at this time must be dispensed with. As will be seen, the subdivisions of the sheet allow fully for this to be done. The surgeon makes his examination and in a few seconds completes the sheet, thereby giving the provisional diagnosis, instruction for radiography, the resuscitation procedures he requires, and the grading of cases for time of operation. He also assesses the degree of severity, which indicates to the clerical staff the procedure which instructions state shall be followed for E.M.S. cases.

The other members of the team follow up and, taking the red label cases first, carry out the ordered treatment which requires their personal attention—for example, intravenous therapy, blood pressure, and haemoglobin estimations. The treatment having been completed the sheet is initialled in the space provided at the side. Thus the surgeon is enabled to look though his own cases and then proceed with the operative work, each patient arriving at the theatre in the correct order and with the preliminary treatment carried out.

Radiography.—It has been found that practically all cases admitted under war conditions require an *x*-ray examination. The radiographer, working with a portable apparatus, takes the cases in order according to the coloured label. He has not to keep asking which to take first; he can proceed unhindered with his work, his instructions having been given in the appropriate column. When the films are completed they are hung at the foot of the bed and go with the patient to the theatre.

Nursing Staff.—Injections ordered are given by the sister, who, with the help of the concise recordings of the sheet, gains a clear and quick conception of what is happening to patients in her ward. Anaesthetic premedication is given, and there is little likelihood of cases being sent to the theatre in the wrong order, thereby delaying treatment of more urgent cases. The minimum amount of clerical work by the nursing staff is called for, their only contribution being the simple details of name and age at the top of the sheet. All other details required by the clerical department are obtained by their own staff.

Administrative Staff.—The amount of details which can be obtained obviously depends on the condition of the patient, but so far as is possible enough are taken to allow for procedures required from the clerical department to be put into motion. These procedures include the provision of data for hospital records, information to be supplied to the Casualty Bureau and Service Departments, completion of M.P.C. 47—which folder is then returned to the ward—completion of Form E.M.S. 105, correlation of total numbers, and, in fact, all statistical information asked for very early in the proceedings. The clerk dealing with the case takes note of the severity of illness and sends out formal notices to relatives in accordance with E.M.S. instructions. When the administrative details have been obtained a special stamp is put on the chart which indicates that the cases have been dealt with; it is thus easy to see which still remain to be attended to. The patient's religion is clearly shown at the top of the form, and the respective ministers of religion can also see at a glance the severity of the patient's condition.

Conclusion

A big influx of casualties is very likely to lead to confusion if a clear-cut system is not established—everyone has his own work to do, and the necessity for questioning by this or that person should be removed so far as is possible. The use of our simple emergency admission sheet has done much to effect this, and the fact that everyone can get on with his own particular task undisturbed leads to a smooth-working efficiency in the hospital organization which must be of direct benefit to the patient.

WELFARE IN THE WOMEN'S SERVICES

The enrolment of women as auxiliaries to the fighting Services on a scale far exceeding that of the last war has introduced many new and difficult problems. Their corps have expanded so quickly that many of their conditions have had to be improvised. Great ingenuity has been shown on all sides, but some units have suffered discomfort and others confusion. The shortage of labour and materials slowed down the construction of accommodation and the delivery of clothing and equipment. Officers had to carry out duties for which they had not been perfectly trained, and severe weather added to the difficulties of everyone. The growing-pains of the movement were reflected partly in definite and well-founded public complaints of bad conditions, and partly in a crop of vague rumours about drink and immorality. The Government wisely determined to apply the remedy of publicity. On Feb. 24, 1942, the Prime Minister appointed a committee to inquire into and report on the amenities and welfare conditions in the three women's Services. The chairman was Miss Violet Markham, and the members included senior representatives of the fighting Services and M.P.s. The medical members were Sir David Munro and Dr. Edith Summerskill, M.P.

The committee's report[1] gives not only a full and fair account of the Services which should effectively dispose of the charges maliciously levelled against them, but lays a firm foundation of knowledge for the future.

The care taken in all the Services to maintain a high standard of health and hygiene impressed the committee very favourably. The members of the committee were assured by the medical officers at the departments and the stations that the health of the women is extremely good. They were struck by the marked improvement which the first month's training effected in the physique, poise, and self-confidence of the recruits. They suggest pertinently that uniform health records should be kept for the Services and for Government establishments, so that the information may be used after the war for a study of health in relation to women's employment. Women in the Services, as in industry, have double the sickness rate of men. The special ailments of women account for part of the increase, but the greater incidence of sickness is among the immobile. The best menstrual health was found among women doing strenuous physical work. The large amount of dental treatment needed was a revelation to the committee.

Reporting Sick: A Criticism

They received a number of complaints of inattentiveness or lack of skill in the medical and nursing staff, and the treatment of minor ailments caused them some uneasiness. It was alleged, for instance, that girls had to get up and attend sick parade even when they felt ill, that waiting rooms were not always provided, and that patients had to wait long in draughty passages. They were also told that the medical officer sometimes neglected to visit a girl ill in her barrack room or her billet. Many of these complaints proved worthless, but others were supported. How far these, when proved true, belonged to the past of pressure and difficulty the committee could not say. In theory a girl who feels ill reports to the non-commissioned officer in charge of her room; the N.C.O. takes her temperature, and if it is above normal the girl remains in bed until seen by the medical officer. Many auxiliaries, however, stoutly denied that this procedure was always carried out. The committee therefore recommends that commanding officers should constantly review sickness arrangements and ensure that the rules are strictly enforced; it should be the special duty of the company officer to see that her sick receive prompt medical attention, and to be especially vigilant when a girl reports sick in billets or on a remote site. The committee is also concerned at the failure to provide special diet for girls suffering from minor ailments. Sausage-and-mash and roly-poly pudding, it declares, though excellent in themselves, may be unsuitable for a girl suffering from a sick headache. It also considers that patients allowed to stay in their own quarters for a temporary indisposition should not be obliged to get up to obtain their food. Medical inspection parades, other than sick parades, are frequent, and are, unfortunately, all the more necessary because of the prevalence of infestation by scabies and head lice. Head infestation has, however, been reduced to less than 2%, as against 25% in the civilian population of comparable age groups.

Need for More Women M.O.s

The committee found the medical personnel and hospital accommodation adequate. The hospitals are well staffed by specialists, including women dietitians, and include well-equipped special hospitals and centres—e.g., for orthopaedic and nervous disorders. Both the Navy and the Army Medical Services have women on their directorates, and a similar appointment is to be made in the Royal Air Force. The committee thought that more women medical officers should be appointed to the A.T.S. and W.A.A.F., especially in the large reception and training centres; that more use should be made of them in the W.R.N.S. reception stations; and that a woman medical adviser should be appointed to each naval command. State-registered nurses and V.A.D.s are employed in the hospitals and large sick-quarters of all the Services; and the committee admired the combined post, just instituted by the R.A.F., of nursing and health welfare sister to act as health confidante to women. The R.A.F. also employ women trained as nursing orderlies to work in the men's hospitals, and the committee suggests that such of these women as show ability and vocation should be given an opportunity to transfer to the nursing profession.

The committee received complaints about hygiene lectures in the Forces. Some of its members heard and approved of the W.A.A.F. lecture, which was given by a woman doctor, but were not satisfied with the conditions under which it was given. Such an address should not, it considers, be given in a large hall to an audience of recruits of all ages. It suggests that a lecture should be given to all three Services on the wider implications of sex behaviour, not because the sex morals of the Forces are more precarious than those of civilians, but because life in the Forces presents new educational difficulties. It finds, however, common agreement that ephemeral sex relationships create more emotional problems than they appear to solve, and it is of opinion that the combined wit of the medical and educational services should be able to provide a standard lecture on broad lines which would be generally acceptable. A set lecture, however, will not go very far on the road of sex education, and the committee thinks that if officers were instructed more fully in the various aspects of the subject they would be better equipped to play a vital part in their dealings with individual women.

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[1] Cmd. 6384, 1942. H.M. Stationery Office. (1s.)

Pregnancy and Childbirth

"Illegitimate pregnancy is almost certainly, it says, less common in the Services than outside. No woman runs an extra risk of becoming pregnant by joining a Service, and if she does become pregnant the arrangements made for her care and disposal are both humane and efficient. She goes to a discharge depot for a short time, and while there she is put in touch with one of the voluntary societies and other bodies which make arrangements for confinement and the future. The facilities have proved adequate, but the situation is now becoming more difficult as the Services expand. Not only single women need help, for the Services contain numbers of married women with no homes. Here, the committee points out, is a national and not a Service problem. It presses the urgency of this on the Ministry of Health, and suggests immediate action by grants to local authorities and voluntary associations for further accommodation during pregnancy, and by increasing the provision in hospitals, maternity and convalescent homes, and residential nurseries for children. The figures for venereal disease are half those in men's units. Arrangements for diagnosis and treatment are adequate, but more women medical officers might be employed in the gynaecological wards of the hospitals. The committee makes the point that loose behaviour is not necessarily the product of Service life, which generally puts the relations of men and women on a healthy and normal basis. It finds that promiscuous conduct is limited to a small proportion, and that the allegations of immorality which have disturbed opinion reflect most unfairly on an admirable body of women.

The report should not only go far to reassure the public about the conduct of these Services but should serve the valuable purpose of making their organization and problems better known. For the first time in history a vast number of our young women are receiving a regimental training in discipline and arduous communal living. Their present experiences will profoundly affect their whole future attitude to life, and through them that of their children. To ensure to them now the best possible conditions for bodily and spiritual welfare is a vital duty, and the report may make an important contribution to its performance.

Reports of Societies

SYMPOSIUM ON REHABILITATION

At the annual meeting of the British Orthopaedic Association held in Nottingham from Sept. 25 to 26, under the presidency of Mr. G. R. **Girdlestone**, the dominant theme was the present arrangements and future plans for rehabilitation of the injured.

At Harlow Wood Orthopaedic Hospital Mr. S. A. S. **Malkin** demonstrated the work of the hospital's remedial workshops, and a film was shown illustrating the methods employed there and at a special annexe in the occupational reconditioning of E.M.S. casualty patients. Later, at the Rehabilitation Centre for Miners at Berry Hill, near Mansfield, a discussion was held in which the matter was dealt with from the points of view of the surgeon, the employer, the industrial medical officer, and the trade union.

The Surgeon

Mr. E. A. **Nicoll**, opening the discussion, said that the problem was threefold: first, the purely scientific aspect of physical restoration; secondly, the psychological one of obtaining the full co-operation of the patient; thirdly—and sometimes more difficult—the sociological problem of obtaining the proper social context for the conduct of rehabilitation. As soon as injured, every working man's first desire was to get well as soon as possible. It was when delay occurred that doubts and fears crept in. These must be removed, and morale and initiative maintained. Co-operation by the employer, the industrial medical officer, and the trade union had produced, in his experience, a team in which the surgeon played an important part from beginning to end. The result had been the almost complete disappearance of litigation. The statistical difference between a socialized and non-socialized accident service is at least 10%, expressed in terms of men returned to pre-accident work, and that was something very considerable when expressed in the return of workmen to the vital man-power of the country.

The Employer

Mr. Guy de G. **Warren**, as an employer, gave an account of the organization responsible for the development of the Berry Hill Centre. The Midland Colliery Owners' Indemnity Association was formed by a group of associated companies and was concerned to deal with the insurance risks of accident. It was not run for profit and represented the employment of over 100,000 men. With many others, they had been shocked by the state of the treatment of injuries as revealed in the report of the B.M.A. Committee on Fractures. The companies with which Mr. Warren was associated were able, first of all by subsidies, to ensure throughout the area the development of efficient fracture clinics, and this had resulted in an earlier restoration to some working capacity. It was soon appreciated that the lack of facilities for reconditioning prevented men from obtaining full recovery. The job was therefore completed by this rehabilitation centre, and it had been justified from the economic and from the humanitarian points of view. His opinion was that any national hospital scheme must include similar reconditioning schemes. From his experience he thought that one centre capable of dealing with 60 patients simultaneously could treat and discharge approximately 500 cases a year. As it would appear that of accident cases occurring in heavy industries and requiring hospital treatment 20% needed a course of rehabilitation, then one unit would be necessary for a hospital or group of hospitals dealing with about 3,000 such cases annually. On the other hand, the percentage of hospital accident cases other than those in heavy industries needing rehabilitation treatment should not exceed 8%. Therefore one unit should suffice to deal with a group of hospitals admitting 8,000 such cases a year. The workman must be dealt with in an atmosphere where he knew that everyone from the hospital to the employer was out to help. A man admitted to the centre was given the assurance of the surgeons that he could be improved and that work would be available for him afterwards. The growing utilization of industrial medical officers in factories would help to foster greater care for the injured man after his return to industry.

The Industrial M.O.

Dr. Donald **Stewart**, speaking as an industrial medical officer, said that at present the position of production was paramount. It was being somewhat retarded by absenteeism, partly due to injury and sickness. Injuries were increasing, important factors being the amount of new and unskilled labour drafted into industry, often working under overcrowded and other difficult conditions. There was therefore overloading of the casualty and out-patient departments of hospitals in industrial areas, which had to carry on with diminished staffs and with difficulties in obtaining equipment and materials. There was thus a challenge to hospital services and the medical profession to see that an adequate service was maintained for people in production. Some particular problems were provided by young persons in industry, married women, and accidents at night-time and on Sundays in the factories working then. The industrial medical officer had an important function to perform, first of all in the general supervision of the conditions of work, and of measures designed to prevent ill-health and injury, the initial treatment of accidents, the follow-up of patients who could stay at work and of those who returned after-treatment and rehabilitation. He was the one person who could interpret the wishes of the surgeon because of his knowledge of the conditions of work and the types of job available. There must be a steady improvement in the initial treatment of injuries. The sepsis rate was high, and insufficient care was taken of so-called minor injuries. In 1,000 consecutive accidents in one factory he had found that 52% were finger injuries only. Incapacity rate was great because they were not treated with the seriousness due to them. One big problem was to provide an adequate service for the treatment of injuries in small factories which could not have their own medical units. In Birmingham, in order to meet that difficulty, they had proposed the provision of a travelling surgical unit, thus taking the hospital to the factory for the more serious injuries, which should be dealt with in the initial stage on the spot.

The Trade Unionist

Mr. J. L. **Smyth**, speaking from the trade union point of view, felt that more should be done to prevent accidents by ensuring proper selection of personnel so that people did not work on jobs for which they were unfitted. He made a plea for a greater understanding of each other's job as between the doctor and the workman. The ignorance of the doctor about working conditions was often responsible for much misunderstanding, particularly as it referred to certification under the Workmen's Compensation Act. At the same time the workman undoubtedly very often misunderstood the doctor's position. The doctor could do much to remove the prejudices of the less enlightened, among both employer and employed. He felt that the industrial doctor might be handicapped because he was himself an employee of the firm. His job, however, was to serve the workers, and probably he would himself prefer to be altogether independent of the management. Mr. Smyth deprecated the controversies arising in the courts between the individual worker and employer with lawyers and doctors ranged on either side to fight the matter out, which gave no satisfaction to anybody. The trade unions were delighted to have been associated with the development of the idea of rehabilitation centres such as had been outlined by Mr. Watson-Jones. Those centres already in existence had furnished practical demonstration of the value of the idea. The T.U.C. had recently given approval to the idea and called upon its general council to demand that the Minister of Health bring about an intensive development of this service, which would include mobile medical units. The compensation bogy must be destroyed. He would like to see standardized records at all hospitals and the preservation of continuity of treatment, and to see doctors in hospitals working closer together in a common policy on behalf of the nation with the resources of the country behind them.

General Discussion

In the discussion afterwards Sir **Walter Citrine** remarked on the big element of conservatism to be overcome on the part of both the medical profession and the workman. He felt that there was no place for the consideration of economic motives. Their noblest aspiration should be by skill and organization, whether in hospital or rehabilitation centre, to restore humanity and take away the disability produced by accident. Trade unions were willing to co-operate with anyone, whether employers or social agencies, if they were imbued with those high humanitarian ideals. Mr. G. **Perkins** of Roehampton emphasized the need for starting the work of reconditioning from the initiation of treatment in hospital and said that the work should be supervised throughout in both hospital and centre by the surgeon in charge of the case. Mr. R. **Watson-Jones**, of Liverpool said it was just as important to avoid the fear and litigious atmosphere that might develop after injury as it was to avoid non-union of a fracture. Every fracture surgeon must be more than a craftsman: he must be a psychologist. The newness of the idea of rehabilitation was only in putting forward the psychological aspect so prominently. The British Orthopaedic Association deserved credit for its work in promoting fracture clinics and rehabilitation centres. The latter must not be a counterpart of the old massage department of hospitals. They must be geographically separate, with the advantages of open air, freedom, and separation from the hospital atmosphere. The problem to-day was far more than economic or humanitarian. This country was at war, and it was vital that every man should be back at work.

The **President** emphasized the important part played by Sir Robert Jones in the whole development of the idea of rehabilitation. It was he who in the last war had insisted on the value of active co-operation of mind and limb in the restoration of movement in stiff joints and in the restoration of muscle power and co-ordination. At the workshops at Shepherd's Bush Sir Robert showed what could be done for the reconditioning of the disabled. The tragedy was that so much of his teaching in this direction had been allowed to slide in so far as it affected the treatment of accident cases throughout the country.

In the course of the meeting a series of clinical papers were read and demonstrations given at the Harlow Wood Orthopaedic and Nottingham General Hospitals.

Those who made contributions were Mr. A. M. **Birkett** of Nottingham, Mr. R. G. **Pulvertaft** of Grimsby, Mr. J. P. **Campbell** of Nottingham, Mr. J. **Grocott** of Stoke-on-Trent, Mr. J. **Hardman** of Sheffield, Mr. L. H. **Morris** of Leicester, and Mr. S. A. S. **Malkin** and Mr. F. **Crooks** of Nottingham. Interesting groups of cases were demonstrated at both of the hospitals.

Correspondence

Tuberculosis and Milk

Sir,—The recommendation of the M.R.C. Committee on Tuberculosis (Oct. 10, p. 436) that "the pasteurization of milk should be extended throughout the country, and, where this is not practicable, all milk consumed by children should be boiled," has during the past 10 or 12 years been repeatedly urged by the People's League of Health, the Joint Tuberculosis Council, the Royal College of Physicians, and the British Medical Association. In spite, however, of this weight of authority the advice has had but a limited application. For this failure two reasons may be suggested. One is that the reports of scientific councils do not much engage popular reading; and the other, that the public is misled by such alluring titles as "clean milk," "pure milk," "accredited milk," and the like, and does not realize that none of these labels affords any protection against the risk of tuberculosis and other infections.

May I repeat the suggestion that where learned corporations have failed the individual doctor may readily succeed. Parents and the guardians of children, informed by their trusted medical advisers of the true position, would develop a public opinion that would demand "safe milk"—that is, "pasteurized milk"—and the fancy labels of the commercial advertiser would lose their unwarranted appeal. Further, in such an educational campaign medical practitioners would find a welcome opportunity in the practice of preventive medicine, and would discharge a responsibility that falls on the medical profession as guardian of the public health. What is spoken by trusted voices in thousands of homes is likely to have a wider and more immediate effect than many archives. The reward is promised in the words of the M.R.C. Committee: "If all milk for human consumption were pasteurized it is no exaggeration to say that tuberculosis of bovine origin would be eliminated."—I am, etc.,

Hove, 3. C. O. Hawthorne.

Classification of Nerve Injuries

Sir,—I am relieved to find that others than Dr. Russell Brain and myself feel their sensibilities disturbed by the neologisms that Prof. H. J. Seddon proposes to add to the already florid vocabulary of neurology. The subject must soon become totally unintelligible to all but those primarily concerned with it if this passion for diving into the lexicon is not checked. I will not here reiterate all the arguments I have already privately poured into Prof. Seddon's insentient ear against his adoption of this set of ill-sounding triplets, though I continue to wonder how he does not realize that the illimitable resources of our mother tongue are adequate to convey ideas and to state facts far more subtle than those presented by nerve injuries. Working as he does in Oxford, it is sad that Prof. Seddon is not willing to fight for the lost cause of English in medical terminology.

However, it appears that what seem to him the needs of a precise and unequivocal nomenclature require that he shall adopt these specimens of tortured Greek, made to serve a purpose for which they were never intended, and all I am now venturing to ask is how it comes that with standards so exacting he has allowed himself to adopt the term "fibrin suture" (*Lancet*, July 25, p. 87) for the method of sticking together the two ends of a severed nerve by a few drops of plasma. "Suture" we all understand to mean stitching, and the *O.E.D.* informs me that it refers to the "joining the two ends of a severed nerve or tendon by stitches." "Fibrin suture," as he uses it, might perhaps pass as a rough workaday term were it not that Prof. Seddon has burst upon us as a terminological purist, ready to affront our ears and to shame our unfamiliarity with ancient Greek in the name of scientific precision. As I "gum suture" my stamp to the envelope that is to carry this letter to you, Sir, I wonder how Prof. Seddon will explain away his lapse from consistency. But I suppose that when even Homer nods another Greek writer may do the same without reproach.—I am, etc.,

London, W 1. F. M. R. WALSHE.

Crush Syndrome

SIR,—Following the demonstration of a "crush-kidney" syndrome in dogs,[1] research of a similar nature has been continued on cats (under nembutal or chloralose anaesthesia), during the course of which one fact of possible practical significance has come to light.

If the hind limbs are bound sufficiently tightly with rubber tubing to become completely ischaemic, as evidenced by reduction of foot temperature to that of the surrounding air, sudden release after 3 to 4 hours results in considerable impairment of renal function. In 11 such animals the average fall in creatinine clearance following this procedure was 51% (varying from 26 to 78%), although oliguria was prevented by infusion of sulphate-saline solution and blood pressure restored with gum-saline. In 7 animals in which the tubing was not tied sufficiently tightly to produce this degree of ischaemia an average fall of 24% (varying from 14 to 35%) in creatinine clearance resulted. If, however, the circulation is readmitted to such limbs gradually, no appreciable impairment of renal function can be observed. In 10 animals treated in this way the average change in creatinine clearance was +1% (varying from −9 to +16%). In one other, which was suffering from jaundice, a drop in clearance of 33% was noted, and later experiments on eviscerated animals suggest that the liver is responsible for detoxicating the blood coming from the ischaemic muscles, if sufficient time is allowed.

The process of gradual re-establishment of the circulation in the limbs is simple in the cat owing to the extreme richness of arterial anastomoses. Before untying the limbs, the aorta is clamped immediately above the bifurcation—i.e., below the lumbar arteries. After half an hour, with occasional gentle massage of the limbs, the femoral artery is clamped as high as possible and the aorta released. By this time the thigh has warmed up appreciably and the main vessels are full of blood. After a further half-hour, again with occasional gentle massage of the muscles, the femoral artery is released and full circulation thus established. Such a procedure is clearly out of the question in human casualties, but the same end-result might well be achieved in suitable cases by less drastic means.—I am, etc.,

University College, Leatherhead. M. GRACE EGGLETON, D.Sc.

Crush Injury and Anoxia

SIR,—In my letter on crush injuries (July 26, 1941, p. 139) I endeavoured to establish that, as suggested by Sir L. Hill (1941), the renal characteristics of the "crush syndrome" were due to *anoxia* following traumatic shock. From your columns it is evident that the belief is widely held that the crush syndrome is due to some obscure and still unidentified toxic derivative of crushed or necrotic muscle or tissue. The following considerations, however, militate strongly against such a belief.

1. According to Bywaters and Beall themselves (1941) the renal damage in cases of crush injury appears early and is progressive even though the crushed limb be amputated.

2. It is not possible to establish by cross-circulation or other methods that the blood of an animal suffering from traumatic shock (crushing of the limbs) is toxic (McDowall, 1940).

3. The characteristic degeneration of the epithelium of the renal tubules in crush injury is not found in infarction or absorption of blood clot (tissue necrosis).

4. The renal degeneration met with in crush injury is found in cases of injury where no crushing of muscles has occurred (Mayon-White and Solandt, 1941; Glen, 1941; Young and McMichael, 1941).

5. A condition similar to the renal failure of crush injury with similar degenerative changes in the convoluted tubules is found in the anuria of cholera persisting after successful restoration of the circulation by saline transfusions (Tomb, 1942).

In addition to the foregoing considerations it is to be observed that the fall in blood pressure which often follows the release of a tourniquet from an injured limb is not due to the liberation of toxins from the injured area, as is often assumed, but to the sudden enlargement of the vascular bed (McDowall, loc. cit.), associated no doubt in many instances with diminished blood volume due to incipient shock.

Anoxia may be produced, apart from circulatory defects, (1) by obstruction to breathing of the normal atmosphere (from strangulation, drowning, pneumonia, asthma, etc.); (2) by diminution of the oxygen content of the inspired air (as at high altitudes or in respiration chambers), and by its replacement by other gases such as CO_2, CO, CH_4, N_2O, etc.; (3) by diminished oxygen-carrying capacity of the blood (*a*) from the replacement of oxyhaemoglobin by methaemoglobin, carboxy-haemoglobin, or nitric-oxide haemoglobin, (*b*) from diminished blood volume (as in haemorrhage, collapse from cholera, and traumatic shock), (*c*) from diminished total haemoglobin content of the blood (as in hypochromic anaemia, haemolysis, and pernicious anaemia). In this connexion it is of special significance to note that Bywaters and Beall (loc. cit.) report that renal changes very similar to those met with in crush injury are found with anuria in cases of haemolysis due to incompatible blood transfusion ("transfusion kidney"). Similar degenerative changes of the renal tubular epithelium with anuria are also found in blackwater fever (Manson-Bahr, 1935) and in pernicious anaemia (Leftwich, 1920; Stieglitz, 1924), the common factor in all these cases being anoxia due to anaemia consequent on haemolysis or defective blood formation.—I am, etc.,

Sydney. J. WALKER TOMB.

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Splenectomy in Purpura Haemorrhagica

SIR,—Dr. Bruce Williamson (Oct. 3, p. 407) castigates Prof. Witts for his "levity" in advising splenectomy in purpura haemorrhagica. On Dr. Williamson's own admission he (with the late G. A. Sutherland) was responsible for the introduction into this country of splenectomy for this condition (1925). In 1926 in a paper "Recent Advances in the Diagnosis and Treatment of Purpura Haemorrhagica" (*Archives of Disease in Childhood*, 1) he states in regard to splenectomy for this disease: "The results are so uniformly good that it appears to be only a matter of time before this disease is classified as curable by splenectomy. The results are comparable with those of splenic anaemia and acholuric jaundice."

In 1928 in my monograph *Acute Aplastic Anaemia* (p. 28) the following appears:

> "The disease which bears Werlhof's name is really a conglomeration of diseases which have one condition in common—deficiency of platelets. There is only one of these conditions—thrombocyto*lytic* purpura—in which splenectomy is indicated, and unless evidence of destruction of platelets by the spleen is demonstrable splenectomy is contraindicated. Bruce Williamson, in a review of the literature of sixty-five cases of splenectomy for this condition, makes no mention of the thrombocytolytic character of the disease, nor does he mention the importance of considering the complete blood picture before deciding in favour of splenectomy. This is a serious omission in a paper bearing the title 'Recent Advances in the Diagnosis and Treatment of Purpura Haemorrhagica.' An analysis of the deaths amongst the cases cited by him suggests that the culpability of the spleen was not sufficiently established prior to operation."

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[1] Eggleton, Richardson, Schild, and Winton, *British Medical Journal*, 1942, 2, 392.

During the 16 years which have elapsed since Dr. Williamson unreservedly advocated splenectomy as the ideal treatment for this disease I know of no publication by him in which he confesses his conversion to the views expressed by me in 1928. It is hardly fair of him, therefore, to deal so severely with Prof. Witts, who, in recommending splenectomy in his two cases of thrombocytopenia, was supported by the authority of the physician who introduced the operation into this country—Dr. Bruce Williamson.—I am, etc.,

A. Hayes Smith, M.D.

Trichlorethylene as General Anaesthetic

Sir,—The letter from Drs. Lloyd-Williams and Hewspear (Aug. 8, p. 170) recording fibrillation in a patient with non-toxic goitre under trilene anaesthesia has stimulated valuable comment from two of your readers. At the Royal Free Hospital we are constantly on the look-out for improvements, and it is the policy of the anaesthetic department to follow up every constructive suggestion offered to it. We are therefore grateful to Dr. Langton Hewer and Dr. Newton Price for their letters. May I say a few words in explanation of some of the methods we have adopted.

Intubation: While we are aware of the vagal reflexes which physiologists have told us can occur when the bronchial mucous membrane is insulted, it is possible to say that in more than 15 years, with an average of between 300 and 400 anaesthetics for thyroid operations a year, neither my colleagues nor I have seen any evidence of their existence. This may be due to the fact that our cases are "cocainized." It has often been said to us that thyrotoxic cases should not be intubated because without endotracheal tubes they can be maintained in a lighter plane of anaesthesia. With a moderate degree of cocainization and blind intubation this is not true; but because of such suggestions we have many times, for considerable periods, anaesthetized cases without intubation, only to return (often at the surgeon's request) to the original method. So far as possible we use only first-plane anaesthesia, but always with ample oxygen; our experience is that the complete freedom of airway, lack of anoxaemia, and good condition of the patient (checked in every case by blood-pressure readings) amply justify the method.

Novocain and adrenaline: We aim at a method of true anoci-association and regard the effect of the novocain as an important part of the anaesthesia. Except in those patients whose Goetsch test is positive, we have seldom found that a strength of 1/150,000 adrenaline has any effect on the pulse. In some cases which we infiltrated with adrenaline without novocain the skin incision and dislocation of the gland often produced reflex movement.

Dr. Newton Price's letter raises an interesting point. Premedication for thyrotoxic patients is always a difficult problem. For nearly a year we have been trying chloral hydrate in place of the more usual basal narcotics. So far we have used it in about 300 cases, and it seems to be satisfactory. Patients come to the theatre awake but in a condition which can best be described as "placid." A further communication on this subject is intended at a later date.—I am, etc.,

Stanley Rowbotham,
Major, R.A.M.C.

Shock Treatment in Psychiatry

Sir,—In your leading article (Oct. 3, p. 397) on shock treatment in psychiatry you rightly stress the importance of the early diagnosis and treatment of schizophrenic and allied conditions.

It appears a pity that shock treatment, like many other modes of treatment which have made a sensational entry into the medical world and have been abused by lay literature and press, is in grave danger of being used too indiscriminately, and thereby the value and the reputation of this mode of cure are liable to suffer. Many cases, unsuccessful because of unsuitable selection, will finally lead the practitioner and even the mental specialist to regard the treatment as useless, and thereby many cases really suitable will be robbed of their only chance of recovery.

I think we have to divide all cases suitable for shock treatment into two groups, the basis of division being the aim of the treatment. Shock treatment includes both insulin and convulsion treatment. Group 1 includes early cases of schizophrenia treated with some hope of complete recovery, or at least of keeping initial and slight symptoms stationary for many years. Group 2 includes all cases, early or those for which there is little or no hope of recovery or even prolonged remission; the treatment is purely symptomatic in aim.

Suitable for the first group are only very early cases—i.e., the treatment is begun within the first year of certification, or preferably at a time when a young person, though not yet requiring certification, shows definite signs of introversion and a progressively deteriorating schizoid personality. Unfortunately the present system of certification makes it practically impossible to get at these cases early enough, as the certification is naturally postponed until the illness is far advanced, and hardly anybody can be persuaded to enter a mental hospital for early treatment, even voluntary, in such early stages of the disease because of the stigma still attached to these places. It is therefore high time that general hospitals should open wards for the treatment of such early cases and not only dispensaries and observation wards. Such patients could then undergo successful treatment without being stigmatized for the remainder of their life.

In the selection of these cases it is important to consider the type of illness, the best prognosis being in acute katatonic cases with no family history and no background of mental deficiency. Gradually developing hebephrenics, unless treated very early, show little recovery. Many cases of confusional excitement which are actually incipient schizophrenics have a very good prognosis, and the argument of some critics that one will treat thereby many cases which would have recovered also spontaneously is not valid, because even a few cases of schizophrenia thus nipped in the bud will mean much to humanity.

As to the second group, it will have to be explained to the relatives that a complete cure is not hoped for but the patient will show some improvement. Some cases of acute katatonic excitement may thus be brought to rest, stuporous patients often become more amenable to nursing, and patients refusing their food will soon eat spontaneously. I would include in this group all advanced melancholics and involutional melancholics, which, though not schizophrenic, are often treated by convulsions. The results are in these cases usually only symptomatic.

It seems to me that these points must be kept in mind when selecting cases for shock treatment, and much disappointment will thereby be avoided.—I am, etc.,

Abergavenny. K. A. Graf.

Sulphonamide Sunlight Eruptions

Sir,—I read with interest the article on sulphonamide sunlight eruptions by Capts. R. G. Park and W. M. Platts (Sept. 12, p. 308). I feel, however, that some at least of their cases are capable of a different explanation from that given. After any considerable sunburning of the skin the capillaries of the sunburnt areas tend to dilate more readily than those of normal areas, even after the obvious signs of sunburning have disappeared. This undue reactivity of the capillaries shows up whenever the patient develops a widespread erythema, which will be more obvious on the previously sunburnt parts, and it can easily be demonstrated by a hot bath. I therefore suggest that some of the cases recorded are not due to a true actinic sensitization but are merely an ordinary sulphonamide rash appearing most conspicuously on areas previously affected by the sun. I make this suggestion for the following reasons. The eruption usually appeared about the eighth to the tenth day, the usual time for an ordinary sulphonamide rash; in many cases unexposed parts were also involved, which is very uncommon in actinic dermatitis; some patients developed the rash even though they were not exposed to the sun after taking the drug; the sensitivity disappeared in two to four days, which is more rapid than in other types of actinic dermatitis such as that from eosin.

While fully admitting the possibility of sensitization of the skin by sulphonamides, I feel the diagnosis should only be made after due regard to these considerations lest these drugs gain an undeserved evil reputation.—I am, etc.,

F. F. Hellier,
Major, R.A.M.C.

Nomenclature of Night-blindness

Sir,—We must all feel grateful to Dr. John Ware for his historical and classical contribution (Oct. 3, p. 409). His suggestion of "nyctamaurosis" and "nyctamblyopia" is reasonable if it is really necessary to have two substantives to indicate different degrees of blindness; but "complete" and "partial" seem to fill the bill pretty well. My preference for "nyctamaurosis" over "nyctamauroma" is based on the desire for consistency (or even logic) with its lightening of the tax on our memories. However it may have been in old times, it is indisputable that for many years past new words ending in "oma" have all indicated a tumour, either of a definite character or in a definite situation; their name is legion. On the other hand, whenever we have wished to indicate a process, general condition, or infestation we have invariably applied the termination "osis"; the most up-to-date example is, I think, "avitaminosis." It is true that there are a few "omas" (or "omata") which are not indicative of tumour formation, but they are so few that they can be easily remembered as exceptions to the rule. Why tax our memories with another exception (and perhaps more to follow) when by playing the game according to the modern rules we could play it almost with our eyes shut?—I am, etc.,

Ambleside. J. Price Williams.

Sir,—It would almost seem that some telepathic influences have been at work, for Dr. John Ware (Oct. 3, p. 409) has travelled along the same mental path that I have trod, even to realizing more fully that our English language is far from being absolute. Purblind, nearly blind, short-sighted: (orig.) wholly blind, is an excellent example. Dr. Ware goes the length of agreeing with me that *oma* may indicate something concrete or it may not.

"Nyctalopia" and "hemeralopia" we unanimously abandon, but we reach different destinations. To reach his he is willing to put a new meaning into the established words "amaurosis" and "amblyopia," the former meaning for him "complete loss of vision without qualification"; the latter, "partial loss of vision without qualification." In other words, we are asked to put new wine into old bottles. If we attempt this the bottles will break and the wine run out. I prefer to use two new words, "nyctamuria" and "nyctamauroma," for in doing so I put new wine into new bottles and both shall be preserved.—I am, etc.,

London, W.1. Francis E. Preston.

Sedimentin Index and Sedimentation Rate

Sir,—May a hard-worked general practitioner raise his small voice in this controversy? Dr. P. Edwards and Mr. L. J. Cuttrill, writing from Market Drayton Sanatorium (Sept. 26, p. 379), have stated *ex cathedra* that "any test should be as simple as possible and give the maximum of reliable information"; the more I study this statement the less sense can I make of it. I think I know what they mean; but even so, it isn't true. From what little I have seen of sanatorium practice I have long since come to the conclusion that in the world of tuberculosis tests, which began life by being simple, tend with the increase of knowledge and experience to become more complex in technique. For example: (1) Temperature-taking ceases to be a matter of thrusting a thermometer under the tongue for a roughly guessed minute (or, simpler still, of laying the hand upon the brow), and becomes a ritual wherein the patient lies completely relaxed for half an hour before warming the thermometer for two minutes in his rectum. (2) *X*-ray examination ceases to be a matter of snapshots, and now involves in addition lengthy and careful screening of each area of the lung field and mediastinum with the patient twisting this way and that. To make it more effective the radiologist has to spend some valuable time beforehand in the dark in order to accommodate his eyesight. (3) Sputum examination, too, it seems, is no longer entirely a matter of a stained smear, but involves concentration, culture, and animal inoculation. I will refrain from drawing the obvious conclusion, and merely condole with all sanatorium physicians (especially those at Market Drayton) that so much of their leisure should be encroached upon by these time-consuming "refinements."

May I now presume to contribute my personal experience of the blood sedimentation test from the G.P.'s point of view? I started determining sedimentin indices in general practice just over a year ago, and soon found not only that the information I derived from them was more useful than that given by the Westergren readings, but also that the procedure was actually less bother. You see, neither I nor my dispenser could be guaranteed not to forget—or, if we remembered, not to be otherwise involved—when the exact moments came round to take the hour-readings; whereas with the rack of six tubes on my (or her) desk it is the simplest matter to note the different "falls" every ten or fifteen minutes between, and even during, consultations. On my round of visits I have on the car floor the rack of bloods taken from bed patients, so I can note and record the "falls" every time I stop the car, and again just before I proceed on my way. This takes less than twenty seconds; I know because I've timed it. I can't help feeling that Dr. Clarke Penman (also writing from Market Drayton) is exaggerating when he complains that it takes five times as long as the Westergren readings and that the observer cannot "settle to any other work." Why, with my own eyes I have seen a sanatorium physician with his rack of tubes in the operating theatre, taking readings between refilling his patients' A.P.s. No. The chief obstacle to index determination, I think, is having to look up the logarithm of a number in a book of log tables. So many of us have forgotten how to do it, and so few have the meekness to ask our children.

By means of the sedimentin index it would seem, although I may be mistaken, that not only can one ascertain whether a patient is suffering from a destructive disease process, but that one can *measure* (in a new sort of way) *how ill* it is making him. A series of weekly or monthly determinations reveals the patient's rate of progress, and enables one to forecast with some accuracy how long it will take him to get well again—if he continues to progress at the same rate. It also shows you whether your treatment is making the slightest difference to his rate of progress. This information is not revealed by the first-hour Westergren technique—or even the second-hour. But of course I should no more dream of bringing the Westergren technique into disrepute than I would the taking of mouth temperatures or *x*-ray snapshots. And no less.—I am, etc.,

Norfolk. Rural Practitioner.

"Silent" Sinusitis

Sir,—Mr. Edward D. D. Davis (Oct. 10, p. 441) states that sinus disease as a cause of visual disturbances is very rare, and then quotes 54 cases of retrobulbar neuritis of which only 5 (or 9% of the total) were, in his opinion, of nasal origin. These figures suggest to me that sinusitis should be classed as a common cause of retrobulbar neuritis, not as a very rare cause.

Mr. Davis then goes on to make the extraordinary statement that to the honest rhinologist silent sinusitis does not exist. If by silent sinusitis Mr. Davis means the type of infective and allergic origin to which I referred in my letter (Aug. 22, p. 230), then I resent very much his implication, not in its application to myself, as I am not a rhinologist, but in the application to several of my rhinologist friends, who, even if they do differ in their views from Mr. Davis, could never be anything else but honest. Dr. W. Edwards (p. 441) remarks that the proof of the pudding is in the eating, and if silent sinusitis does not in point of fact exist, how does Mr. Davis explain the fact that every case of migraine which I have treated has been considerably improved, if not in fact cured, by ephedrine replacements?—and this applies to many cases which have been investigated, with negative findings, by rhinologists.—I am, etc.,

Alderley Edge, Cheshire. J. J. Craig.

Sir,—The letters of Mr. Terence Cawthorne and Mr. Edward Davis lead one to think that they view the success of the practice of medicine only from the point of view of the suffering patient. It is incredible that consultants can be so far out of touch with the times in which we live. Even in Hogarth's time it was said: "The ancients tried to make medicine an art and failed; the moderns have tried to make it a trade and succeeded."

Recently I took under my care a case of certified insanity, within seven days of the time when the patient was to undergo two operations for silent sinusitis, each operation carrying a surgeon's fee of 100 guineas. The patient had never at any time had signs or symptoms of sinusitis. Transillumination, radiographic examination, and culture of antral wash-outs gave negative results. The surgeon who had advised the operation further stated that it was typical of such cases of silent sinusitis that no alteration was to be found in either the B.S.R. or the differential white cell count. This disease, though insidious, is apparently diagnosed with ease by the typical absence of all evidence of disease in the sinuses.

The patient made a complete recovery without surgical interference, which, however fortunate for the patient, might be regarded as less fortunate for the surgeon. Certain organic nervous diseases, abnormal mental states, rheumatic conditions, and pulmonary diseases, to mention but a few, are typically remittent in their course, and obviously offer a fruitful field for the invocation of treatment for silent sinusitis.—I am, etc.,

London, S.E.24 KENNETH MCFADYEAN.

SIR,—Mr. Terence Cawthorne (Sept. 26, p. 379) appears to want to minimize the value of the communications made by Dr. Rosa Ford and Dr. J. J. Craig. No one wishes to operate on healthy nasal accessory sinuses, but his letter conveys the suggestion that these two workers have done so. Perhaps Mr. Cawthorne would describe the radiological evidence which he considers sufficient on which to class sphenoidal and ethmoidal sinuses as healthy or diseased. Would he require proof puncture also in the case of these sinuses; if so, what method does he consider sufficient to demonstrate disease in these sinuses?—I am, etc.,

Powick, Worcester H. F. FENTON.

SIR,—I find Miss Rosa Ford (Oct. 10, p. 441) crossing swords with Mr. Terence Cawthorne over his criticism of slack diagnosis of sinusitis. We are asked to alter our canons of paranasal diagnosis on the evidence of two cases, now somewhat hoary. In the face of this evidence it is surely pertinent to ask why we should alter our customs. It is my view that the so-called evidence contained in these cases amounts to no more than evidence of loose thinking.—I am, etc.,

Newcastle-upon-Tyne F. MCGUCKIN.

SIR,—Long experience has taught me the truth of Mr. E. D. D. Davis's statement that for the rhinologist "silent sinusitis" does not exist. In the two cases of which I gave details in the *Journal* (Aug. 1, p. 128) "silent sinusitis" did not exist for any of the four rhinologists concerned. In consequence both patients were obliged to suffer desperately from headaches for at least 7 years. Such helpless suffering is very prevalent, and would be quite needless if the silence in which sinusitis can wrap itself could be broken, either by such means as Mr. Davis advocates or by those I have suggested, which seem to me simpler and more widely applicable.—I am, etc.,

London, W.1 ROSA FORD.

⁂ This correspondence is now closed.—ED., *B.M.J.*

"Female Circumcision" among the Kikuyu

SIR,—"Female circumcision" as it exists among the Kikuyu (Kenya) is an operation which varies in severity, some sections of the tribe practising a more drastic form than others. The following is a generally accepted description of the "major" operation:

> "It involves the removal of not only the clitoris, but also of the labia minora and half of the labia majora, together with the surrounding tissue, resulting in the permanent mutilation affecting the woman's natural functions in micturition, menstruation, and parturition, with disastrous results not only to the birth rate, but also to the physique and vitality of the tribe."

The so-called "minor" operation is that of clitoridectomy, now adopted by some sections of the tribe as the result of advice and pressure from Government. The missionaries, many of whom are medical men, and nurses have spoken of "the sexual mutilation of women" as being a more correct term than "circumcision." Besides the severity of the operation, and its effects—physical and psychological—on the girls at puberty, bleeding is often profuse at the time of operation and sometimes leads to death. There is always extreme inflammation and extensive cicatrization of the parts affected. Afterwards, normal menstruation is interfered with and sometimes coition prevented. It is significant of the frequency of this result that the Kikuyu have a special word to denote it—"nduri." Plastic operation to relieve this condition is of frequent occurrence in mission hospitals. The most disastrous results of the operation occur at times of childbirth, especially with primiparae. Labour is always delayed and mother or child, or both, often die in consequence of the unfavourable conditions caused by the operation. When mission hospitals were established it was found necessary to make incisions, sometimes several, in order to enable a child to be born.

As the result of a strong stand taken by some of the missions working among the Kikuyu from 1916 on, many Christian girls are now saved from this operation, and thus in certain areas the custom is becoming a thing of the past.—I am, etc.,

Dunbog, Newburgh, Fife JOHN W. ARTHUR, M.D.

Woman-power and Maternity

SIR,—I should like to draw attention to the fact that in your report of the National Conference on Maternity and Child Welfare (Oct. 3, p. 404) reference is made to maternity legislation in Germany and Japan, while the notable achievements of our Soviet ally in this respect are completely ignored. We can find much assistance in the solution of the problems of woman-power and maternity by reference to the special measures which have enabled the women of Soviet Russia to play such a large part in the development and in the defence of their country.

Every pregnant mother in the Soviet Union in peacetime is entitled to a minimum of 56 days' maternity leave before and after confinement (reduced to 36 days before and 28 days after during the war). This is extended to cover half-hour periods every 3½ hours during the nursing period, and subsequently such time as may be authorized by the child's doctor in respect of any illness on the part of the child. Maternity leave is on full pay, and these extensions of maternity leave entail no deduction from the mother's normal salary. Furthermore, on registering at an ante-natal clinic she is entitled to various privileges, such as transference to lighter work if she is on heavy work, and exemption from any night work. Production of her ante-natal card also ensures an expectant mother priority in other spheres, such as shopping and transport.

These are the special provisions of immediate interest to us in the welfare of the pregnant woman in industry and the essential services. There are many others, and those who are interested will find a more detailed account of maternity legislation and the work of the scientific institutes for the protection of mother and child in Prof. Sigerist's book *Socialized Medicine in the Soviet Union*.—I am, etc.,

Southall JOAN K. MCMICHAEL.

Medical Planning Now

SIR,—Owing to wartime difficulties the proceedings of the A.R.M. have been reported rather briefly, and as the result I believe certain important points which greatly impressed the meeting have been lost sight of.

I had previously believed that we would serve our colleagues in the Services best by making no changes in their absence and arriving at no final decisions until they return. And this has been the view expressed from time to time by correspondents in the *Journal*, who feel that we ought to safeguard the interests and future of our absent colleagues. But at the A.R.M. a most striking speech was delivered by a member who stated that he was in the Services, having left his practice to join up. He said that he had taken advantage of a period of leave to attend the A.R.M. I regret I do not remember his name, but from the brief summary in the *Supplement* of Sept. 19 (p. 31) I think it may have been Dr. W. E. Dornan of Sheffield. He appeared to have no illusions about politicians. He urged us on behalf of those absent in the Services to make our plans now, and carry them into effect while our bargaining power was high and before over 10,000 doctors were suddenly thrown on the labour market by post-war demobilization, thereby practically destroying our bargaining power, a situation he expected the politicians to exploit to the full.

I had not realized this obvious danger, and I feel sure that many doctors do not fully appreciate it. Therefore it seems to me advisable that the fullest publicity within the profession should be given to pointing out this risk, in order that measures may be adopted to prevent it.—I am, etc.,

Hove. H. J. MCCURRICH.

Post-war Planning and Winning the War

Sir,—Your issue of April 11 has just reached me and I have read the letter of Mr. R. Watson-Jones with interest. Surely he is right in suggesting that too much time may be spent now in discussing the post-war organization of medicine. Is it not better for the profession to concentrate on maintaining and increasing our war effort? And is it not also clear that any new arrangements should only come into existence when those of us now abroad have had time to come home, look round, and give our considered opinions in a calmer atmosphere than is now possible? The profession has had many unfortunate experiences of high-handed and arbitrary action by Government. The liveliest resentment will be felt if, on our return home, we are presented with a professional situation we dislike and in the shaping of which we have had no voice.

I suggest that the B.M.A. should secure a pledge from the Ministry of Health that no major changes affecting our livelihood will be allowed until most of us serving temporarily with the Forces abroad have been able to return home and look round. After all, we are supposedly fighting for a charter which is to free mankind (doctors included) from arbitrary action by the State or any other powerful authority. Having seen hospitals used as vote-catching machines I would urge that politicians be given no control in any future scheme. They are the last to remember that in a properly conducted profession or service those in control should extend their loyalty to the subordinates below—without which no proper loyalty to those at the top is possible.—I am, etc.,

G. C. Pether,
T/Major, R.A.M.C., Middle East Forces.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

On Friday, Nov. 13, Prof. Major Greenwood, F.R.S., will give a lecture on "Origins of the Scientific Study of Population," and on Friday, Nov. 27, Dr. H. P. Bayon will lecture on "Disease as a Determining Factor in War." Both will be delivered in the lecture theatre at the Arts School at 8.30 p.m., and they are open without fee to all members of Cambridge or London Universities or of Girton or Newnham Colleges.

At a Congregation held on Oct. 1 Dr. J. A. Venn, President of Queen's College, resigned the post of Vice-Chancellor and was readmitted for the year 1942-3. In the course of his address reviewing events of the past academic year Dr. Venn announced that the Rockefeller Foundation had again continued its grant of £1,200 for research in cellular physiology at the Molteno Institute, and is providing £450 a year for a research grant for Dr. Joseph Needham. Mentioning the bestowal of the Order of Merit upon Prof. E. D. Adrian, he said that this reflected the importance of work recently undertaken for the nation. In addition to 15 vacant Chairs there are now 16 Professors, together with 3 Readers, absent on national service, and out of 370 university lecturers and demonstrators only 143 remain in Cambridge. Several of the former holders of professorships have consented to remain in charge of their departments for the time being.

The Final M.B. Examination will begin in the present term on Monday, Dec. 7, a day earlier than is prescribed by Ordinance, the written examination for Part I being held that day and for Part II on Dec. 8 and 9. Names of candidates for the M.Chir. Examination should be sent to the Registrary by Dec. 29; the examination begins on Feb. 16.

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examination indicated:

Final M.B., Ch.B.—*Parts II and III*: H. M. A. Ansari, Josephine Hall, J. D. H. Linfoot, E. R. Monypenny, Ethel M. Spedding, R. L. N. Stewart, Joan Williams.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council, held on Oct. 8, with Sir Alfred Webb-Johnson, President, in the chair, it was decided to increase the membership of the Court of Examiners from 17 to 20. The Council decided to offer the use of the library as a meeting place for Canadian and American medical officers.

Mr. A. J. Graham was nominated as the fiftieth Jenks Scholar. A Leverhulme Scholarship was awarded to F. K. Sanders, M.A., D.Phil.Oxon, for a year from Sept. 30. Subject of research: Problems connected with the repair of peripheral nerve injuries. Dr. Douglas E. Lea was nominated for reappointment as a Prophit Student for 1943 and Dr. Lilian Helena Walter was nominated for appointment as a Prophit Student as from Aug. 18, both for cancer research. Dr. Geoffrey Bourne has been reappointed a Mackenzie Mackinnon Research Fellow for a second year from Oct. 1. A vote of thanks was accorded the trustees of the Powell-Cotton Museum for a generous donation of comparative osteological material given as a token of sympathy with the College in the disaster to the museum. The general annual report and the scientific report on the Museum and Research Laboratories were approved and copies will be sent to such Fellows and Members as apply for them.

Diplomas of Membership were granted to T. D. Kellock, H. G. McQuade, J. R. K. Preedy, D. S. Short, Edith M. Waterhouse, J. F. R. Withycombe.

Diplomas in Child Health were granted, jointly with the Royal College of Physicians of London, to the following candidates:

A. P. Bentall, E. Emanuel, E. G. Fox, J. F. Galpine, Aitolia Georgiadis, Margaret E. Harker, D. C. Jackson, Elizabeth B. S. Scobbie, Vera Settle.

Obituary

F. G. CHANDLER, M.D., F.R.C.P.

We regret to announce the death on Oct. 8 of Dr. F. G. Chandler, physician to St. Bartholomew's Hospital and senior physician to the London Chest Hospital, Victoria Park, E.

Frederick George Chandler was born at Sutton, Surrey, on July 25, 1885, and from the Leys School entered Jesus College, Cambridge, with a scholarship and gained first-class honours in the Natural Sciences Tripos of 1908. He went on to St. Bartholomew's Hospital, took the English Conjoint Diplomas in 1911, and the M.B. and B.Ch. degrees a year later. For his Cambridge M.D. thesis in 1917 he won the Raymond Horton-Smith prize. After holding a house-physiciancy at Bart's he was appointed medical registrar at the London Hospital in 1913, but was seconded from this post during the last war, when he served with a temporary commission in the R.A.M.C. as regimental medical officer to the 2nd Argyll and Sutherland Highlanders, and later as medical specialist at a casualty clearing station. On returning to civil practice in 1919 he took the M.R.C.P. and was elected to the visiting staff of the Victoria Park Hospital, where he did excellent work, and after two years as casualty physician at Bart's he became assistant physician and medical tutor at Charing Cross Hospital. He was elected F.R.C.P. in 1925. Chandler's promotion was rapid at Charing Cross, but about twelve years ago a vacancy occurred at St. Bartholomew's and he was elected assistant physician. He was also on the consulting staff of King Edward VII Sanatorium and of the Hospital for Tropical Diseases. His book, written jointly with Dr. W. Burton Wood, on *Lipiodol in the Diagnosis of Thoracic Disease*, appeared in 1928.

[*Press Portrait Bureau*

Chandler joined the British Medical Association in 1923 and was a member of the Consultants Board at headquarters for the past ten years. He held office as honorary secretary of the Section of Medicine when the Association met at Bath in 1925, as vice-president of the Section of Public Health (including tuberculosis) at Bournemouth in 1934, and as vice-president of the Section of Tuberculosis at Plymouth in 1938. He was an enthusiastic worker, with varied interests outside his profession, including music and botany.

Sir Percival H.-S. Hartley sends the following appreciation:

By the death of Dr. Frederick Chandler the profession of medicine loses one whom it can ill spare, for he was a man of high principles and wide culture, one who had already made his mark in his profession, and would have attained even higher eminence had he been spared. A classical scholar of Jesus

College, Cambridge, he afterwards entered St. Bartholomew's Hospital, becoming later my house-physician and proving one of the very best with whom it has been my privilege to work. There being no immediate vacancy in prospect at St. Bartholomew's he became medical registrar at the London Hospital, and then assistant physician at Charing Cross, but was later recalled to his "Alma Mater" and appointed assistant physician and later physician to St. Bartholomew's. Meanwhile he had made his reputation at the Victoria Park Hospital as a physician skilled in chest diseases, and was one of the pioneers in England of the delicate operation of dividing the pleural adhesions which prevent the full efficacy of an artificial pneumothorax, thus greatly increasing its value. For his eminence in chest work he was appointed—with the approval of H.M. the King—one of the consulting physicians of the King Edward VII Sanatorium, Midhurst. Here he did valuable work, rapidly endearing himself to his colleagues by his devotion to duty and charming personality. He was in middle life, and in the heyday of his success, when he suddenly, a few months ago, found himself smitten by a mortal disease. But with the utmost fortitude and Christian resignation he accepted the position and with cheerful courage continued to receive his friends, never once allowing himself a single word of complaint. He passed away peacefully at his home at Newdigate, Surrey. Of his happy family life, and the deep devotion and courage of his wife, who nursed him tenderly to the end, it is not for me to speak. But the hearts of all who knew him go out to her and their children in their sorrow and distress. Men like Dr. Chandler, followers of St. Luke in the highest and best sense, our profession can ill afford to lose, and it is with emotion and heartfelt sorrow that we say farewell.

ROBERT CECIL ROBERTSON, *M.C.*, M.D.

News has been received of the death in Hong Kong on August 4 of Robert Cecil Robertson, professor of pathology and bacteriology at Hong Kong University. Dr. Robertson was born in 1890 at Kilmarnock, and entered Glasgow University, graduating in medicine just before the outbreak of the last war. He served with the R.A.M.C. during that war and gained the Military Cross. Afterwards he resumed his medical studies, and in 1919 took the M.R.C.P.Ed. and the D.P.H., in 1920 the F.R.F.P.S., and a year later the M.D.Glasg., with commendations.

Robertson chose a career in the Far East, and for many years was a member of the staff of the Henry Lester Research Institute in Shanghai, serving as head of the Division of Pathology. He was also assistant pathologist to the Shanghai Health Department. His appointment to the chair at the University of Hong Kong was quite recent; he took up his work there only in 1940, and his brief tenure was thus an adventurous and troubled one owing to the spread of the war in the Far East and the occupation of the colony. He was exactly the type of man to represent Great Britain in that part of the world—a man of boundless physical and moral courage, a keen humanitarian, and a vigorous champion of the cause of the Chinese, among whom he had hosts of friends. He was robust in the expression of his views and strove zealously to improve the hygiene of the Chinese populations. He served as commissioner of the League of Nations anti-epidemic unit No. 2, which made health surveys in China, and in that capacity carried out some important missions. His epidemiological survey in 1939, when he tackled the difficulties of the Burma Road and presented a valuable report to the League Commission, is specially notable. He distinguished himself greatly in the rescue and rehabilitation work following the Yangtze floods in 1931. In August, 1937, when the Chinese attacked the Japanese flagship at Shanghai and bombs fell disastrously in the International Settlement, Robertson was officially reported among the 2,000 dead, but the anxiety of his relatives in this country was presently relieved by a laconic cablegram from him bearing the single word "unharmed." He contributed occasional papers to the specialist medical journals, in particular studies on the bacteriology and treatment of fevers in Shanghai. Unfortunately, his acceptance of the position in Hong Kong, where in other circumstances he might have done a very great work, was followed almost immediately by a breakdown in health, and in 1940, owing to continued illness, he ceased to belong to the Reserve of Officers. He was a member of the B.M.A. from 1917 until 1942.

In the off times of a very active career Robertson turned to the painting of pictures, in which his wife, a Scottish lady, also excelled. A picture of his painted in Shanghai was hung in the Royal Academy in 1937. He was also an accomplished photographer and an ardent scientist in many directions apart from those which constituted his lifework.

JOHN WALTER CARR, C.B.E., M.D., F.R.C.P., F.R.C.S.

Dr. J. Walter Carr, for many years a well-known physician in London, died on Sept. 29 at Hampstead. He was a Londoner by birth and education, and in London he spent the whole of his professional career. He entered University College and Hospital for his medical training, qualifying in 1884, and taking his M.B., B.S.Lond. with first-class honours in medicine, obstetric medicine, and surgery. In 1887 he proceeded M.D., and became a Fellow of the Royal College of Surgeons in the same year. His principal hospital association was with the Royal Free, where he was for many years physician, and, after his retirement from the active staff, consulting physician. He was also lecturer in medicine to the London School of Medicine for Women, which is associated with that hospital. Another institution he served with great devotion was the Victoria Hospital for Children at Chelsea.

Dr. Carr, who became Fellow of the Royal College of Physicians of London in 1901, served the college in many capacities—as a member of its council, an examiner, and, in 1926-7, as censor—and he attended Comitias up to the present year. He was also examiner in medicine to the University of Birmingham and the Society of Apothecaries. For a number of years he was a prominent member of the Medical Society of London, and in 1928 was elected its president. He had also been president of the Clinical Section of the Royal Society of Medicine. In all these capacities and others he gained the esteem and regard of his professional colleagues to an unusual extent. Forty years ago he published, jointly with three colleagues (T. Pickering Pick, Alban Doran, and A. Duncan), *The Practitioner's Guide*, and in 1916, when he himself was in the middle fifties, he wrote a book entitled *How to Live Long*, and verified its precepts by living for another quarter of a century; he was in his eighty-first year. Apart from these, he wrote numerous papers on medical subjects, particularly articles in various textbooks on tuberculosis and diseases of the pleura and mediastinum.

In 1920 he was made Commander of the Order of the British Empire, and in 1929 he had the unusual honour for a medical man of being elected Master of the Haberdashers Company, which stands high in precedence among the great City guilds. Dr. Carr retired from active practice several years ago, but he continued to live in London, and followed his favourite recreations—walking and travelling. His wife died in 1937, and he is survived by a son and three daughters.

The Services

The D.S.C. has been awarded to Temp. Surg. Lieut. G. MacBain, R.N.V.R., for courage and devotion to duty in North Russian waters, and to Temp. Surg. Lieut. A. W. Clark, R.C.N.V.R., for bravery, endurance, and devotion to duty in action against the enemy in the Mediterranean.

Temp. Surg. Lieuts. D. R. Barry and S. G. Hamilton, R.N.V.R., have been mentioned in dispatches for bravery, endurance, and devotion to duty in action against the enemy in the Mediterranean and for great bravery and devotion to duty when H.M.S. *Prince of Wales* and H.M.S. *Repulse* were sunk by Japanese aircraft respectively.

CASUALTIES IN THE MEDICAL SERVICES

Acting Lieut.-Col. Cornelius McGrath, R.A.M.C., who is included as "died" in an Army Council Casualty List published on Oct. 1, graduated M.B., B.Ch., B.A.O. of the National University of Ireland in 1936. He immediately entered the R.A.M.C., was promoted capt. a year later, and recently became major.

Major James Grant Morrin, R.A.M.C., is included as "died" in an Army Council Casualty List published on Oct. 1. Educated at St. Mungo and Anderson Colleges, Glasgow, he took the Scottish triple qualification in 1912, and served in the R.A.M.C. in France in the war of 1914-18, attaining the rank of capt. After demobilization he settled in practice in Lambeth in 1922 and represented his constituency at the Annual Representative Meetings of the B.M.A. at Belfast in 1937 and Plymouth in 1938 and was honorary secretary of the Lambeth and Southwark Division in 1938-9. On the outbreak of the present war he was immediately recalled for service.

Major Douglas James Stirling Armstrong, R.A.M.C., has died on active service in Malta. He was educated at the University of Glasgow, where he took the degrees of B.Sc., M.B., Ch.B. in 1938, and the D.P.H. in 1940. He was a member of the B.M.A. A. G. H. writes: When the full story of the epic defence of Malta comes to be told, the name of Dr. Armstrong will be found to occupy a prominent place. Joining the R.A.M.C. as a volunteer shortly after the outset of war, he was appointed in January, 1941, as commanding officer, 57th Field Hygiene Unit. He thus became, at the age of 25, sole consultant and adviser in hygiene to the military garrison of Malta. Up till the time of his death there were considerable periods when, by enemy action, light, ventilation, water, and sanitary facilities in great portions of the command were completely abolished. Despite these tremendous difficulties, the hygiene of the garrison remained at the highest possible level. These are bare facts. The decorations and well-earned honours would, no doubt, have followed. The present writer had the privilege of knowing Armstrong during the winter of 1941 and in the unforgettable spring of 1942 in Malta. Then, under the most ferocious aerial bombardment of a single small target, Major Armstrong in his equanimity and perseverance showed all those characteristics of courage and endurance which have distinguished great Scotsmen. When his headquarters were hit for the third time and almost completely destroyed, he remained unperturbed and set about the heavy work of reorganization swiftly and efficiently. To everything he did during these hectic eighteen months he added a touch of distinction and individuality entirely his own, whether in painting those water-colours of post-mortem lung-blast appearances which we in his profession will later admire, or whether investigating epidemic jaundice.

Surg. Lieut. Robert Davies Royds, R.N.V.R., who has died in a hospital in Algeria, was born on July 8, 1914, the elder son of Mr. and Mrs. R. Royds, and was educated at the Grove Academy, Broughty Ferry, and at St. Andrews University, graduating M.B., Ch.B. in 1937. Appointed a Carnegie research scholar, he worked under Prof. D. F. Cappell at University College, Dundee. He entered the R.N.V.R. in July, 1940, and had been interned in Algeria since his ship, H.M.S. *Havock*, ran aground.

Wounded.—Major M. E. M. Herford, M.B.E., R.A.M.C.

Wounded and Prisoner of War.—War Subs. Capt. R. J. F. Howe, R.A.M.C.

Prisoners of War.—Capt. W. Falconer, R A M.C., Capt. F. E Gallash, A.A.M.C., Lieut -Col. L. E. Le Souef, A.A.M C., Lieut.-Col. J. T. Lewis, R.A.M.C., Capt. M. Mayrhofer, A.A.M.C., Major J. D. Palandri, A.A.M.C., Surg. Lieut. E. C. Powell, R.N.V.R., Major J. W. Redgate, R.A.M.C.

Missing.—Capt. A. E. Brewer, R.A.M.C, Capt. B. A. Hunt, A.A.M.C., Major B. W. Nairn, A.A.M.C.

DEATHS IN THE SERVICES

Major-General Sir Samuel Guise Guise-Moores, K.C.B., K.C.V.O., C.M.G., late R.A.M.C. (ret.), died at Cheltenham on Oct. 3, aged 78. He was born at Deesa in Gujarat on Dec. 24, 1863, the son of Col. S. Guise-Moores of the Devon Regiment, and was educated at Cheltenham College and at St. Thomas's and King's College Hospitals, taking the M.R.C.S., L.R.C.P. in 1888, and the D.P.H. in 1898. After filling the post of house-surgeon to the East Devon and Cornwall Hospital at Plymouth, he entered the Army as surg. in 1890, became col. in 1915, major-general in 1920, and retired in 1923. He had a long and very distinguished career. His first war service was in the Chitral campaign of 1895, with the relief forces (medal and clasp). He also served in the South African War, in the relief of Kimberley, and in the actions of Belmont, Enslin, Modder River (wounded), and Magersfontein, and later in the actions of Poplar Grove, Vet River, Pretoria, and Diamond Hill (twice mentioned in dispatches, Queen's medal with 6 clasps and King's medal with 2 clasps). In the war of 1914-18 he served throughout in France and Flanders in administrative posts and was A.D.M.S. of several successive divisions at Ypres, on the Somme, and at Passchendaele. In 1917 he became D.D.M.S of the 11th Corps and later D.M.S. of the 2nd Army and of the Army of the Rhine (mentioned in dispatches five times). In 1919-20, he served as commandant of the R.A.M. College, and after retirement was appointed house governor and medical superintendent of the Osborne Convalescent Home for Officers, relinquishing the post in 1931. From 1927-33 he was a colonel-commandant of the R.A.M.C. Among many other activities he was principal medical officer of the National Rifle Association from 1908 to 1914 and was in medical charge of the Wembley Exhibition. Early in the century he served for some years as surgeon major in the Scots Guards. He was granted many well-deserved honours: C.B. in 1915; C.M.G. in 1918; K.C.B. in 1925; K.C.V.O. in 1931; Honorary Surgeon to the King in 1923. He also held the French Croix de Guerre and the Belgian Order of King Leopold. He was president of the Southern Branch of the B.M.A. in 1929-31 and chairman of the Isle of Wight Division in 1928-31.

Major-General Charles Harford Bowle-Evans, C.M.G., C.B.E., M.C., I.M.S. (ret.), died at Cheltenham on Aug. 23, aged 74. He was born at Tewkesbury on Oct. 19, 1867, the son of Lieut. John Bowle-Evans, Rifle Brigade (ret.), and was educated at the University of Cambridge, where he graduated B.A. in 1889 and M.B., B.Chir. in 1894, subsequently taking the D.P.H. in 1910, and at St. Bartholomew's Hospital. He entered the I.M.S. as surg. lieut. in 1894, became col. in 1920, major-gen. in Sept., 1923, and retired in the following Dec. He was appointed Director-General of Medical Services in India in 1923 in succession to Sir C. H. Burtchall, but only held the post for two months, having to retire on account of ill-health. He was the first I.M.S. officer to hold that post, except that the late Sir C. P. Lukis held it for a few months during the war of 1914-18. He received the C.M.G. in 1915, the C.B.E. in 1920, and in 1923 was appointed Honorary Physician to the King. He had a long list of war service: North-West Frontier of India, Waziristan, 1894-5 (medal with clasp); Chitral, 1895, action of Malakand Pass, relief of Chitral (medal with clasp); China, 1900 (medal); and the war of 1914-21, when he was twice mentioned in dispatches and gained the M.C.

Medical Notes in Parliament

Mass Radiography

Mr. James Griffiths asked Mr. Brown on Oct. 8 for a statement on tuberculosis. Mr. Brown replied that the committee which was appointed by the Medical Research Council at his request had completed its report, which was published that day. He had taken action on a number of points included in the recommendations. To facilitate early diagnosis the Ministry of Health obtained priority for the supply of some 30 sets of equipment for mass radiography. It was allocating them to large centres of population where they could be used to the best advantage, and in consultation with local authorities and with the assistance of an expert committee it had arranged for the training of the necessary staff to operate this equipment Deliveries of the equipment would be gradual. Arrangements for operation in the individual districts and for co-operation between authorities had to be worked out in detail. He expected that an effective start will be made in the New Year. Additional beds were being allocated and action was being taken to meet the needs for nursing and domestic staff. Where facilities for diagnosis and treatment were available it was important that those who give up work temporarily for treatment should be able to do so without anxiety as to the maintenance of their dependants. Local authorities were accordingly being authorized to grant financial assistance in such cases for the maintenance of dependants and to avoid breaking up the home while the breadwinner underwent treatment. This assistance would be administered by the public health authorities as a part of the approved treatment under the tuberculosis scheme. The cost would be repaid from Exchequer funds. Mr. Johnston was making similar arrangements in Scotland.

Dr. Summerskill asked what Mr. Brown was doing to reduce the incidence of non-pulmonary tuberculosis, which could be traced to milk. Mr. Brown said the Ministry of Health was in touch with the other Ministries concerned in that matter. Captain Elliston asked whether the mass radiography sets would be available for selected counties and county boroughs where the medical officer of health had submitted an approved scheme. Mr. Brown said the Ministry would work in co-operation with the local authorities. Sets were transportable but were best kept at places where they could be used for a period. The work would be done in connexion with the arrangements at local sanatoria. Men discharged from the Army who were tuberculous would come under the general arrangements of the scheme. Sir Francis Fremantle asked whether Mr. Brown would consult the Ministries of the Fighting Services so that these would use the sets to prevent tuberculous men getting into the Services. Mr. Brown replied that the Services had taken the initiative in the use of mass radiography.

Duodenal Ulcers in Invalided Men

Sir Irving Albery asked the Secretary of State for War on Oct. 13 how many men had been invalided out of the Service suffering from duodenal ulcers, and if any inquiry had been made about the cause. Sir James Grigg said that it was not in the public interest to give the precise figures, but the proportion of men invalided from the Army suffering from duodenal ulcers was about 11% of the number invalided on account of all diseases. There was no evidence to show that Army life rendered men more liable to duodenal ulcers than they would be in civil life, and he was satisfied that no special inquiry was necessary.

Yellow Fever.—On Oct 13 Sir James Grigg said that three cases of yellow fever had been diagnosed in British troops in areas in which they had been stationed since the commencement of the present war. Vaccination against yellow-fever of British troops proceeding to yellow fever endemic areas was introduced before the war, and had been continued without interruption. Most of the vaccine used was manufactured in this country, but some supplies were obtained from the U.S.A.

Routine Tuberculin Test for Children.—Sir E Graham Little, on Oct 13, asked the Minister of Health whether, in view of the rise in the incidence of tuberculosis, especially in children under 5, and of the present impracticability of wider use of radiography in detecting tuberculosis, he would impress on medical officers under his jurisdiction the diagnostic value, especially in the case of infants and young children, of properly performed tuberculin tests. Mr Brown replied that the report of the committee of the Medical Research Council on Tuberculosis in Wartime stressed the importance of the routine use, in all tuberculosis dispensaries, of the tuberculin test in children particularly The report was being brought to the notice of all medical officers of health of tuberculosis authorities.

Notes in Brief

It has been decided to appoint a woman naval surgeon at one of the W.R.N.S. establishments Other appointments are under consideration.

The sensitivity of certain persons to national flour is at present under consideration by the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council.

Supplies of quinine are adequate for a considerable period.

Medical News

The Duke of Gloucester has accepted the post of President of King Edward's Hospital Fund for London, in succession to the late Duke of Kent. He is the sixth member of the Royal Family to hold the presidency. Since its foundation in 1897 by King Edward VII, when Prince of Wales, the fund has distributed £10,500,000.

The Section of Comparative Medicine of the Royal Society of Medicine opened its 1942-3 session on Oct. 21. Further meetings have been arranged for Dec. 16, Feb. 17, and April 14, and, like the first, will be devoted to aspects of immunity.

The Royal College of Nursing (Henrietta Place, Cavendish Square, W.1) has arranged a dietetic course for nurses In planning the course the College has had help from the Ministry of Food and from members of the British Postgraduate Medical School staff, many of whom will give lectures to the students. Practical experience will include six months in the Hammersmith Hospital dietetic department, a month in the main kitchen and stores department of the London Hospital, and short periods in dietetic departments and clinics of other London hospitals.

Concentrated orange juice is to be distributed to children at welfare centres and food offices in place of the blackcurrant juice of last winter. It is prepared according to specifications of the Ministry of Food by pharmaceutical firms possessing the necessary plant, from concentrated orange juice imported from America. Special precautions are taken to prevent contamination and to ensure a minimum loss of vitamin C. The label states that the vitamin C content is 60 mg. ascorbic acid per fluid ounce, or about 160 mg. per 100 grammes. The juice should be kept in a cool dark place The Ministry of Food states that small air bubbles in the neck of the bottles are due to shaking during transport and not to fermentation.

The Board of Education has issued a leaflet, "War-time Diet in Boarding Schools," being Memorandum No. 34 of the series on the Schools in War-time There is a foreword by Sir Wilson Jameson Copies (price 2d.) can be obtained through any bookseller or direct from H.M Stationery Office.

Dr. John Young of Wimbledon Common, London, formerly of Blackpool and of Glasgow, among a number of legacies to hospitals and other charities, bequeathed £1,000 and a share of his residuary estate to the Royal Medical Benevolent Fund. Mr. H B. Grimsdale, F.R.C.S., bequeathed, subject to his wife's life interest, £500 each to the R.M.B.F., the Westminster Ophthalmic Hospital, and the Royal College for the Blind, Norwood.

No. 39

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 3.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for. (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county) (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	61	7	19	—	3	94	7	30	—	1
Deaths		—	—				—	2		
Diphtheria	860	43	200	72	26	1,066	44	282	31	36
Deaths	20	—	2	2	—	28	1	4	—	3
Dysentery	232	19	36	—	—	89	10	71	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	—	—	—	6	—	—	—	—
Deaths		—	—				—	—		
Erysipelas		—	53	4	4		—	44	4	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				97						
Deaths	72	6	19	23	8	43	2	19	31	7
Measles	3,801	223	185	13	28	745	35	9	40	1
Deaths	6	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	95	2	16	1	—	98	4	25	1	—
Deaths										
Paratyphoid fever	5	—	9	—	—	100	10	13	—	—
Deaths	—	—	—	—	—	1	—	—	—	—
Pneumonia, influenzal*	508	19	4	—	—	485	19	6	—	3
Deaths (from influenza)	12	1	1	1	1	3	17	—	1	4
Pneumonia, primary			161	13	1			158	8	
Deaths				3	7				2	—
Polio-encephalitis, acute	6	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	33	4	3	21	1	38	3	4	2	1
Deaths		1	—				—	—		
Puerperal fever	—	1	25	2	—	—	—	9	1	—
Deaths		—					—			
Puerperal pyrexia	172	11	16		3	123	6	7		1
Deaths										
Relapsing fever	—	—			—					—
Deaths										
Scarlet fever	2,423	155	455	62	34	1,258	38	199	55	30
Deaths	3	—	1	—	—	1	—	—	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths			—	—	—			—	—	—
Typhoid fever†	6	1	2	17	5	32	4	5	9	1
Deaths	—	—	—	—	—	2	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	845	98	17	37	5	2,247	214	81	44	17
Deaths	13	3	—	2	—	45	1	2	—	—
Deaths (0–1 year)	337	41	63	41	28	293	19	63	47	23
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,740	507	548	189	104	3,697	456	514	166	133
Annual death rate (per 1,000 persons living)			12 3	12·6	‡			11·2	11·0	‡
Live births	6,200	713	845	426	265	5,105	474	899	355	221
Annual rate per 1,000 persons living			17 5	28 4	‡			18 3	23·6	‡
Stillbirths	201	32	27			187	14	49		
Rate per 1,000 total births (including stillborn)			31					52		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

n *England and Wales* the outstanding features of the returns were the large rise in the notifications of scarlet fever and measles—460 and 445 respectively in excess of last week's totals—and the continued prevalence of dysentery, which was only 5 below last week's record level. There was a rise in the ncidence of diphtheria, 53 cases, and acute pneumonia, 49, while there were 93 fewer notifications of whooping-cough than in the preceding week.

The returns for scarlet fever showed small rises for most areas, although the increase was most pronounced in the North: Yorks West Riding 128, Lancashire 49, Staffordshire 35.

The only noteworthy local increase in the incidence of diphtheria was in Durham, where 33 cases in excess of last week's total were recorded. Diphtheria is more prevalent in the northern section of the country than in the southern, and the three counties of Lancashire 140, Yorks West Riding 104, and Durham 97 cases account for 40% of the total for the country.

The rise in the incidence of measles was fairly general throughout the country, the only large increases being in Yorks West Riding 169, and Cheshire 121 cases. Of the 791 cases notified in the former county 224 were in Leeds C.B., and of the 296 cases in the latter county 71 were in Bebington M.B. The most notable exceptions to the increasing trend were those of London and Warwickshire with 48 and 27 fewer cases than in the previous week.

In *Scotland* there were further increases in the incidence of scarlet fever and measles. The weekly notifications of scarlet fever have risen from 275 to 455 during the past four weeks; the largest totals during the present week were for Glasgow 102, and for Edinburgh 77. Notifications of measles have steadily risen during the past five weeks from 72 to 185, the principal centres of infection being Dundee and Paisley Burgh, with 49 and 48 cases respectively.

In *Eire* the relatively high incidence of poliomyelitis was maintained, 8 of the 21 cases being notified in Dublin. An outbreak of typhoid in the rural district of Dingle, Co. Kerry, accounted for 14 of the 17 cases notified.

Dysentery

The high incidence of dysentery recorded last week in England and Wales was repeated again during the week. The largest of the new outbreaks was 19 cases in Hertfordshire. Elstree R.D. An increase occurred in the two centres of infection in Wales: in Caernarvon, Conway M.B., the number of cases rose from 5 to 13, and in Glamorganshire, Cardiff C.B., from 6 to 30. In Southampton there was an increase of from 15 to 21 (Basingstoke R.D. 8, Droxford R.D. 13). The number of cases in Yorks North Riding, 25, was the same as in the preceding week (Middlesbrough C.B. 25). The outbreak in this town has caused 9 deaths; 8 of them were in children under 4 and the other in a person of 50. The cause of the outbreak has not been determined; bacteriological examination of milk, water, and ice-cream yielded negative results. In Essex the total declined from 39 to 33; no further cases were reported in Chelmsford R.D., where 27 cases were notified last week; this week's cases were in Colchester M.B. 17, and in Hornchurch U.D. 16. The incidence in Norfolk declined from 40 to 13 (Norwich C.B. 12); the large outbreak in the preceding week, 30 cases in Swaffham R.D., produced only one further case.

Other county totals of note during the week were London 19. Middlesex 11, Surrey 10; these were distributed among several administrative areas within the county.

Small-pox

According to a Press statement on Oct. 17, 10 more cases of small-pox have appeared in Methilhill, Fife, bringing the total up to 21. The County M.O.H. is reported as having said that there is a possible connexion between the Methilhill and the Glasgow outbreaks.

Returns for the Week Ending October 10

The notifications of infectious diseases in England and Wales during the week included the following: scarlet fever 2,613, whooping-cough 972, diphtheria 991, measles 4,650, pneumonia 541, cerebrospinal fever 57, acute poliomyelitis 23, dysentery 209, paratyphoid 11, typhoid 6.

The Minister of Health, at the opening of a wartime nursery at Hull, said that during the present month the thousandth nursery for women war workers' children would come into operation. At the end of September there were 937 nurseries opened in England and Wales, caring for 40,000 children under 5 years of age.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A House, Tavistock Square, London, W.C.1.

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QUERIES AND ANSWERS

Glasses after Operation for Cataract

"Cataract" writes: Will any sufferer who has had his lenses successfully removed inform me if bifocal glasses are satisfactory, and if cemented segments are necessary, or can the bifocals be cut out in one piece? If so, can this be done with Percival lenses? I have slight astigmatism.

Any Old Bones?

"Enquirer" would be grateful to learn where a medical student can obtain a set of bones or a half skeleton.

Death by Lightning

Dr. H. M. Stanley Turner writes: In 1936 a paper entitled "Electrical Traces" was read before the Royal Society of Edinburgh by Prof. Jellynek, who occupied the chair of electropathology in Vienna University. It was illustrated by films, and the author claimed that high-potential electrical discharges through the living tissues of plants and animals left what he termed "electrical traces" in the tissues concerned. He stated that these took the form of curves or spirals which could be easily identified in sections under the microscope, and illustrated his claims by slides of photomicrographs upon the screen. If Prof. Jellynek's claims are confirmed such findings would be of potential importance to medical jurists, and it would be interesting to know whether there has been confirmation from other sources. This inquiry is prompted by "Notes on a Case of Death by Lightning" in Medical Memoranda in your issue of Oct. 10, 1942.

Aspirin for Asthma

Dr. Alexander Francis (London, W.1) writes: It has long been known that aspirin relieves asthma in many cases, but now that so much prominence has been given to the fact by the letters of A. K. (Sept. 19, p. 356) and others, it is well to repeat the warning which I first sounded in the *British Medical Journal* (Aug. 16, 1919)—that there is great danger in giving aspirin to a patient with nasal polypi. If a patient with a history of nasal polypi has a high blood pressure the risk is not great, but in low blood pressure cases most alarming symptoms are likely to be instantly produced, which is further evidence, if such were needed, of the vasomotor origin of asthma.

Dr. W. Lees Templeton (Highgate, N.6) writes: It is an extraordinary fact that whenever the logical explanation of the action of a drug in any condition is that it is homoeopathic the orthodox practitioner will go out of his way to suggest that it is faith or hope, but never charity—to wit, homoeopathy! Aspirin in some people will produce asthma. Asthma in some people will be relieved by small doses of aspirin! Need one go further?

Income Tax

Two Separate Appointments—Expenses

"Y. Z." holds an appointment as assistant radiologist at one hospital and another appointment as visiting radiologist at the municipal hospitals. Salaries are paid separately; no private practice is allowed. The inspector of taxes states that as the two appointments are assessable separately no travelling expenses are allowable.

⁂ Assuming that "Y. Z." cannot show that the holding of one appointment is a condition attaching to the other the inspector is legally correct, though the result is rather unfair on our correspondent. If, however, there are two or more municipal hospitals, "Y. Z." can claim such part of his car expenses as fairly represents the amount spent on travelling between them.

Travelling Expenses—Use of Car

"Q. Q." is attached to an R.A.F. camp as a medical specialist. Mess accommodation is limited and he lives four miles away from the camp. He has to be available for emergencies. Can he deduct the cost of maintaining a car—including the depreciation for travelling to and from the camp?

⁂ The legal rule is strict—the expense of travelling between the place of residence and the place of work is not regarded as incurred "in the performance of the duties"—and we are not aware of any concession covering the facts. It might, however, be worth while writing to "The Chief Inspector of Taxes, the Hydro, Llandudno, N. Wales," explaining the circumstances and inquiring whether some concession cannot be made to meet the equity of the case for an allowance.

Change in Nature of Appointment

"M.R.C.S." was employed as a house-surgeon from Nov. 28, 1940, to March 31, 1942. He began work as assistant tuberculosis officer at £724 per annum, less 6% for superannuation as from April 20, 1942. On what amount should he be assessed for 1942-3?

⁂ He is not entitled to be assessed on the basis of the previous year; the difference in the work and the terms of remuneration are such as to constitute his present appointment a new source of income. On the facts stated his liability for 1942-3 is as follows:

	£	s	d	£	s	d.
Gross earnings April 20, 1942, to April 5, 1943—i e., 350/365ths of £724	693	0	0			
Less superannuation deduction	41	0	0			
Amount of gross assessment				652	0	0
Allowance for married man	140	0	0			
Allowance for earned income (1/10th of £652) .	65	0	0			
				205	0	0
Amount of net assessment				£447	0	0
	£	s	d			
Tax on £165 at 6s. 6d in the £	53	12	6			
Tax on £282 at 10s in the £ . . .	141	0	0			
				194	12	6

(Of this amount £32 should ultimately be received by "M R C S." in the form of a post-war credit.)

Repayment Claim—Agent's Commission

"Beta's" accountant has charged him £25 (i e., 10%) for his services in obtaining repayment of £257. Is this the usual practice?

⁂ Professional accountants base their charges not on a percentage of the amount repaid but on the time spent on the case and on its degree of difficulty. Repayment agents frequently adopt the percentage basis, and 10% is not uncommon. Whether, in fact, £25 was a reasonable charge really depends on just what the agent had to do by way of preparing special statements, collecting evidence of what tax had been suffered, and so on.

LETTERS, NOTES, ETC.

Home Drying of Fruit and Vegetables

Mr. B. G McLellan, F.I.C, has produced a practical leaflet on "Home Drying of Fruit and Vegetables," which should be of interest to medical men who possess gardens or orchards and wish to preserve surplus vegetables or fruit for winter use We understand that the author (Beverley House, Clifton, York) is willing to send copies to doctors on receipt of a stamped and addressed envelope

Bleeding Tooth Sockets

Mr. Joseph Angelman (Colchester) writes: I have read with interest the letters dealing with the arrest of dental haemorrhage sent by Dr. Le Fanu (Aug 15, p. 208), Dr. J. T. Maclachlan (Sept. 19, p. 356), and Dr. S. Jung (Oct. 10, p 444). I have never been able to understand why the doctor, when dealing with oral and dental tissues, should forget the elementary principles of surgery. Would Dr. Jung plug a bleeding cavity elsewhere in the body with a cork? I think not. Similarly, I am sure Dr. Le Fanu would be very chary about using the silver nitrate stick to arrest haemorrhage from cavities other than in the mouth. The treatment of dental haemorrhage demands the arrest of bleeding without injury to the surrounding soft tissues. Silver nitrate is a very powerful escharotic and when in contact with the oral tissues rapidly destroys them. As a dental surgeon may I suggest the following procedures. Examine the bleeding area; if there is a gentle oozing and remains of a blood clot, remove the latter and wash out the socket with warm water. Place a small pad of gauze, which may be impregnated with some styptic such as tannic acid, over the socket; over this place larger pieces of gauze or lint, and instruct the patient to bite reasonably hard, and to maintain pressure for a minimum of five minutes. It is the pressure which is important. In many cases this will suffice If there is a more persistent flow from the socket, especially from one point, it indicates a partially ruptured arteriole in the mucoperiosteum surrounding the socket. Suturing is the ideal method of treatment. Place a suture through the buccal and lingual (palatal, as the case may be) mucoperiosteum, and draw the tissue against the bony walls of the socket, thus compressing the bleeding-point. Tie the suture over the socket opening In the vast majority of cases this will immediately arrest the haemorrhage. When dealing with the true bleeder type where the persistent haemorrhage is due to some systemic or haematogenous factor, the local treatment should be supplemented with intramuscular haemoplastin, which is very successful. In very severe cases continued pressure by closure of jaws with a bandage may have to be used. The treatment of the haemophiliac patient does not come within the scope of this letter.

Conjoined Twins

Dr. James A. Rooth (Brighton) writes: I was much interested in the report of a case of conjoined twins by Dr. E. Ridehalgh (July 4 p. 10). In 1909 I had a case of this sort, but the course it took was very different. The twins were joined back to back and the point of union was the coccyx; the union was thought to be cartilaginous, but the movement was very restricted, though evidently much more than in the case you report. The labour however, was practically uncomplicated and lasted about 16 hours the mother being a young primipara of 21. The first twin was born by a vertex presentation in the first position after a slight delay which revealed the true state of affairs; the second was delivered in a similar manner. The process was evidently one of evolution of the second or podalic child, and this seems to have been the method of birth in the few similar cases recorded; in each case the second child underwent evolution owing to traction of the ligament. It will be seen that there was no undue delay, no anaesthetic, and no laceration of the mother, which was remarkable seeing that the twins weighed 13 lb. together The chief points of difference between the two cases are that there was freer movement in my case, and that the twins lived and are still alive in America, and have, I believe, made a good living on the variety stage.

MEDICINE 100 YEARS AGO

Extract from a clinical lecture delivered at the Westminster Hospital by Mr. G. J. Guthrie, printed in the *Provincial Medical Journal*, October 22, 1842:

"It appears that some gentlemen wish to run down this hospital, both as relates to the relief the poor receive, and the instruction which students may obtain at it, by inveighing strongly against the management which does and does not take place within its walls. I regret very much that many of the assertions of mismanagement are, in all probability, true as relates to the medical arrangements, several of which are not, in my opinion, fitting for a public hospital in London They are all of them, however, good, and well adapted for a parish infirmary; and as long as it may be thought right to continue them, the hospital must remain in a depreciated state, both as a place of refuge for the sick poor, and as a school of instruction When things become so bad that any change must be for the better, we may hope for improvement, and I care not how soon this takes place, for I confess I shall look forward with the hope that this hospital will then rise from its remains, and assume that character, and obtain that reputation, it never can have under existing circumstances. I have done my endeavour to remove the abuses and grievances of which I am sensible; but I abhor all disputes and squabbling, more particularly when they become personal, and I have no wish to contend with gentlemen whom I personally respect, although I believe them to be in error; and even if I thought it right to do so, I have not the time to spare which the forms of the hospital require.

"With respect to you as students, I have not recommended one to come here; I have not invited you in any way. You came because it suited your own views, and, being here, I am at all times happy to give you every information in my power. My days of attendance are Tuesdays and Saturdays, according to the rules of the hospital; but you will see a notice in the hall that I also attend on Thursdays, believing that every physician and surgeon should see every particular case three days a week, and when I have anyone in danger I visit him every day. You need never expect me before a quarter past one, and never wait for me after a quarter past two, before which time the assistant-surgeon will go round with you if I should be absent; and whenever he does the duty of one of the surgeons, he ought to receive a regulated proportion of the money which the seniors derive from the fees which you pay for permission to attend. I am never so contented as when you make yourselves constantly known to me, by obeying my injunctions, so frequently repeated, of walking up to me and repeating your names in my face."

BRITISH MEDICAL JOURNAL

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NUTRITIONAL IRON DEFICIENCY ANAEMIA IN WARTIME*

PART I

THE HAEMOGLOBIN LEVELS OF 831 INFANTS AND CHILDREN

BY

L. S. P. DAVIDSON, B.A., M.D., F.R.C.P.Ed.&Lond. G. M. M. DONALDSON, M.B., Ch.B.
M. J. DYAR, M.B., Ch.B. S. T. LINDSAY, B.Sc., Ph.D.
J. G. McSORLEY, M.B., Ch.B.

(From the Department of Medicine, University of Edinburgh)

As we enter the fourth year of the war, with its consequent increased mental and physical strain and inevitable dietary restrictions, the assessment of the health of the nation becomes an urgent necessity. Nutritional deficiencies in a population can be assessed in various ways, the estimation of iron deficiency being one method. The advantage of this method is that iron deficiency can be accurately determined by estimation of haemoglobin concentrations. If such an investigation is made on representative samples of the population in wartime the results can then be compared with similar figures obtained in peacetime, and in this way the effect of war conditions on national health can be demonstrated.

Such an investigation is at present being carried out in Edinburgh on infants, school children, and women of child-bearing age, both pregnant and non-pregnant. The survey covers a representative cross-section of Edinburgh working-class population within these groups. This paper deals only with infants and school children; a second communication will be devoted to the haemoglobin levels in women.

An unselected series of infants and pre-school children from birth to 4 years of age have been examined at the infant clinic attached to the maternity pavilion of the Edinburgh Royal Infirmary, at district welfare clinics, and at wartime nurseries in Edinburgh. The group of school children comprised all the scholars between the ages of 5 and 12 years attending two primary schools which serve working-class districts of Edinburgh. The Haldane haemoglobinometer (13.8 g./100 c.cm. equalling 100%) was employed throughout the investigation. All apparatus used was checked against a standard set.

Infants and Pre-school Children (Birth to 4 Years)

This group comprised 442 individuals: 318 from birth to 23 months, and 124 from 2 to 4 years. None of them had received any iron therapy. A few children between the ages of 9 months and 4 years had been given 25 mg. of vitamin C daily. The results obtained are set out in Tables I and II, and in the accompanying Graph. Of the total number, 142 were examined at "wartime nurseries" which have been set up by the public health authorities to care for children whose mothers are undertaking whole- or part-time war work. Most of these children were supplied with a midday meal in the "nursery."

TABLE I.—*442 Infants and Pre-school Children (Birth to 4 Years) Average Haemoglobin Levels according to Age*

Age ..	< 1 m.	1 m.	2 m.	3 m.	4 m.	5 m.	6 m.	7 m.	8 m.	9 m.	10 m.	11 m.	12–17 m.	18–25 m.	2 years	3 years	4 years
No. of cases	18	37	42	28	19	15	14	12	13	8	18	11	48	35	29	43	52
Average Hb %	128·3	99	81	76	83	80	79	80	76	77	68·6	72·4	73·9	73	75·3	76·3	76·8

TABLE II.—*236 Infants and Pre-school Children (10 Months to 4 Years). Average Haemoglobin Levels according to Age*

Age	Welfare Clinics		Wartime Nurseries		Combined	
	Cases	Av Hb %	Cases	Av. Hb %	Cases	Av. Hb %
10 m.	14	69·6	4	65·0	18	68·6
11 m.	7	72·2	4	72·7	11	72·4
12–17 m. .	28	77·4	20	69·0	48	73·9
18–23 m. .	16	73·0	19	73·3	35	73·1
2 yrs.	11	75·8	18	75·0	29	75·3
3 yrs.	8	76·2	35	76·3	43	76·3
4 yrs.	10	77·5	42	79·5	52	76·8
Totals ..	94		142		236	

The haemoglobin levels in the two groups in Table II are very similar, except in the age period 12 to 17 months, when the average haemoglobin level of infants examined at welfare clinics is notably higher than those seen at the wartime nurseries. The significance of this is referred to later.

School Children (5 to 12 Years)

This series consisted of 389 children attending two primary day schools in Edinburgh. The results are set forth in Table III in the form of haemoglobin levels at successive ages, and in Table IV as the percentage of children falling into successive haemoglobin ranges. It will be noted that the average haemoglobin level for the whole series, irrespective of age, is 80.3% (Table III), and 53% of the children have less than 80% of haemoglobin (Table IV).

TABLE III.—*389 School Children (5 to 12 Years). Average Haemoglobin Levels according to Age*

Age . .	5 yrs.	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	Total
No. of cases	19	39	38	66	75	56	75	21	389
Average Hb % .	81·3	80·0	80·4	76·9	80·6	82·2	80·6	81·0	80·3

TABLE IV.—*Grades of Anaemia in 389 Edinburgh School Children (5 to 12 Years)*

	No. of Cases	Percentage of Children in Different Haemoglobin Ranges			
		Hb 60–70 %	Hb 71–80 %	Hb 81–90 %	Hb > 90 %
School I ..	197	9	46	36	9
School II ..	192	7	44	44	5
Combined ..	389	8	45	40	7

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* This subject is still under investigation. Part II, dealing with haemoglobin levels in women, will be published later

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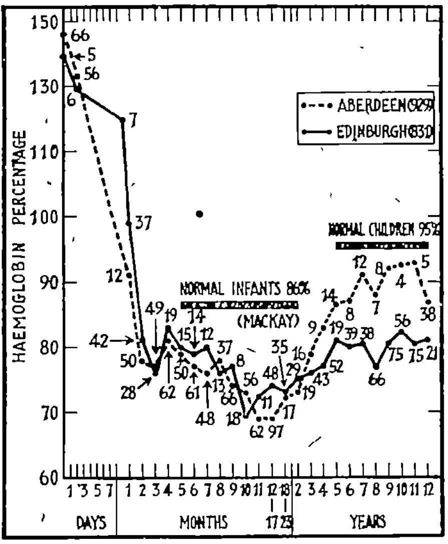
Discussion

Infants (Birth to 23 Months)

A curve has been constructed from the Edinburgh figures in Table I, and is shown in the graph. On the same graph is drawn the curve which was obtained by Davidson *et al.* (1935) in Aberdeen for children of the same age groups.



Graph showing haemoglobin percentages in the present series compared with those of a similar series investigated in Aberdeen in 1935.

The two curves show a close parallelism from birth up to 10 months, with a slightly higher level throughout in the Edinburgh series. From 4 months onwards there is a gradual fall in haemoglobin levels. This fall becomes more acute in both series from the eighth to the eleventh month. There follows a gradual rise until 2 years of age, which is more rapid in the Edinburgh series. The Edinburgh series therefore shows a slight improvement over the Aberdeen series which may or may not be significant. In addition, after the maximum fall in haemoglobin which occurs between the tenth and eleventh months, an earlier and more marked rise takes place in the Edinburgh group. This improvement could be attributed to the better milk supply for infants due to wartime regulations, or to better attendance at infant welfare clinics for expert advice during the critical period of weaning and the inception of a mixed diet. Although it may be some consolation to know that after three years of war no deterioration in haemoglobin levels of infants has been demonstrated, it should not be forgotten that anaemia in infants is still extremely common

Table V shows the percentage of infants at different haemoglobin levels (2 to 23 months) in the present Edinburgh series, and the comparable figures for Aberdeen and Edinburgh for the age groups 9 to 23 months. This table indicates that the incidence of severe anaemia (less than 61% haemoglobin) in infants of 9 to 23 months in the 1935 Aberdeen series is three times as great as in the 1942 Edinburgh series, but the percentage of moderately anaemic infants (61% to 70% haemoglobin) has risen by 10% in Edinburgh as compared with the Aberdeen figure. It will be noted that 83% of the Edinburgh infants and 87% of the Aberdeen infants between 9 and 23 months have a haemoglobin level of less than 80%.

Table V.—*Grades of Anaemia in Infants (2 to 23 Months); Edinburgh, 1942, and Aberdeen, 1935*

Place	Age	No. of Cases	Percentage of Children in Different Haemoglobin Ranges			
			Hb < 61%	Hb 61–70%	Hb 71–80%	Hb > 80%
Edinburgh ..	2–23 m.	262	5	23	42	30
Edinburgh	2–8 m.	143	4	15	40	41
Edinburgh .	9–23 m.	119	5	33	45	17
Aberdeen .	9–23 m.	298	15	23	49	13

A haemoglobin level of 86% ± 5 is widely accepted as the ideal for infants from 2 to 23 months. This figure was suggested by Helen Mackay (1933) from her examination of normal infants whose diets had been supplemented by iron. Haemoglobin levels of 80% or less would by this standard be considered subnormal. On this basis only 17% of the infants from 9 to 23 months in Edinburgh and only 13% of the Aberdeen infants had a normal haemoglobin level.

Mackay's figure of 86% seems to us reasonable, since haemoglobin levels of this magnitude and higher were commonly obtained in one of the Edinburgh clinics, where the mothers were particularly keen and intelligent. The higher average haemoglobin level noted in infants of 12 to 17 months examined at welfare clinics as compared with infants of the same age group in the wartime nurseries (Table II) could be explained on the basis of this observation.

The significance of the frequency with which anaemia is still found in infants cannot be overemphasized. The aetiological importance of low birth weight and infections was stressed by Davidson and Fullerton in 1938. The desirability of augmenting the iron intake at the sixth or seventh month in order to counteract the fall in haemoglobin which occurs when the hepatic stores of iron become exhausted needs special emphasis. At first, when mixed feeding has not been fully established, this may best be done by giving small doses of inorganic iron in an easily assimilated form. Later, when the change to mixed feeding has been completed, this may be best accomplished by increasing the intake of foodstuffs rich in available iron. A careful investigation of this problem by paediatricians is obviously required.

Children of Pre-school Age (2 to 5 Years)

A study of the graph shows that any advantage which the Edinburgh series has over the Aberdeen series in infancy is lost during the pre-school period. Thus on entering school at 5 years the Edinburgh children had an average haemoglobin of 81%, compared with an average figure of 87% for the Aberdeen series.

School Children (5 to 12 Years)

As in the case of the infants, a curve has been constructed for the haemoglobin averages of school children in Edinburgh, 1942, and is shown in the graph, together with the curve obtained of school children in Aberdeen, 1935. It will be seen that the number of children in the different age groups is much smaller in the Aberdeen series than in the present Edinburgh series. The Aberdeen figures were obtained from children of the poorest classes, and since the majority of them had haemoglobin levels of 90% or over, it was not considered necessary at the time to carry out further investigation in this age group. In Edinburgh, on the other hand, on completion of the survey of the first group of 197 children, only 9% were found to have haemoglobin levels of over 90% in spite of the fact that these children were in much better social circumstances than those in Aberdeen. Consequently it was deemed advisable to extend the survey to cover a larger group of individuals. A figure of 95% ± 5 selected by us as a standard of normality for healthy school children is based on our own experience, and coincides with the figure given by Whitby and Britton (1939).

The comparison shows that in Edinburgh, 1942, the haemoglobin level throughout this age period is considerably lower than in Aberdeen, 1935, the average difference for all ages being approximately 10%. In spite of this the children did not show obvious signs of malnutrition, and in fact the anaemia would not have been revealed unless haemoglobin estimations had been carried out.

It should be noted that the haemoglobin levels of the children reaching school age were found to be slightly lower in the Edinburgh series than in the pre-war Aberdeen series. Helen Mackay (1942) investigated a series of 364 children comparable in class with our present series. Her average figure for the age group 5 to 13 years was 80%, as compared with the Edinburgh figure of 80.3%. Thus in both these series there is seen to be a fall of approximately 10% from the pre-war Aberdeen figure of 90%.

The analysis of these three series of haemoglobin figures to show the percentage of children in various haemoglobin groups is given in Table VI. This shows that whereas in the Aberdeen series not a single child had a haemoglobin of less than 80%, almost half of the children in Helen Mackay's series and more than half of the children examined by us in Edinburgh had haemoglobin concentrations below that level.

Table VI.—*Comparison of Anaemia in 3 Groups of School Children (5 to 12 Years)*

<table>
<tr><th rowspan="2"></th><th rowspan="2">No. of Cases</th><th colspan="4">Percentage of Children in Different Haemoglobin Ranges</th></tr>
<tr><th>Hb < 71%</th><th>Hb 71–80%</th><th>Hb 81–90%</th><th>Hb > 90%</th></tr>
<tr><td rowspan="2">Edinburgh, 1942</td><td rowspan="2">389</td><td>8</td><td>45</td><td>40</td><td>7</td></tr>
<tr><td colspan="2">53</td><td colspan="2">47</td></tr>
<tr><td>London (Mackay, 1942)</td><td>128</td><td colspan="2">42</td><td colspan="2">68</td></tr>
<tr><td>Aberdeen (Davidson, 1935) . .</td><td>67</td><td colspan="2">0</td><td colspan="2">100</td></tr>
</table>

The children and also the infants in the Aberdeen investigation were drawn from the poorest section of the community at a time when the unemployment rate was extremely high. The weekly income assessed on the basis of "man value"* averaged only about 11s. per head in Aberdeen, in contrast with the present Edinburgh assessment of the family income of 520 women examined at ante-natal clinics, which ranged from 24s. to 39s. per "man value" per week.

It will be appreciated that in peacetime economic status is the chief factor influencing the nutrition of individuals; in wartime, on the contrary, "rationing" and the difficulty in obtaining some unrationed foods constitute the chief limitations, which, broadly speaking, are operative irrespective of income. This is probably the explanation of the higher incidence of anaemia noted by us during the present year in spite of the high figures for "man value" recorded. In support of this conclusion it is significant to note that since obtaining the data already recorded we have examined the haemoglobin concentration of 134 school children aged 5 to 12 years who were pupils in an Edinburgh secondary fee-paying school and who were drawn from a higher social and economic class than the children considered above. The average haemoglobin level for this group was 80.7%, a figure almost identical with that obtained for the 389 working-class children. The percentage of children falling in the different haemoglobin ranges was also similar.

The frequency and degree of anaemia present in school children from working-class families in Edinburgh in 1942 as reported in this paper call for the most careful consideration by both local and national authorities. It is obviously desirable that during the period of active growth and mental development the incidence of anaemia should be reduced to the lowest possible level. This can be achieved by one of two methods or by a combination of both. The first consists in the provision of school meals which are appetizing, well balanced, and rich in foodstuffs with a high iron content. Intensive propaganda must be undertaken to induce a much higher proportion of children to partake of such meals. The need for such propaganda is evident in Edinburgh, where, although the numbers are gradually rising, only some 20% of children are at present taking school meals. The second method is by supplying iron at the schools in the form of a tablet or a mixture, or incorporating it in some article of diet universally eaten, such as bread.

Investigations are at present being undertaken in Edinburgh to discover whether the anaemia can be prevented and corrected by diet alone or whether a supplement of iron is required.

Summary

The haemoglobin levels have been estimated in 831 infants, pre-school children, and school children from working-class families in Edinburgh. The results have been compared with a similar series examined in Aberdeen in 1935.

After three years of war no significant change was found to have occurred in the haemoglobin levels of infants, but a fall has been demonstrated in the case of school children.

We wish to express our thanks to Prof. Charles McNeil, Dr. G. J Linklater, school medical officer, and Dr. T. Y. Finlay, medical officer for maternity and child welfare in Edinburgh, for the facilities and help afforded us by them during this investigation.

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PLASMA PROTEIN STORAGE

BY

J. BEATTIE, M.D., D.Sc.

AND

H. B. COLLARD,* B.A.

Bernhard Baron Research Laboratories, Royal College of Surgeons of England

In a previous paper (Beattie and Collard, 1942) it was stated that after a moderate haemorrhage there was a significant movement of plasma protein into the blood stream. This conclusion was reached by demonstrating that the observed plasma protein concentration of the blood after haemorrhage was greater than a value calculated from the haemoglobin concentration before and after haemorrhage. Dr. Sharpey-Schafer has pointed out to us in a personal communication that the formula used was incorrect and gave expected values which were too high. He suggested the following formula:

$$\mathrm{p1} = \mathrm{p} \times \frac{1}{1 + \frac{1}{x}\left(\frac{\mathrm{H}}{\mathrm{H1}} - 1\right)},$$

where p1 is the plasma protein concentration to be expected at, say, 75 minutes after haemorrhage, p is that observed at, say, 30 minutes after haemorrhage, H and H1 the haemoglobin concentration at 30 and 75 minutes after haemorrhage, and *x* is the plasma volume % divided by 100 at 30 minutes after haemorrhage. Using this method of calculating the expected value for the plasma protein concentration, we found that we had overestimated the true expected value by varying amounts ranging from about 3 to 15%. Consequently the movement of protein into the blood stream after haemorrhage was, in fact, much greater than we had reported. We are grateful to Dr. Sharpey-Schafer for pointing out our error. This movement of protein observed in anaesthetized cats has been recorded in human subjects bled comparable amounts (Stead, 1940; Wallace and Sharpey-Schafer, 1941). The view was expressed by us that the amount of protein entering the blood was determined probably more by the state of the protein reserves than by any other factor. After plasma transfusions in normal animals there is some evidence of an indirect nature that a movement of plasma protein out of the blood stream may take place (Beattie, 1942). As this outward movement was not constant in all experiments it may well be that it, too, is determined by the state of the protein reserves.

The sites of these reserve stores of protein have not been determined with certainty, but Madden and Whipple (1940), in a review of the evidence, considered that the liver was probably the most important store, although they admitted that direct evidence from hepatectomized animals and perfused liver experiments is at best equivocal. It was decided, therefore, to study the effects of plasma transfusions on hepatectomized animals and of varying protein concentrations in the perfusing fluid in perfused isolated livers. In addition, it was thought that by giving repeated plasma transfusions to normal animals it might be possible to determine whether the plasma protein reserves could be filled up rapidly and so allow the building up of high plasma protein concentrations in the blood within a relatively short time.

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* The "man value" figures obtained by us were calculated on the following basis: each member of the family was assessed according to age and sex in terms of one man as one unit, one woman as 0.8 of a man, and a child as 0.5 of a man

* Leverhulme Scholar, Royal College of Surgeons of England.

Methods

The animals used in all the experiments were cats anaesthetized with nembutal (50 mg. per kg. of body weight). They were heparinized during the experiments. Plasma used for transfusions, etc., was obtained from heparinized cats. The cells were separated immediately after the blood was withdrawn and the separated plasma stored at a temperature of 6° C.

Chemical.—Plasma proteins were estimated by the biuret method of Robinson and Hogden (1940) and haemoglobin by the alkaline haematin method of Wu (1922). Plasma volumes were determined by the dye method using T.1824 (Evans blue). Dye concentrations were estimated by a photo-electric colorimeter. A regression curve plotted from the dye concentrations in samples taken at 10-minute intervals was used to obtain the plasma volume before dye was injected (Hamlin and Gregersen, 1939). Deviations from the regression curve were used to estimate variations in plasma volume as described by the same authors. Fresh injections of dye at hourly intervals were given to check the values calculated from the regression curve.

Plasma specific gravities were estimated by the falling-drop method of Barbour and Hamilton (1926), and from these the plasma protein concentration was estimated by the formula suggested by Weech *et al.* (1936). These estimations were of value only in normal and hepatectomized animals, in which they checked closely with the values obtained by the biuret method. Plasma S.G. estimations are valueless in perfused liver experiments, as they show continued rises during the perfusions irrespective of changes in protein content (as determined by the direct biuret method). The substances or substance which gradually increased in concentration in the perfusing fluid were not determined, but were probably urea, lactate, or glucose, or a mixture of all. The *p*H of the perfusing fluid was not determined.

Physiological.—The livers for perfusion were removed after the animals had been bled rapidly from the abdominal aorta. An inflow cannula was tied in the inferior vena cava above the diaphragm. The common bile duct was ligated and a cannula tied into the gall-bladder in all except two animals which had small gall-bladders. The phrenic vessels were ligated close to the inferior vena cava, and the liver was then removed. It was placed on a cotton gauze sling, with the portal vein and hepatic artery free to drain through the gauze into a porcelain funnel. This was covered with a perspex lid through which projected the two cannulae. Perfusion was carried out in reverse, the inflow being through the inferior vena cava and the outflow through the portal vein. The perfusion pressure was maintained constant at 12 to 15 c.cm. above the upper surface of the liver by a reservoir fed by a pump which raised the perfusion fluid from the oxygenator. The outflow from the liver was passed into the oxygenator, where it fell on to a rotating perspex disk which threw the fluid on to the walls of a glass cylinder through which a stream of oxygen passed. The fluid collected at the bottom of the oxygenator, and from there was raised to the reservoir by a pump. The porcelain funnel and the oxygenator were immersed in water baths maintained at a constant temperature of 40° C. The temperature of the perfusing fluid was 36° to 38° C.

Hepatectomized animals were prepared by the one-stage method of Firor and Stinson (1929).

Observations

Repeated Plasma Transfusions.—Five animals (91, 92, 93, 100, and 106) were given repeated plasma transfusions. The results of these transfusions on the plasma protein concentrations are shown in Tables I to III. No. 91 was given 4 transfusions, each of 10 c.cm., at intervals of 30 minutes. In spite of the fact that the animal's plasma contained 8·3 g. per 100 c.cm., the transfusion of the relatively low protein plasma (6.84 g. per 100 c.cm.) caused a transient rise in the plasma proteins (8.64 g.), followed by a decline which brought the plasma proteins (8.06 g.) below the pre-transfusion level. A second transfusion of the same plasma produced no significant change in the protein concentration at the end of 29 minutes. A third transfusion of the same plasma produced a significant rise to 8.40 g. per 100 c.cm. in 29 minutes. The fourth transfusion, again of the same plasma, raised the protein level to 8.84 g. at the end of 45 minutes, and it remained at that level at the end of 60 minutes.

The changes seen in No. 92 resemble closely those in No. 91. This animal had an initial plasma protein concentration of 6.67 g. per 100 c.cm. It received 3 transfusions, each of 20 c.cm., at 45-minute intervals. The plasma transfused had a protein content of 6.05 g. per 100 c.cm. The first transfusion caused a transient rise in protein concentration to 7.24 g. in 16 minutes. The value had declined to 6.94 g. at the end of 41 minutes. The second transfusion produced a considerable rise to 7.72 g. in 10 minutes, which was maintained until the third transfusion was given. This caused a further rise to 7.99 g., and this level was maintained with some minor fluctuations for 55 minutes.

No. 93 was given 3 transfusions, the second 42 minutes after the first, and the third 118 minutes after the second. The first 2 transfusions were of 15 c.cm. and the third was 10 c.cm. The protein concentration of the transfused plasma was 7.14 g. per 100 c.cm. After a fall, the pre-transfusion level was almost regained 41 minutes after transfusion. The second transfusion produced no change in protein concentration, but the third caused a well-marked

TABLE I

No.	Plasma Volume before 1st Transfusion (c.cm.)	Plasma Protein Concentration before 1st Transfusion	Volume of Plasma Transfused (c.cm.)	Plasma Protein Concentration of Plasma Transfused	Plasma Protein Concentrations after 1st Transfusion (grammes per 100 c.cm.)							
					Min. After	Pl Prot. Conc.	Min. After	Pl. Prot. Conc	Min. After	Pl. Prot. Conc.	Min After	Pl. Prot Conc.
91	87	8·30	10	6·84	9	8·64	14	8·40	28	8·06	—	—
92	195	6·67	20	6·05	10	7·21	16	7·24	26	7·14	41	6·94
93	104	8·57	15	7·14	10	8·40	16	8·09	26	8·13	41	8·50
100	151	7·69	20	6·26	—	—	25	8·23	40	8·16	55	8·13
106	124	7·28	20	6·46	10	7·58	25	7·07	40	7·18	55	7·11

TABLE II

No	Time between 1st and 2nd Transfusions (min.)	Plasma Protein Concentration before 2nd Transfusion	Volume of Plasma Transfused (c.cm.)	Plasma Protein Concentration of Plasma Transfused	Plasma Protein Concentrations after 2nd Transfusion (grammes per 100 c.cm.)									
					Min. After	Pl. Prot Conc	Min. After	Pl. Prot. Conc.	Min After	Pl Prot. Conc.	Min. After	Pl Prot. Conc.	Min. After	Pl Prot. Conc.
91	30	8·06	10	6·84	10	8·20	15	8·09	29	8·09	—	—	—	—
92	42	6·94	20	6·05	10	7·72	16	7·52	26	7·75	41	7·62	—	—
93	42	8·50	15	7·14	10	8·60	15	8·57	26	8·54	45	8·57	56	8·57
100	60	8·13	20	6·36	11	8·09	25	8·13	40	8·16	—	—	—	—
106	60	7·11	20	6·46	10	7·86	25	7·96	40	8·03	—	—	—	—

TABLE III

No	Time between 2nd and 3rd Transfusions (min.)	Plasma Protein Concentration before 3rd Transfusion	Volume of Plasma Transfused (c.cm.)	Plasma Protein Concentration of Plasma Transfused	Plasma Protein Concentrations after 3rd Transfusion (grammes per 100 c.cm.)									
					Min. After	Pl. Prot. Conc.	Min. After	Pl. Prot. Conc.	Min After	Pl. Prot. Conc	Min. After	Pl. Prot. Conc.	Min. After	Pl. Prot. Conc.
91	30	8·09	10	6·84	10	8·26	15	8·26	29	8·40	—	—	—	—
92	43	7·62	20	6·05	10	7·99	15	7·75	25	7·92	40	7·89	55	8·09
93	118	8·50	10	7·14	10	8·67	15	9·22	25	9·15	40	9·25	85	9·28
100	45	8·16	20	6·36	10	8·13	25	8·13	40	8·16	55	8·30	—	—
106	45	8·03	20	5·88	10	8·26	25	8·26	40	8·33	—	—	—	—
*91	30	8·40	10	6·84	10	8·81	15	8·67	30	8·74	45	8·84	60	8·84

* These values were obtained for a 4th transfusion

TABLE IV

No	Composition of Perfusing Fluid	Plasma Protein Concentrations in Grammes per 100 c.cm.										
		0 Min.	15 Min	30 Min.	45 Min.	60 Min.	75 Min.	90 Min.	105 Min.	120 Min.	135 Min.	150 Min
150	50 c.cm. plasma 180 c.cm Tyrode's soln 80 c.cm. red cells	1 63	—	1·69	—	1·71	—	*1 75	1·47	1·50	1·52	1 55
153	170 c.cm. plasma	6 23	6 23	6·32	6 34	6·30	6·15	6 25	6·23	—	—	—
154	130 c.cm. plasma 40 c.cm Tyrode's soln	3 56	3 50	3·53	3·38	3·42	3·47	3·53	3 62	3·68	—	—
172	95 c.cm. plasma 55 c.cm. blood	6 49	6·32	6·37	6 34	6 28	6 11	6 27	6·24	—	—	—
173	65 c.cm. plasma 100 c.cm. blood	6 82	6 71	6·76	6·65	6 50	6 63	6·61	6·45	6 49	—	—

* 50 c.cm. Tyrode's solution added after this sample.

rise to 9.22 g. in 15 minutes. This new level was maintained for a further 70 minutes.

In No. 100 the second transfusion was given 1 hour after the first, and the third 45 minutes after the second. The plasma transfused was, as in the previous experiments, lower in protein content than the animal's own plasma. The first transfusion caused a rise in protein content from 7.69 to 8.23 g. per 100 c.cm. in 25 minutes. There was a slight decline over the remainder of the first hour. The second transfusion produced no change in protein concentration, and the third likewise, except at the final sample taken 55 minutes after this transfusion, when the protein concentration rose slightly to 8.3 g.

The reaction to the first transfusion in No. 106 was almost identical with that observed in No. 91. The second transfusion, 1 hour later, produced a considerable rise in protein content (7.11 g. to 7.86 g. per 100 c.cm.) in 10 minutes. The protein content continued to rise slightly for a further 30 minutes. The third transfusion, 45 minutes after the second, again caused a rise (8.03 g. to 8.26 g.), which was maintained for 40 minutes. The plasma used for the first and second transfusions had a protein content of 6.46 g. per 100 c.cm., while that for the third transfusion contained only 5.88 g. The protein content of the animal's plasma was considerably in excess of that in the transfused plasma.

Perfused Isolated Livers.—These experiments fall into two groups: (i) 5 experiments in which no plasma was added after the start of the experiment; and (ii) 4 experiments in which plasma was added. The results obtained in the first group are shown in Tables IV and V. The changes in plasma protein concentration are given in Table IV. Table V is calculated after allowing for losses due to sampling. In the 2 livers (Nos. 150 and 154) perfused with low protein perfusing fluid there was a rise in plasma proteins. The increase is greatest in the liver perfused with the lowest plasma protein fluid (No. 150). No change was found in No. 153, which was perfused with a fluid containing plasma protein in the concentration of 6.23 g. per 100 c.cm. Livers perfused with fluid containing higher plasma protein concentration than 6.23 g. per 100 c.cm. (Nos 172 and 173) apparently removed protein from the circulation.

TABLE V

No.	Total Plasma Protein in Circulation at Start of Experiment A	Total Plasma Protein Lost by Sampling B	Expected Total Plasma Protein at End of Experiment C	Actual Total Plasma Protein at End of Experiment D	Difference between Cols. C & D as % of Expected Protein
50	3·75	0·32	3·43	4·03	+17·5
53	10·59	1·25	9·34	9·35	—
54	6·05	0·32	5·73	5·93	+3·5
72	8·11	0·79	7·32	7 02	−4·1
73	8·53	0·60	7·93	7·24	−8·7

The second group again had experiments with low and high protein content in the perfusing fluid (Tables VI and VII). No. 164, perfused with a plasma containing only 2.7 g. per 100 c.cm., showed an increase in protein concentration over a period of 60 minutes of 3%. The percentage increase in concentration in the second hour was 13.4, although 1.31 g. of protein had been added. Over the whole 2 hours there was an increase in total plasma protein of 7.9%. No. 165, also perfused with fluid of low protein content, showed no significant change in concentration over a period of 50 minutes. When 1.10 g. of protein was added the concentration returned to its initial level about 1 hour later. Protein had been lost from the perfusing fluid. Perfusion with a much higher protein concentration in No. 167 led to a fall of 8.2% in concentration in 50 minutes. After 1.23 g. of protein had been added, the concentration returned to the starting level. The addition of 40 c.cm. of Tyrode's solution failed to produce any output of protein from the liver, and consequently the total protein at the end of the experiment was almost identical with that expected. The last experiment (No. 170) showed a rise in plasma protein concentration of 3.7% in 1 hour. The addition of 1 85 g. of protein increased the concentration by a further 3.9%. The gross increase in total plasma protein, however, exceeded by only 2.6% the value expected.

TABLE VII

No.	Total Plasma Protein in Circulation at Start of Experiment A	Total Plasma Protein Added to Circulation B	Total Plasma Protein Lost by Sampling C	Expected Total Plasma Protein at End of Experiment (A+B−C) D	Actual Total Plasma Protein at End of Experiment E	Difference between Cols D & E as % of Expected Protein
164	5·40	1·31	0·32	6·39	7 01	+9·7
165	6·12	1·10	0·34	6·88	6·22	−9·6
167	12·65	1·23	0·90	12 98	12·95	—
170	6·56	1·85	0 72	7·69	7 89	+2·6

Hepatectomized Animals.—These animals were observed for a control period before giving plasma transfusions. The changes in their plasma protein and haemoglobin concentrations are shown in Table VIII. Of these, 4 animals (Nos. 147, 158, 162, and 168) maintained their haemoglobin concentrations within ±3% of the first value. An examination of the dye disappearance curve shows that their plasma volumes appeared to be constant within narrow limits. No observations of plasma volumes were made on No. 168. No. 161 showed a marked increase in plasma volume and a corresponding reduction in haemoglobin concentration. The plasma protein concentration did not fall parallel with the fall in haemoglobin concentration. No. 166 showed an actual increase in plasma protein concentration, with a reduction in haemoglobin concentration and a rise in plasma volume. Calculating the changes in total plasma proteins, it was noted that Nos. 147 and 158 showed no evidence of movement of plasma protein into or out of the blood. No. 162 showed a decline of 4%, which is probably significant. Nos. 161 and 166 showed evidence of movement of plasma proteins into the blood (Table IX).

After a known amount of plasma had been transfused into 4 animals the changes in haemoglobin and plasma protein concentrations were observed and plasma volume estimations made (Table X). An analysis of these results (Table XI) showed that 3 out of the 4 animals (Nos. 147, 158, and 162) lost protein in substantial amounts, and 1 animal (No. 161) gained over 5% plasma protein. Without placing too much reliance on the actual values, it is clear that plasma protein movement out of and into the blood stream does take place in hepatectomized animals

TABLE VI

No.	Composition of Perfusing Fluid	Vol of Plasma Added (c.cm.)	Pl. Prot. Conc. of Added Plasma	Protein in Added Plasma (g.)	Plasma Protein Concentrations in Grammes per 100 c.cm. at 10-Minute Intervals															
					0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
164	200 c.cm. plasma-Tyrode mixture	20	6·53	1·31	2·70	2·80	2 95	2·99	—	2·99	*3·05	3·19	—	3·40	3·49	3 49	3 46	—	—	—
165	242 c.cm. plasma-Tyrode mixture	19	5 79	1·10	2·53	2 53	2 66	2·45	2·53	*2·53	2·62	2·89	2·88	2·59	2·66	2·57	2·51	—	—	—
167	170 c.cm. plasma, 38 c.cm. normal saline	20	6 13	1·23	6·08	5·86	5·84	5·73	5 83	*5·58	5 83	5·89	5·93	†6 08	5 10	5 03	5·30	5 21	5·18	5·10
170	125 c.cm. plasma	25	7·40	1 85	5 47	5·36	5·48	5·05	5·08	5·46	*5·67	5 47	5·72	5 77	5·74	5·89	5·89	—	—	—

* Plasma added after this sample. † Tyrode's solution added after this sample.

Discussion

After repeated transfusions with plasma of a protein content lower than that of the animal's blood, the plasma protein content showed significant rises in 4 out of the 5 animals, and a rise of doubtful significance in 1 (No. 92). Analysing these results, it can be seen from Table XII that 4 animals (Nos. 91, 92, 93, and 106) lost the major portion of the transfused fluid from the circulation. One animal (No. 100) lost about half the transfused fluid.

The plasma protein added to the blood was retained in the circulation in 2 experiments (Nos. 92 and 100), and considerable fractions of it left the circulation in the others (Nos. 91, 93, and 106). Presumably, the greater part of this "lost" protein entered the protein stores.

Retention of plasma protein in the circulation may be accomplished by increasing the concentration to a much higher level and by expanding the blood volume. In No. 92 the former factor is predominant, and in No. 100 the latter. The question may be asked: "What determines whether plasma protein moves from the blood or is retained in it?" It has been suggested (Beattie and Collard, 1942) that the state of the plasma protein stores may be the most important factor.

If this be the explanation, then we have to assume that the plasma stores in Nos. 92 and 100 were well filled and could accommodate no more plasma protein. Examining these experiments in some detail, the effects of the first transfusion of low protein plasma are of interest. Determining the total plasma proteins from the animal's and transfused plasma volumes and the plasma protein concentrations, this value is divided by the concentration observed at certain time-intervals, thus giving the plasma volume to be expected. Assuming that no plasma protein has entered the blood stream, the plasma volume of No. 92 at 10 minutes after transfusion ought to be 197 c.cm., which would mean that 18 c.cm. of fluid had disappeared from the blood. However, as the haemoglobin concentration had declined from 102.0 to 95.84, it is clear that such a movement of fluid could not have occurred. Plasma protein must therefore have left the plasma stores and entered the blood stream. The subsequent fall in plasma protein may be due either to movement of fluid into the blood or protein out of it. If the former were the cause, the haemoglobin concentration would show a continued fall; in fact, however, it rose slightly to 97.54 at 16 minutes and 97.84 at 26 minutes, and fell slightly to 97.0 at 41 minutes. It must be concluded that there has been a reverse movement of protein into the stores.

TABLE VIII.—*Hepatectomized Animals*

Haemoglobin and Plasma Protein Concentrations before Transfusion

No.	Time (min.)	Hb	P.P	Time (min.)	Hb	P.P.	Time (min.)	Hb	P.P.	Time (min.)	Hb	P.P.	Time (min.)	Hb	P.P.	Time (min.)	Hb	P.P.
*147 ..	0	100 0	5 65	11	103·0	5 61	21	101·6	5·65	31	102·0	5·51	—	—	—	—	—	—
158 ..	0	100·0	7·35	11	98·63	7·21	21	100·3	7·18	31	100 0	7·18	41	100 0	7·14	—	—	—
161 ..	0	100·0	8·33	15	94·4	8 03	20	91·8	—	25	91·8	7·86	30	92·1	7·96	—	—	—
*162 ..	0	100 0	7·00	10	100·3	6·66	20	100·3	6·66	30	103 0	—	40	103·0	6·86	—	—	—
166 ..	0	100 0	6·58	15	96·8	6·70	25	97·4	6·67	35	95·0	6·73	45	94·4	6·82	—	—	—
168 ..	0	100·0	7·11	12	99 3	7·18	24	99·65	7 18	34	98·6	7·07	44	98·95	6 87	53	98·3	6·60

* These animals received either plasma or glucose (5%) before this sample.

TABLE IX

No	Beginning of Experiment			Duration of Experiment (min.)	End of Experiment					Gain or Loss as % of Total P.P. at Beginning of Experiment
	P. Vol.	P.P. Conc.	Total P.P.		P. Vol.	P.P. Conc.	P.P. in Circulation	P.P. Lost in Sampling	Total P.P.	
147	70	5·65	3·96	31	69	5·51	3·80	0·17	3·97	—
158	68	7·35	5·00	41	68	7·14	4 86	0·14	5 00	—
161	133	8·33	11·08	30	144	7·96	11 46	0 16	11 62	+4·9
162	101	7·00	7·07	40	97	6·86	6·65	0·14	6·79	−4·0
166	124	6·58	8·16	45	131	6 82	8 93	0 13	9·06	+11 0
168	—	7·11	—	53	—	6 60	—	—	—	—

TABLE X.—*Hepatectomized Animals*

No.	P.V. before Trans. (c cm.)	Vol. of P. Trans. (c.cm.)	P.P. Added (g.)	Hb and P.P. Conc. after Plasma Transfusion. 10-minute Intervals															
				0		10		20		30		40		50		60		70	
				Hb	P.P. Conc.	Hb	P P. Conc.	Hb	P.P. Conc.	Hb	P.P. Conc.	Hb	P.P. Conc.	Hb	P.P. Conc.	Hb	P.P. Conc.	Hb	P.P. Conc.
147	69	25	1·78	102 0	5 51	89·8	6·22	87·9	6·19	84 9	5·92	82·7	5·82	82·0	5·68	82 7	5·68	82·2	5·65
158	68	30	1·92	100·0	7·14	80·4	7 18	78·2	7·11	77·7	7·01	80 4	6·94	—	—	—	—	—	—
161	144	45	2 64	92·1	7 96	74 1	7·86	74·4	7·65	75 4	7 86	75·2	7 79	73·1	7·79	72 9	8·03	—	—
162	97	40	1·20	103·0	6 86	90 0	6 19	85 6	6 37	88 2	6·14	89 1	6 23	89·4	6·19	93·4	6·02	—	—

TABLE XI

No.	Beginning of Experiment			P.P. Added by P. Trans (g.)	Total P.P. at End of P. Trans. (g.)	End of Experiment					Gain or Loss as % of Total P.P. at beginning of Experiment
	Vol.	P.P. Conc.	Total P.P.			P. Vol	P.P. Conc.	P.P. in Circulation	P.P Lost in Sampling	Total P.P.	
147	69	5·51	3·80	1·78	5·58	85	5·65	4·80	0 41	5·21	−6·6
158	68	7·14	4·86	1 92	6 78	85	6·94	5·90	0 14	6 04	−10·9
161	144	7·96	11·46	2·64	14·10	182	8·03	14·61	0·23	14 84	+5 3
162	97	6·86	6·65	1 20	7 85	103	6 02	6 20	0·19	6·39	−18·6

TABLE XII

No	Before Transfusion			Vol. of Plasma Trans. (c cm.)	P.P. Added (g)	End of Experiment			Net Gain or Loss of P.P. (g)	Net Gain or Loss of Fluid (c.cm.)
	P.V. (c.cm.)	P P Conc.	Total P.P. (g.)			P.V. (c cm.)	P.P. Conc.	Total P.P (g.)		
91	87	8·30	7·22	40	2·74	93	8·84	8 22	−1 74	−34
92	195	6·67	13 01	60	3·63	209	8 09	16 90	+0 26	−46
93	104	8·57	8·91	40	2·86	107	9·28	9 93	−1·84	−47
100	151	7·69	11·61	60	3 80	184	8·30	15·27	−0 14	−27
106	124	7 28	9·03	60	3·76	140	8 33	11·66	−1 13	−44

The second transfusion produced a similar effect. The plasma protein concentration rose sharply at 10 minutes and, after fluctuating at 16 and 26 minutes, fell slightly at 41 minutes. The haemoglobin concentration moved in the reverse direction, rising from 97.24 at 10 minutes to 100.1 at 41 minutes after transfusion. Flow and ebb of plasma protein from and into the stores must have occurred. The third transfusion showed clearly that the same events have taken place. As the haemoglobin 10 minutes after transfusion was identical with that at 55 minutes after, no substantial movement of fluid could have occurred. Hence the final rise in plasma protein concentration must have been due to the plasma protein added from the stores.

An analysis of No. 100 showed that the large loss of transfused fluid was shared equally between the three transfusions. The loss was rapid and complete within 10 minutes, as the haemoglobin concentrations at the 10-minute and subsequent samples after each transfusion were within 1.6% of each other. The changes in plasma protein concentrations do show, therefore, after the 10-minute samples, the ebb and flow of protein from the stores to blood and of blood to stores. The small amplitude of this tidal movement, coupled with the fact that the values for the plasma proteins are high, suggests strongly that this animal, too, had well-filled protein stores.

Saturation of the protein stores can be accomplished by repeated plasma transfusions. No. 93, after 2 transfusions, showed a final plasma protein concentration of 8.57 g. per 100 c.cm. 56 minutes after the second transfusion, identical with the value at the start of the experiment. A third transfusion raised the level to 9.22 g. in 15 minutes, and maintained it there for a further 20 minutes. In No. 91, at 29 minutes after a third transfusion, the plasma protein concentration was only slightly higher than the level before the first transfusion. The fourth transfusion raised the level significantly and maintained it there for 1 hour. Saturation of stores was completed by the second transfusion in No. 106, and a subsequent transfusion raised the level still higher and maintained it for a further 40 minutes.

In view of Madden and Whipple's (1940) opinion that the liver is an important site for the storage of protein, it seemed possible to test on this organ the suggestions outlined above. Madden and Whipple envisaged a steady state, or ebb and flow, between the plasma proteins and those in body cells. That idea presupposes two reservoirs of protein, one in the blood stream and the other in reserve in tissue cells. A state of equilibrium between the two reservoirs tends to appear, and the speed with which it is accomplished will depend on the "gradient" between the "levels" of protein in the tissue cells and that in the blood stream. If the level of available plasma protein is low in the tissues, then high degrees of hypoproteinaemia may persist. On the other hand, a high level of protein in the blood stream will only remain high if the protein reserves are also high.

The isolated liver experiments show clearly that the liver can mobilize and throw into the perfusing fluid quantities of plasma protein (Tables V and VII, Nos. 150, 154, 164). The stimulus for this production is obviously the low plasma protein concentration of the perfusing fluid. There is, too, in these experiments a correlation between the degree of "hypoproteinaemia" and the rate of plasma protein production. One experiment (No. 165), in which the plasma protein concentration was low, showed no change in concentration over 50 minutes. It may be presumed that the reserves were also low in this liver, and this is supported by the fact that the addition of 1.10 g. of plasma protein produced a temporary rise and then a disappearance of all the added protein inside 1 hour. Equilibrium between stores and circulating protein seems to be suggested in one experiment (No. 153). Protein was lost from the perfusing fluid in two experiments (Nos. 172, 173). The loss was greater in the experiment with the higher plasma protein concentration.

When plasma was added to the perfusing fluid about 1 hour after the experiment had begun, the results obtained again seemed to depend partly on the state of the reserves and partly on the concentration of protein in the perfusing fluid. One liver (No. 164) showed a continuing output of protein after the addition of plasma, while another (No. 165), perfused under precisely the same conditions with a perfusing fluid almost identical with that used in No. 164, showed a loss of the added plasma protein. Previous to the addition, this liver had added no protein to the perfusing fluid, and hence it can be presumed that the reserves in this liver were low. Another liver (No. 167), perfused with a rich plasma protein fluid, lost protein from the circulating fluid. The added plasma protein produced a rise in concentration, and presumably all of it remained in the perfusing fluid. The addition of Tyrode's solution merely diluted the perfusing fluid without producing any further addition of protein. The remaining experiment (No. 170) showed a small rise in concentration before plasma was added. The added protein remained in the perfusing fluid, although from the values obtained for protein concentration it would appear that there was at first a movement out of the perfusing fluid, followed by a movement in the reverse direction.

There can be no doubt, therefore, that the liver does behave as a "store" for plasma protein. It remained, however, to determine if it was in fact the only store. Hepatectomized animals were prepared and after variable periods given plasma transfusions. Two animals (Nos. 147, 158) showed no change in total plasma proteins before they were given a transfusion. One (No. 147), at 70 minutes after the transfusion, showed an appreciable loss of protein out of the circulation. The other (No. 158) lost a greater amount in 40 minutes. Another animal (No. 162) had lost some protein before transfusion and continued to lose an even greater quantity afterwards.

These results may indicate a movement of protein into other stores, but they are not as convincing as evidence of movement from such stores into the blood. Such evidence is provided by Nos. 161 and 166. Over a period of 30 minutes, while blood dilution was proceeding, No. 161 raised its total plasma protein by a small but significant amount. No. 166, over a period of 45 minutes, also while blood dilution was proceeding, raised its total plasma protein by 11% over the expected value. No. 161 continued to add protein to its circulation after a plasma transfusion at about the same rate as before transfusion,

The evidence from these experiments does suggest that plasma protein leaves the blood stream in hepatectomized animals in quantities greater than might reasonably be required for normal metabolism, and, conversely, these animals seem to possess some source of plasma protein other than the liver.

The speed with which protein may enter or leave the blood stream or perfusing fluid lends support to Whipple's view that protein can move as such from cells to plasma, and plasma to cells, as the need arises. It is clear, too, that the storage mechanism is not capable of dealing with large quantities of excess protein added to the blood. A rising plasma protein concentration after repeated plasma transfusions is an indication of saturation. The site of the protein stores cannot be pinned down exclusively to the liver. Whether all body cells can contribute protein to the blood stream with the facility with which they apparently can withdraw it has yet to be decided.

Summary

Repeated plasma transfusions show that the plasma reserve stores may become saturated with protein and that further transfusions will lead to a rising plasma protein concentration and plasma volume.

The liver can add to or abstract plasma protein from the blood. The direction of the movement depends on the state of the liver's reserves and the plasma protein content of the blood.

Protein stores from which plasma proteins may be derived, or in which plasma protein can be stored, exist apart from the liver.

We wish to thank our technical staff for the assistance they have given in carrying out these experiments.

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TONSILLECTOMY BY GUILLOTINE AND DISSECTION

BY

T. B. JOBSON, M.D., B.Ch.

Controversy regarding the best method of enucleating tonsils is ever with us. Even now there are a great many relevant points that are not appreciated by the majority of doctors and some specialists. As one who has had to perform some 15,000 of these operations by both methods, I feel that analysis of this controversy may be of interest.

Taking the guillotine operation, let us inquire why such a lot of bad work is done by this method and why it has got a bad name in many quarters. The modern "reverse" technique was introduced in 1910 by Whillis and Pybus of Newcastle. They described their results in 200 cases in the *Lancet*. Very little notice was taken of their work in this country, but in America the idea was adopted by Sluder, who with the proficiency of practice brought his skill in the method to a very high level. In fact, he claimed that his results showed 99.6% of complete enucleation in children. His advocacy of the method brought back to this country its use by surgeons who appreciated the improved technique and who had opportunities of gaining skill by practice.

Reasons for Poor Results with the Guillotine

It may be asked why the results achieved by the guillotine are so variable. Restricting the discussion for the moment to children, let us inquire why some doctors firmly believe that a tonsil cannot be completely removed with the guillotine. Indeed, a good many of the public (instructed by their doctors, no doubt) are of the same opinion. There is some justification for this view, for undoubtedly a great deal of bad work is done with the guillotine. Now, why should this be? If Sluder can produce 99.6% of complete enucleations, the method cannot be at fault. My experience assures me that it is not at fault. Why, then, does not the method yield such excellent results universally? Several reasons suggest themselves.

Many doctors imagine that tonsils can be removed by anyone as soon as he can write M.R.C.S. or B.Ch. after his name. They think that tonsils are like ripe strawberries, ready to be plucked off. They are confirmed in this opinion when two or three come out successfully. The fact that the fourth or fifth is badly done does not shake their complacency. But this means 20% bad results—enough to give the method a bad name. The fourth is perhaps a "mushy" tonsil. The lymphoid tissue strips off, leaving the capsule behind with remnants of tonsil tissue. The next may be one with a horizontal cleft near the lower pole, inviting the ring of the guillotine to be placed in the cleft, and so leaving a lower pole. Again, perhaps the capsule is thickened and there is difficulty in invaginating the tonsil into the ring of the guillotine. Too much pressure is used with the finger, and it perforates the anterior pillar. The pitfalls are many and are not realized at first.

The bad results are not noticed by the parents. The surgeon "gets away with it." In other operations, such as appendicectomy or hernia, a bad one will become manifest immediately, so it follows that the surgeon learns to do these under supervision and does not attempt them until he is competent. The analogy with golf is rather apt. The member who has just been elected sees the professional tee up a ball and drive it down the fairway 250 yards. It looks so simple, but the beginner does not find it so. He has to practise and practise; after a time he gets to the stage of missing one shot in four, but his handicap is then only 18. He has to have lessons and do more practice before his handicap gets down to single figures. Only a few reach the scratch mark—those who are endowed with a fine touch and good muscular co-ordination. So it is with guillotine tonsillectomy. It requires good "hands" to start with and long—very long—practice to achieve anything like 100% success. Also, the surgeon must be able to use his left hand as well as his right.

Another cause of poor results is that at many hospitals tonsil operations are left to the house-surgeons unsupervised. They do their best, but their results cannot reach the desired 100% goal in their short period of residence, and their successors repeat this unsatisfactory process. There is another reason for the odium cast on the guillotine. Many of our surgeons who restrict themselves to the dissection method and who never had the opportunity or desire to persevere with the long practice required for expert guillotine work are apt to condemn the method and noise it abroad that the only satisfactory method is by dissection. To justify this they point to some of the bad results outlined above.

Finally, the removal of a child's tonsils and adenoids in a minute or two with the guillotine is a much less spectacular operation than a set dissection lasting ten times as long. The parent may think he is getting better value for his money for the longer operation, which is not always the case.

I have nothing to say against the dissection operation. It is an excellent method, and in adults is, I think, the method of choice. It is more easily learned, and a good many house-surgeons learn it fairly well in their six-months period—although further practice is required before they become experts.

The Methods compared in Adults

So far I have dealt with the guillotine operation in children. It may be of some interest to compare the value of the two methods in adults. To get some evidence on this point I have during the last two years tried out the method of dissecting one tonsil and guillotining the other—alternately right and left. Analysis of the first 100 cases showed that 11 were unsuitable for the guillotine. These were cases of very flat tonsils, some which had had a previous operation, some with a very thickened capsule, the result of quinsy, etc. In the other 89 cases observation notes were made on: (1) haemorrhage, (2) appearance of the tonsil bed, (3) after-pain.

The results showed practically no superiority of either method. The desired slit-like bed was more often achieved by the guillotine. Those requiring a ligature were about equal. My conclusion, then, is that the guillotine method is not applicable to all cases in adults—and also that it requires a great deal more skill to get good results than is the case with children. The dissection method is therefore, I consider, the method of choice in adults. In this method each surgeon develops his own technique. One point I would like to emphasize, and that is the importance of dissecting up the mucous membrane from the pillars and upper pole and then "delivering" the tonsil from underneath this fringe of mucosa, which will then form a covering for the edges of the pillars. This procedure greatly lessens after-pain and prevents cicatricial contraction of the pillars.

It is interesting to recall that Whillis and Pybus in their first 200 cases claimed only 65% of perfect tonsillectomies. Compare this with Sluder's results a few years later. In 1924 I published a paper on this subject.[1] In this I estimated the number of completely successful results at 95%, but now I believe even this is too low. By immediate inspection of the bed and examination of the tonsil removed it can be ascertained if a fragment has been left. This can be dissected out in a few minutes. Such a necessity is very rare, but its recognition is important if we aim at perfect results.

It must not be thought that tonsillectomy by dissection is always easy. The difficult tonsil for the guillotine is difficult for dissection, and the results by this method are not always perfect. As in every operation, skill increases with practice, and skill is more rapidly gained in dissection than in the guillotine method. Serious bleeding does not often occur, but it can be very alarming and indeed dangerous. The surgeon therefore must be competent to deal with haemorrhage in the tonsil bed. Finally, our aim must be "to remove the tonsil, the whole tonsil, and nothing but the tonsil." The guillotine is more likely to fail in the second, dissection to err in the third, of these aims.

Anaesthesia

Our routine for adults is intratracheal ether with packing of the hypopharynx. This helps to prevent the possibility of inhalational pneumonia or lung abscess. For the guillotine operation in children ethyl chloride is used, and for dissection in children a short ether anaesthesia. The children are given 1 to 2 grains (according to age) of seconal an hour before operation, and one hopes that this will obliterate any memory of the operation. Again we find the improvement in statistics since our specialist anaesthetist has been appointed for this purpose. Many years ago, when changing house-surgeons gave the anaesthetics, we had two or three fatalities, but for five years since this anaesthetist has been doing the work we have had none.

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[1] *Practitioner*, 1924, 113, 100.

The conclusion is that the appointment of special surgeons and anaesthetists has raised the standard of tonsillectomy to a very high level.

ATYPICAL "INFLUENZAL PNEUMONIA" AT A SCHOOL

BY

H. G. J. HERXHEIMER, L.R.C.P.&S.
Medical Officer, Highgate School, Westward Ho

AND

A. J. McMILLAN, M.R.C.S., L.R.C.P.
Tuberculosis Officer, N. Devon

During a period of three months, March to May, 1942, a small but peculiar epidemic occurred at the evacuated section of Highgate School, at Westward Ho. The history of the outbreak may be considered worth recounting.

Symptomatology

The outbreak had the external appearance of an influenza. The temperature at the start was seldom more than 102°, and remained so for one or two days; it then dropped to between 99° and 100°, and remained there from 3 to 7 days. The symptoms, in the main, consisted of a mild headache or a sore throat; apart from the temperature the only positive finding was a pharyngitis. After a week or less the temperature became normal and the symptoms cleared up. After a further period of 2 to 7 days, however, the temperature suddenly rose again, in one or two cases quite steeply, and remained above normal for some days, in a few instances for a fortnight or even longer. During this period a cough often appeared, and in a few cases a few very faint crackling rales were heard over a localized area of one lung.

In these cases radiological examination of the chest was carried out, but, owing to the long distance from the hospital, this was possible only after some delay, when the journey could be undertaken without too much risk. In all these cases (7), with one exception, a typical *x*-ray picture was found: an area of one lung-field was distinctly blurred—frequently the lower third of the right lung-field—the movement of the corresponding dome of the diaphragm was impaired, and in one case there was a small effusion in the costophrenic angle. The homogeneous shadow was similar to that of a resolving area of pneumonic consolidation. Later control radiographs revealed that this diffuse shadow had disappeared and the lung-field showed no abnormality. In two cases, however, a recrudescence occurred after an interval of 4 to 6 weeks, with exactly the same symptoms, and repeated radiographs showed that the previous pathological shadows had become more marked.

In all, there were 28 cases of "influenza" during the same period, which may, of course, have belonged to quite different types. In one group of about 10 cases the symptoms were very slight, and lasted a few days only. Of the remainder, 12 cases showed the typical features described above, consisting of a two-stage illness, separated by an afebrile interval of apparently complete health.

In this second group 7 cases were radiographed; 6 of them showed residues of a diffuse inflammatory process in an area of one lung. The following history is typical of one such case:

A schoolboy aged 14. No previous history of importance. During Easter holidays, at the beginning of April, 1942. he was in bed with a mild influenzal attack, slight unproductive cough, and temperature just over 99°, which settled down in a week. He was quite fit for a month, but on May 14 developed a febrile cold again, and the temperature rose to 99.8°, but was normal again on May 17 and 18. On May 19 the temperature was 102.6° in the morning; sulphapyridine was given 4-hourly and it fell to 99.2° in the evening. At this time some crepitations were heard over the right lower lobe behind. By the 21st the temperature had settled to normal and remained so.

X-ray examination, May 26 (A. J. M.).—"Screening: Upper lung-fields light up brightly and evenly. There is some increased density at inner angle of right dome of diaphragm, and outer sulcus of same is blurred. Film: This confirms screening report. There is very slightly diminished translucency over right upper lung-field compared with left. There is some increased density and striation at inner angle of right base, and filling up of outer sulcus of right dome. The *x*-ray appearance suggests a residual inflammatory process at right base following influenza." June 9, screen only: outer sulcus of right dome of diaphragm has now cleared.

In this case the administration of sulphapyridine appears to have speeded up recovery; but other cases, not treated with it, took a similar course, and its value in this type of illness must therefore remain doubtful.

Conclusions

Unfortunately, extensive bacteriological investigations have not been possible, and we cannot say to what type of pneumonia these cases belonged. Nevertheless, their publication seems to us desirable for the following reasons: (1) The course of the illness is not typical for an influenzal pneumonia; it might even belong to another group of virus disease. (2) As no other cases have been noted in the district among adults, it may be that the illness attacks mainly adolescents. (3) Owing to the mildness of the illness and the absence of any marked symptoms, it will rarely lead to hospital treatment, and its special characteristics and complications may easily be overlooked; the attention of the practitioner should therefore be drawn to it.

Medical Memoranda

An Unusual Case of Injury to the Female Urethra

Injury to the female urethra apart from childbirth or operative procedures is very uncommon. This is presumably because of its comparatively well-protected position and shortness. In the male, on the other hand, injury to the urethra is more frequent and it is well known that it is usually caused by falling astride an object. In the case here described an injury was sustained by a woman which we consider to be comparable to the well-known injury to the male urethra. Interest is added to the case when it is learnt that the patient was wearing trousers at the time of the injury.

Case History

A married woman aged 38, a unipara, had just returned from her work as a milk roundswoman, and was putting up black-out curtains in her home, climbing on to the window-sill to do so, when she slipped and fell astride the back of an ordinary wooden chair. Her fall was fairly heavy: she was apparently standing about 4 feet above the chair when she slipped. It appears that she came down so that a projecting knob on the corner of the chair struck the anterior part of the vulva and anterior vaginal wall. She felt an immediate "numbing" pain, and after a few seconds found that she was bleeding profusely

On admission to Hendon Cottage Hospital there had been a fair amount of haemorrhage, which was seen to be coming from an extensive tear in the anterior vaginal wall and vestibule. This tear extended transversely across the anterior vaginal wall at the exact level of the urethral orifice and each end of the tear split into two directions, one running backwards and upwards into the vagina, and the other forwards on to the vestibule. There was also considerable bruising of all the parts, and a large haematoma had formed under the anterior end of the left labium. There was no sign of the urethral orifice.

Under an anaesthetic given by one of us (R. H. C.) the patient was put in the lithotomy position and the tear carefully examined (D. J. N. S.). It was then seen that the urethra had been torn away from the vaginal wall and was lying free in nearly all its length in a space between a flap of anterior vaginal wall posteriorly and the posterior surface of the symphysis pubis in front. The free lower end of the urethra was caught with forceps, brought down, and a catheter passed. Clear urine came from the catheter, and saline was injected into the bladder and the volume checked. It was then obvious there had been no injury to the bladder. A plastic repair was done, and the mouth of the urethra sutured as nearly as possible in position, a stitch being placed to anchor it to the periosteum of the postero-inferior surface of the symphysis pubis. An in-dwelling catheter was left in, and the vagina packed with mercurochrome gauze.

Recovery was rapid. The pack was removed in 24 hours and the catheter in a week. The bruising and haematoma of the vulva rapidly disappeared and the patient was discharged after a fortnight. There was complete control over micturition, no stress incontinence, and the vagina healed without stenosis.

Commentary

The features of this case are the rarity of the injury and the circumstances of its occurrence—exactly similar to the way in which rupture of the male urethra is produced. What is very interesting is that the patient was dressed in trousers at the time of the accident. In addition she had thick underclothes on beneath the trousers, which were themselves made of thick serge, so that the injury was produced entirely by contusion just as the male urethra is ruptured. It is probable that had the patient been wearing a skirt she would not have been injured, and clothing may be a factor in the prevention of injuries to the female perineum. It raises the question, of course, as to whether surgeons must be prepared to see such cases, as fashion dictates that increasing numbers of women shall wear trousers!

R. Hunt Cooke, M.D., M.R.C.P.,
Medical Superintendent, Hendon Cottage Hospital.
Denys J. Neal Smith, M.D.,
Surgeon, E.M.S.

Persisting Epilepsy following Shock Therapy

The rare occurrence of spontaneous fits over a long period following shock therapy is illustrated by the following case.

Case Report

The patient, a man aged 22, first came under my care on Sept. 19, 1940. He had had convulsions at intervals for six months when 1 year old. From 7 to 14 he suffered from an illness described as chorea—he now shows physical signs consistent with a diagnosis of a compensated rheumatic heart lesion. At 20 he had his first mental breakdown, a depressive illness lasting six months. A year later he was diagnosed as a schizophrenic, and had spent a further year in mental hospitals and been treated with ten therapeutic convulsions when he came under my care. He was dull and retarded, but suspicious, moody, and freely hallucinated—a typical "chronic" schizophrenic. Blood examination showed 4.9 million reds, haemoglobin 75%, and sedimentation rate normal; the urine was repeatedly found clear and normal. From Sept. 23, 1940, to Jan. 2, 1941, he was given a course of insulin therapy, the coma dose rising from 80 to 952 units, and 19 comas followed 63 injections. The course was complicated by occasional severe coma fits and after-reactions. Treatment by T.A.B. vaccine was then tried, 13 intravenous doses, rising from 5 million to 750 million bacilli, being given between Jan. 4 and Feb. 21, 1941. On Jan. 19 a spontaneous fit occurred, and two more were recorded in January and four more up to Feb. 15, accompanied by mental improvement, when 1 grain of phenobarbitone each night was prescribed. This controlled the fits; but the mental state relapsed, and the drug was discontinued on Feb. 28. A fit occurred on March 3, 1941, and six in March altogether, with five more by April 15, when he left my care considerably improved mentally.

The firm impression gained was that his spontaneous fits controlled his schizophrenia, and this continued satisfactorily until July, when further phenobarbitone therapy stopped the fits and heralded another mental relapse. He came under my care again; the medication was terminated and one electric convulsion given, and this was followed by one or two spontaneous fits a week, with mental improvement. Inquiry on Dec. 12, 1941, elicited the information that the fits continued and he remained cheerful and sociable, occupying his time rug-making and playing the piano. A further report dated June 28, 1942, states that he still has one or two fits weekly, and that epanutin was tried and stopped the fits; but it made him mentally worse and had to be abandoned. His mental condition, all things considered, remains good.

D. N. Parfitt, M.D., M.R.C.P., D.P.M.,
Squadron Leader, Specialist in Neuropsychiatry, R.A.F.

Reviews

PAEDIATRICS

Nutrition and Chemical Growth in Childhood By Icie G. Macy, Ph D Volume I: Evaluation (Pp 432; illustrated $5.00 or 27s 6d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox 1942.

Management of the Sick Infant and Child By Langley Porter, M.D, B S., and William E Carter, M.D. Sixth revised edition. (Pp. 977; illustrated 57s. 6d) London, Henry Kimpton. 1942

A Handbook on Diseases of Children, including Dietetics and the Common Fevers By Bruce Williamson, M.D., F R.C.P. Third edition. (Pp 364; illustrated. 12s. 6d., plus 6d. postage) Edinburgh: E. and S Livingstone 1942.

Wartime Food for Growing Children. Issued for the Ministry of Food by the Ministry of Information. (Pp 25. 4d, or 13s. 4d. for 50 copies.) London: H M. Stationery Office. 1942.

Dr. Icie G. Macy has provided a valuable collection of facts in her *Nutrition and Chemical Growth in Childhood*, the first volume of which is entitled "Evaluation." Many years of experience, wide reading, and the collaboration of colleagues have gone to the making of this book, which is essentially a record of the scientific methods required and the results obtained in the study of nutrition in childhood with particular reference to the biochemical aspect. A second volume, to be called "Interpretation," is promised for next year. Meanwhile the paediatrician will be grateful for a collection of valuable data, and especially for the results of balance experiments conducted by a method of rapid micro-analysis which gives results quickly after the collection of samples and opens the way to a wider use of this method of studying nutritional problems. The publication of this volume has been made possible by "The Children's Fund of Michigan" and it is introduced in a foreword by Dr. Hugo A. Freund, who is president of the board of trustees of the fund.

Another notable paediatric publication from the United States of America is the sixth edition of the well-known *Management of the Sick Infant and Child*, by Prof. Langley Porter and Dr. William E. Carter. This is a product of the California University Hospital, and continues in its extensively revised form to be a thoroughly practical account of the care of the sick child. Details of treatment are stressed throughout, and the method of approach in the early chapters through the dominant symptom—e.g., "vomiting," "diarrhoea," "haemorrhage"—has much to commend it. Both authors are widely experienced, and they have the fortunate help of many colleagues in certain sections of the book. The sections on therapeutic procedures are of particular value.

The third edition of Dr. Bruce Williamson's little work—*A Handbook on Diseases of Children*—also bears marks of extensive revision, especially that necessitated by the introduction of the sulphonamide drugs. But it is by no means up to date, for there is no mention of gentian violet for threadworms, of atebrin for lamblia, or of modern views on icterus gravis neonatorum. The dangers of raw milk (even the higher grades) are not sufficiently stressed.

Wartime Food for Growing Children is another collection of Dr. Charles Hill's informal broadcasts in the popular "Kitchen Front" series. The information imparted is essentially sound and practical, and practitioners would be well advised to recommend it to parents. The value of suet in puddings (when available!) is perhaps underrated, but critical reading has failed to reveal any other departure from modern paediatric standards. The broadcasts read as well as they sounded.

THE VITAMINS

Chemistry and Physiology of the Vitamins. By H. R. Rosenberg, Sc.D. (Pp. 674. $12 00 or 72s) New York: Interscience Publishers Inc: London: Imperia Book Company.

Dr. Rosenberg was tempted at first to write one book on the vitamins and hormones, since the two classes of compounds have so much in common. The task, however, proved too big and he wisely confined his effort to an account of the vitamins only. He has made a praiseworthy search of the literature, giving exact references to more than 3,000 original papers in footnotes on the appropriate pages, with an index to these references at the end of the book under the names of authors arranged in alphabetical order.

The subject-matter is systematically arranged in chapters on vitamins in general, the groups of vitamins A, vitamin B_1 (thiamin), vitamin B_2 (riboflavin), vitamin B_6 (pyridoxin), nicotinic acid (nicotinamide), pantothenic acid, inositol, para-aminobenzoic acid, vitamin C (ascorbic acid), the group of vitamins D, the group of vitamins E, vitamin H (biotin), the group of vitamins K, vitamin P, non-identified vitamins (including B_3, B_4, B_5, B_7, B_8, B_c, B_p, J, L_1 and L_2, M, T, U, folic acid, growth factor for *Lactobacillus casei*, grass juice factor, mouse factor, anti-pernicious-anaemia factor). An appendix is devoted to the vitagens (including essential fatty acids, amino-acids and carbohydrates, and choline and related compounds). There is also a patent index giving the patent number, date, patentee and assignation, and claims of about 1,200 patents dealing with vitamin preparations. Each chapter has sections, where possible, on nomenclature and survey, chronology, occurrence, isolation, properties, constitution, synthesis, industrial methods of preparation, biogenesis, specificity, determination, standards, physiology of plants and micro-organisms, animal physiology, avitaminosis and hypovitaminosis, and requirements. Provitamins A and provitamins D are treated nearly as fully as the corresponding vitamins.

Dr. Rosenberg has dealt most fully with the chemistry of the vitamins. Syntheses are clearly explained, and are lavishly illustrated by structural formulae. We would like to have seen described Bourdillon's work on the preparation of pure calciferol from the irradiation products of ergosterol; it is scarcely mentioned. However, the omissions we most regret on behalf of readers of this *Journal* are the accounts of clinical trials with the vitamins. There is no mention of Dr. Martha Elliott's comparison of the efficacy of vitamins D_2 and D_3 with regard to the curing and prevention of rickets in young children (the most convincing evidence of their equality yet published); or of Dr. Helen Mackay's work on the influence of a shortage of vitamin A on young children; or of Mellanby's work on the influence of vitamin A on convulsive ergotism and lathyrism, and on overgrowth of bone, which may affect parts of the nervous system (especially the auditory nerve); or of his solution of the toxamin problem. There is only one sentence (a very inadequate one) dealing with Lady Mellanby's work on the influence of vitamin D on the development of caries, and none on her work on gingivitis. There is no mention of the use of cod-liver oil in wound-healing, though whether the benefit is due to vitamin A is uncertain. The biological standardization of the vitamins is treated very scrappily, some of the work referred to being obsolete, and there is no statement of the general principles underlying the methods now accepted. In spite of these defects, however, much remains in the book to render it acceptable to workers on the subject, and many parts of it will stimulate readers to make therapeutic trials of the vitamins, for they can scarcely do harm and they may bring about results of inestimable value.

"THE MYSTERY OF THINGS"

The Circle of Life. A Search for an Attitude to Pain, Disease, Old Age and Death. By Kenneth Walker (Pp 158 7s 6d.) London: Jonathan Cape. 1942

Lotze said that a philosophical system is an attempt to justify a fundamental view of things which had been adopted early in life, and Mr. Kenneth Walker, as a child, sensed the unity of all life. Unlike Wordsworth, that vision of his has not faded but grown with the years. The present parlous state of civilization is compelling man to take a humbler view of his position in the universe so that he is more inclined to admit the interdependence of all living things. In *The Circle of Life*, which may be regarded as a sequel to his *Diagnosis of Man*, Mr. Kenneth Walker essays to help towards an understanding, though naturally not a complete solution, of the problems of disease, pain, suffering, old age, and death. His conclusion is that the meaning can only be found if the subject be examined from the standpoint of the whole aggregate of life on the earth. A disease caused by a pathogenic organism instead of being a meaningless accident is then seen to be an inevitable consequence of the conditions obtaining in organic life. Bacteria can be allies as well as enemies; indeed, "micro-organisms form, as it were, the base of a living triangle, the two sides of which are the vegetable and animal worlds." In his survey he has many interesting things to say: thus "we need not question the purposive action of fear, because in excess it defeats itself"; "life cannot be measured in terms of years but only in terms of inner experience"; "longevity is not a question of miraculous draughts or diets or hormones or grafts, but of right living, both of the body and of the mind"—a valuable comment this, from one with professional experience.

"Man," said Sir Thomas Browne, "is the great Amphibium", he dwells in two interpenetrating worlds—the visible one of living matter, the invisible one of the spirit. As is well known, Mr. Kenneth Walker has for some years found a harmony for this in Oriental philosophy. He recognizes, however, that "a branch of knowledge cannot be isolated from Eastern thought and grafted on to a culture which is entirely foreign to it"; but as "Eastern and Western people barter the products of their industry . . . surely the time has come when with even more mutual profit they can exchange the products of the mind." Yet even his customary lucidity leaves us with but a vague and unsatisfying impression of Eastern philosophy. His discussion of "occult" phenomena naturally includes a consideration of the time-space continuum, and we were delighted to see his reference to Dr. E. A. Abbott's parable *Flatland*, which, published more than 50 years ago, brought home in a simple form the lesson that our minds are inevitably limited to three-dimensional conceptions.

Mr. Kenneth Walker deserves our thanks for a book at once stimulating and comforting. His medical experience enables him to rob death of much of its terrors for the uninformed. He devotes some space to the consideration of various theories about the hereafter. As to this we do well in following Shakespeare, one of whose greatest characteristics, according to Keats, was his capacity for "being in uncertainties, mysteries, doubts, without any irritable reaching after fact or reason."

Notes on Books

The 28th edition of *Gray's Anatomy* is stated to have been "produced under conditions of unprecedented difficulty"; the editors, Prof. T. B. **Johnston** and Dr. J. **Whillis**, however, with the assistance of Prof. F. Davies—the digestive system—and Dr. Denny Brown—the nervous system—have succeeded in overcoming all hindrances and have added much new matter which is of importance from the purely scientific and the practical standpoints, more particularly with regard to the sections dealing with development, myology, neurology, and the ductless glands. Many new illustrations have been added, including *x*-ray plates, by Cairns showing the position of the cerebral ventricles; Allison, the course of the parotid and submandibular salivary ducts; and Grout, a cholecystogram. An interesting memoir of Prof. Howden, who, succeeding Pickering Pick, was editor of *Gray's Anatomy* for 27 years, is contributed by the senior editor of the present volume. Prof. Howden was specially interested in the central nervous system and sense organs, the description of which, more particularly of the internal ear, is largely founded on his personal observations. The present editors may be congratulated on raising still further the high standard of utility and accuracy of previous editions, and there is no doubt that the popularity of *Gray's Anatomy* will continue as of yore. Longmans, Green and Co. are still the publishers, and the price is 60s.

In *Health for the Young* (George Allen and Unwin, 6s.), written for the lay public, Dr. **Lindsey Batten** displays his customary robust common sense. He could have chosen as his text, "It is not the function of the doctor to suggest ill-health," nor for that matter of anyone else, for (as he rightly points out) advertisements of patent remedies would convey the impression that health is a thing that can only be precariously maintained. "With the decline of faith in a benevolent Providence and the countervailing rise of faith in Science goes a quite unjustified disbelief in the power of living organisms to right themselves." His hard hitting at the prevalent fads and cranks of the day is refreshing, and his practical hints on the maintenance of health and the provision of an enjoyable life for the young should prove decidedly helpful.

No. 4 of Vol. 13, dated March, 1942, of the *Index to the Literature of Food Investigation* has been published by the Department of Scientific and Industrial Research at 4s. 6d. The items run from Nos. 1454 to 1939. Those who wish to obtain this *Index* regularly should send orders direct to the Sales Office, H.M. Stationery Office, York House, Kingsway, W.C.2, or to any bookseller.

"WAR AND THE ADVANCEMENT OF SOCIAL MEDICINE"

SIR WILSON JAMESON'S HARVEIAN ORATION

The Harveian Oration—the only one of the lectures of the Royal College of Physicians of London to be given this year in public session—was delivered on October 19 by Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health. The President of the College, Sir Charles Wilson, was in the chair.

Sir Wilson Jameson began by remarking that William Harvey's life was cast in times of national stress like the present. He was a boy of 10 when the Spanish Armada came up the Channel, and at the age of 64 he was caught in the travails of the Civil War. Such times had always been followed by periods of great social change. The Napoleonic wars furnished a convenient first example. After them came the first Factory Acts, the abolition of slavery in the British Empire, the beginnings of elementary education, and the social emancipation brought about by the reform of Parliament. After the Crimean War, the heroine of which was Florence Nightingale, with her reforms of Army hygiene and nursing, came the growth of liberalism in politics, a new apprehension of the meaning of social justice, and, in hygiene, the beginnings of State medicine.

The South African War touched the conscience of England, partly because of the disclosures concerning the physical unfitness of many Army recruits, partly because of the excessive mortality from disease in the field, and partly because of the conditions in the concentration camps for Boer women and children. The demand for social change was faced in the new Parliament of 1906. The immediate consequences were the provision for feeding, physical training, and medical examination of school children, the beginnings of the campaign for the prevention of infant mortality, workmen's compensation for accidents, old age pensions, housing and town planning, and, eventually, National Health Insurance.

After the First World War

Then came the first world war, the effect of which upon the progress of social medicine was profound. The destruction of young manhood sharpened the need for saving life wherever possible. There was an extension of schemes for the care of mothers and infants and the medical treatment of school children, as well as the establishment of welfare work in industry. As soon as the armistice was signed the Ministry of Health was created. Shortly before the last war there had been a Medical Research Committee under National Health Insurance, but its admirable secretary, Sir Walter Fletcher, made it truly national in its application to the immediate medical necessities of the war, and the Medical Research Council, as it now became, was no merely academic body, but a living and dynamic force for the saving of human life. A concentrated effort was made to combat tuberculosis, and the major local authorities were required to make adequate provision for diagnosis and treatment. Slum clearance schemes were also effected, and later a sweeping measure of Poor Law reform was brought about. In the meantime medical education did not stand still, and the beginnings of two noteworthy movements might be detected at this time, issuing presently in the establishment of the London School of Hygiene and Tropical Medicine and the British Postgraduate Medical School.

What would be the effect on the progress of social medicine of the ordeal through which the world was now passing? He detected a marked difference between the feelings of medical men—and of others—in the last war and in this. In the last war it was the general desire to get back to things as they were, an impatience to resume the old tasks and privileges; but in this war there was everywhere a conviction that great changes were impending. It might be that immediately the war was over an extensive programme of social reform would be introduced, of which social medicine would be an integral part.

Present Gains

Sir Wilson Jameson went on to enumerate some present gains which would surely not be lost in time of peace. Already a co-ordinated hospital scheme existed to meet the needs of the war. Many more hospital appointments had been created, many institutions had been improved out of all recognition—"upgraded," to use the official jargon. The Ministry of Health had itself added 47,000 beds to the total of those already provided by voluntary agencies and local government authorities, and had set up special hospitals for the treatment of head injuries, for neurosurgery, for neuroses, and for rehabilitation. Consultants had been redistributed and their services made available in many places where such provision had formerly been wholly inadequate. Operating theatres had been provided and additional wards built. Laboratory services had been established, for one of which—the Emergency Public Health Laboratory Service—the Government accepted full responsibility. In this work he acknowledged the help of the Harvard Red Cross Medical Unit, which represented by no means the only medical wartime debt which was owing to their professional colleagues in North America.

Again, immunization against diphtheria had become part of the Government public health programme. New methods of attack on tuberculosis had been introduced. The value of miniature radiography must not be overestimated, but it had its use as a means of sorting out the cases which required further examination, and the Minister of Health had undertaken to see that as many sets of apparatus as possible were made available during wartime. A real nutritional policy had been formulated which included collaboration between the Ministries of Health, Food, and Agriculture. There was nothing more praiseworthy than the efforts which had been made in this direction. At last we had obtained as a result of the necessities of the war what had been lacking in the past. A national plan for the collection of hospital morbidity statistics, compiled in accordance with an approved classification, had been set up. Finally, more than ever before, health was in the "news," and prevention had acquired some of the drama of cure.

Encouraging Signs for Peace

There were signs that these gains in time of war would be consolidated. As evidence of the determination to secure much-needed reforms Sir Wilson Jameson mentioned the recent statement of Government policy in relation to hospitals, which was already being implemented by the initiation of surveys in various parts of the country; the adoption by the Royal Colleges of criteria for the training and status of future consultants; the appointment of an interdepartmental committee on the organization of medical schools and the facilities available for clinical teaching and research; and the appointment by the Royal College of Physicians of two other committees—one dealing with the medical curriculum and the other with social medicine. The college had always regarded medical education as one of its main concerns. Here he paid a tribute to the forward policy of Oxford University in establishing a chair of social medicine and to the Nuffield Provincial Hospitals Trust for its support of the university in this venture. Another piece of evidence was the official measures set on foot for the improvement of the status and conditions of work of nurses.

Then there was the setting up by the British Medical Association of the Medical Planning Commission and the character of its interim report. "Surely we are entitled to read into this report a realization on the part of the medical profession that their continued existence as a series of isolated units is in the interests neither of themselves nor of the public they serve. If private practitioners are to take their proper place the medical profession will have to submit to some agreed measure of reorganization."

He concluded with a reference to the part which must be played by the Fellows of the Royal College in moulding the pattern of post-war social reforms. If they were to play their part they must remember Harvey's exhortation to the Fellows and Members in the terms of the Trust by which he brought this annual oration into being "for the honour of the profession to continue in mutual love and esteem amongst themselves."

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THE FATE OF PLASMA PROTEINS IN TRANSFUSION

Whipple and his co-workers,[1] in a series of brilliant investigations covering a period of many years, have shown conclusively that the proteins in the cells consist of a part which is necessary for the life and efficient functioning of the cell and a part which can leave the cell protoplasm without apparently affecting the cell's activity. When for any reason the concentration of the proteins in the plasma is reduced—for example, after haemorrhage—protein leaves the body cells and enters the blood stream. If the amount of protein available in the body cells is adequate, the plasma protein concentration may be restored to its normal value; if the protein available is small, the concentration may reach equilibrium at a value below normal. In this event, restoration to the normal value is effected slowly by a synthesis of new protein by the liver from the products of digestion of proteins in the food.

Beattie,[2] after a study of the effects of haemorrhage in experimental animals, came to the conclusion that movement of protein into the blood stream must take place in substantial amounts within a short time after haemorrhage. In a further paper[3] it was shown that after controlled haemorrhages the rate of addition of plasma proteins to the blood is not parallel to the rate at which fluid enters the blood in order to restore the blood volume to its normal level, and does not depend on the amount of blood withdrawn. Beattie regarded these observations as indicating differences in the amount of protein available in the body cells which could be transferred to the blood stream as plasma protein. It was fortunate that a short time previously Wallace and Sharpey-Schafer[4] had made a series of observations on the effects of haemorrhage on human subjects which demonstrated that exactly similar changes took place in man after haemorrhage. In one subject it was found that an average of 13 g. of plasma protein could enter the blood every hour, over a period of 4 hours. This is probably about the maximum replacement rate, and the general rate is much less. However, it is possible, as Beattie[5] has pointed out, that in the first hour after haemorrhage the rate may be even greater. Mass movements of plasma protein in these amounts are obviously of the greatest importance in the mechanism of recovery after blood loss. Whipple and his colleagues[6] have found that infections may slow down or stop the rise in plasma concentration, and have attributed this effect to the drain on the cellular proteins to provide protein bodies used in the manufacture of antibodies and to replace protein lost in inflammatory exudates. Obviously, then, the state of the "stores" of available protein in the body is of importance in the combating of bacterial infections.

The location of the actual site of the stores of protein which can be mobilized and passed into the blood stream, either to raise its protein concentration or to replace wastage from any cause, is discussed in a paper by Beattie and Collard in our present issue (p. 507). A study of data collected by Sharpey-Schafer and Wallace[7] showed that transfusions of plasma or serum in man could be followed by a rapid removal of fluid from the blood stream, as indicated by a maintenance of the haemoglobin concentration at its pre-haemorrhage level. At the same time there was a parallel removal of protein from the blood: the rate of removal was of the order of 4 to 8 g. per minute. As at the same time there was no indication of a rise in the rate of protein breakdown, it may be presumed that the protein leaving the blood entered the protein "stores." Beattie and Collard show that repeated transfusions of plasma into animals were followed, after considerable quantities had been transfused, by a permanent rise in plasma protein concentration. These findings they interpret as indicating that the cells of the protein "stores" could hold no more protein. The amount of protein which can be removed from the blood in man and animals after plasma transfusions is so great that it seems unlikely that the liver alone can be the storehouse. Beattie and Collard, in the same paper, show that hepatectomized animals can store protein and mobilize protein into the blood stream Consequently the mechanism of protein storage may involve the body cells generally.

These observations are of great practical importance. They demonstrate clearly that the reinforcement of the body's protein reserves may be as important a use for plasma transfusions as their employment to increase blood volume after haemorrhage. The making good of protein losses caused by tissue damage, exudate production, and the formation of antibodies can be effected rapidly from the reserve proteins in the cells, and only much less rapidly by the formation of new protein from the food. A successful defence against bacterial invasion needs ample protein reserves. Apart from these acute conditions, there are many more chronic ones which can be benefited by amplifying the reserve proteins. Once inside cells, the reserve proteins can be used not only to raise plasma protein concentration but also to assist in haemoglobin formation and to provide protein needed to replace normal tissue wastage. The ebb or flow of protein between the cells and the plasma under different conditions emphasizes Whipple's concept that the body proteins are in a state of dynamic equilibrium, the level of which is determined essentially by the state of the protein stores.

CONTROL OF MALARIA IN PALESTINE

Palestine in the last war was the seat of important military operations. It has assumed considerable importance in the present war. Our experiences in 1918 showed it to be a distinctly malarious country, and there seems some ground for believing that malaria might well have led to a less successful issue of the campaign than was fortunately the case. Since then there have been many happenings in Palestine, and many changes. A report of some 40 folio pages, entitled "A Review of the Control of Malaria in Palestine (1918-1941)," recently issued by the Department of Health is, in view of these facts, very opportune. After a brief introduction it gives concisely the salient facts about the population, social and economic conditions, and the physiographical and meteorological features of the country. This is followed by a section on "the anopheles carrier and its habits" and one on "endemicity." In the concluding half or so of the report the control measures that have been undertaken, and their results, are dealt with. Altogether 9 species of anopheles have been recorded in Palestine, of which *A. bifurcatus* (*A. claviger*), from its habit of breeding in cisterns and wells and its close domestic association with man, is outstandingly the most dangerous carrier species, more especially in the towns. In the rural areas *A. elutus*, *A. sergenti*, and *A. superpictus* are all dangerous, as experience has shown them to be wherever they are found. Perhaps the most noticeable feature in respect to species is that *A. maculipennis*, which assumed such importance in Macedonia in the last war, does not occur. Palestine, as a matter of fact, lies just south of the great faunal frontier which in its own sphere, like a political frontier, rules the distribution of species. Malaria is almost everywhere endemic in Palestine, though not as a rule hyperendemic. Epidemic manifestations occur from June to September and from August to September, the former due chiefly to an increase in *vivax* infections and the latter to an increase in *falciparum* malaria. Not the least interesting part of the report is that referring to malaria in relation to our troops in the last war. Whilst stationary on the Auja River line, where antimalarial operations were actively carried out, malaria was not excessively prevalent, but with the advance in September into new country it became a serious menace. How far relative escape from malaria whilst the troops were stationary was due to the operations or to the season not being sufficiently advanced is perhaps uncertain, but there is no question that at the height of the season in October malaria was of tremendous importance both to our troops and to the enemy. The report mentions that German sources give 60% as the incidence of malaria among German and Austrian troops in spite of prophylactic quinine.

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[1] *Phys. Rev.*, 1940, **20**, 194
[2] *British Medical Journal*, 1942, **1**, 459.
[3] Ibid., 1942, **2**, 301.
[4] *Lancet*, 1941, **2**, 393.
[5] Ibid., 1942, **2**, Oct. 17,
[6] *J. exp. Med.*, 1936, **63**, 277
[7] *Lancet*, 1942, **1**, 699.

The Department of Health began to function seriously from 1920 onwards, attention being at first given chiefly to the towns. By 1922 the rural scheme was in full operation. The inspection of areas and the preparation of schemes based on this were an important activity; 15,430 such inspections were made in 1920, 12,429 in 1921, and 13,219 in 1922. By 1923 so much improvement in the general incidence of malaria had taken place that it was found possible to discontinue the free distribution of drugs except in schools. From 1924 onwards intimate and detailed attention to malaria prevention has been the rule in every town and large village. Reclamation schemes, drainage, dusting with Paris green, visitation of schools, arrangements for the supply of quinine, and other methods have been among those most widely employed. The results as shown by general experience and statistics are extremely satisfactory. The percentage of malaria to total treated in the dispensaries fell from 7.2 in urban areas and 3.2 in rural areas in 1922 to a percentage never higher since the last-mentioned date than 0.7. The spleen rate in the children of both urban and rural areas has likewise fallen. Compared with 1919, the figures in this respect are very striking—e.g., in 1919 the spleen rates for Jerusalem, Safad, Haifa, and Jaffa were respectively 44.3, 68.7, 39.0, and 16.6; in 1940 they were 1.6, 1.0, 0.9, and 0. Not only are these operations carried out by the Health Department during two decades highly satisfactory as having achieved great improvement in both urban and rural areas, but the knowledge and experience so gained of the local conditions in relation to malaria and its prevention should be invaluable to the military authorities in this region. Five excellent maps accompany the report.

VITAMIN C AND RESISTANCE TO INFECTION

Much has been written on the role of vitamins in infection, but critical observations on a large enough scale among human communities are relatively few. Glasebrook and Scott Thomson[1] have now reported the results of a careful study of the effects of the administration of vitamin C on the general health and resistance to infection of boys living in their training school. Though published in the third year of the war, the work was done in the peaceful days of 1938. The institution was a large one, and the distribution of food to its population of 1,500 youths aged from 15 to 20 years was badly managed. Often 8 hours elapsed between the time the food was cooked and its arrival on the dining tables. In the meantime it was kept hot in electric ovens. Analysis showed that the total daily intake of vitamin C of each boy was not more than 10 to 15 mg. Urinary saturation tests showed that the vitamin C depletion of the boys was serious. When some 200 mg. of crystalline vitamin C was given daily to groups of boys the urinary output rose only very slowly, and saturation levels were not reached until after 15–23 days. Thereafter the administration of 50 mg. daily maintained excretion at a level indicative of optimal intake. The training school was divided for administrative purposes into divisions, and youths of each division worked as a unit and occupied certain tables in the dining hall. Observations on the relation of vitamin C to resistance to infection were made by supplying pure vitamin C over a period of several months to one or more divisions. The most common infective conditions in the establishment were coryza and "tonsillitis"; the latter term is used by Glasebrook and Scott Thomson as an index of haemolytic streptococcal disease of the nose and throat and covers tonsillitis, sore throat, otitis media, pharyngitis, and cervical adenitis. Of the 335 boys who received vitamin C 21.2% developed common colds and 8.5% had "tonsillitis." Similar figures, 26% and 8.6% respectively, were observed for the 1,100 youths serving as controls. It was thus obvious that vitamin C had no effect on the incidence of either infection Glasebrook and Scott Thomson then analysed the duration of illnesses in boys admitted to sick-quarters, where the period of treatment was completely outside their control. Over six months the average number of days spent in the sick-room due to infective conditions was 2.5 for a boy in the vitamin-C-treated division and 4.98 for a control boy. When the illnesses were differentiated it appeared that the administration of vitamin C had not shortened the duration of the common cold, which lasted on the average 6.3 days in the vitamin-C group and 6.4 days in the untreated youths. The effect on "tonsillitis" was, however, quite dramatic, as the average stay in hospital due to this disease dropped from 16.7 to 10.0 days as a result of administration of vitamin C, and the effect was statistically significant. It is, however, in the analysis of the more serious illnesses that the difference between the two groups was most striking. There were 17 cases of pneumonia and 16 of acute rheumatism among the 1,100 controls, but no case of either disease among the 335 treated youths. These findings again proved of definite statistical significance.

One could hardly ask for a clearer demonstration of the practical importance of an adequate supply of vitamin C; moreover, the findings of Glasebrook and Scott Thomson are confirmed by the results of the wartime mass administration in Germany of vitamin C to children and adolescents,[2] where the treatment seems to have reduced the incidence and severity of "respiratory infections." Compared with such clear-cut results in the field, laboratory work is less conclusive. Fuller, Roberts, Ralli, and Francis[3] have tried to correlate certain immunological reactions in man with the level of vitamin C and of vitamin A in the diet, but found that the capacity of the nasal secretions to inactivate influenza virus, the titre in blood serum of neutralizing antibodies for influenza virus, the activity of lysozyme in the nasal secretions, the titre of complement in blood serum, and the phagocytic activity for pneumococci of polymorphonuclear neutrophilic leucocytes in whole heparinized blood were not affected by wide changes in the intake of vitamin A or C accompanied by wide fluctuations in plasma levels of these vitamins. Two of their subjects were rendered severely deficient in vitamin C without influence on the immunological phenomena. Such negative findings will doubtless stimulate further research. In the meanwhile war conditions offer both incentive and opportunity for the study of the more practical aspects of the relation of vitamins to infection. There are welcome signs that medical men in the Forces and among the civilian population are giving this urgent matter the attention it deserves.

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[1] *J. Hyg.*, Camb., 1942, **42**, 1.
[2] *Ernährung*, 1941, 6, 269.

RAT-BITE FEVER

Though cases of so-called rat-bite fever are continually reported from all quarters of the globe, few have come to light in this country. The last two clinically typical cases described in England followed cat-bites, and in only one instance was an agent, *Spirillum minus*, isolated. Most workers have accepted *Sp. minus* as the aetiological agent in this disease since its isolation by Futaki *et al.*[4] in 1916. They described their micro-organism as a spirochaete, but because of its rigid body and terminal flagella Robertson[5] suggested its inclusion under the spirilla. Many unexplained clinically typical spirillum-negative cases have, however, been described from Japan and other countries. It now seems possible that these have been caused by infection with *Streptobacillus moniliformis*, which has been occasionally isolated in the past from various human illnesses, but until recently has not been seriously considered as a cause of rat-bite fever. In 1933 Strangeways[6] found that *Str. moniliformis* was apparently a normal inhabitant of the nasopharynx in 50% of the laboratory rats which she examined and was also present in four wild rats. This is in striking contrast to the unsuccessful attempts to demonstrate the spirillum in the mouths of rats. *Str. moniliformis* does not grow readily on ordinary laboratory bacteriological media, but grows well on the special solid and liquid media which have been devised for its culture. When possible cases have turned up in the past the usual procedure has been to inject the patient's blood, a lymph gland from the inflamed region, or a piece of the excised wound into guinea-pigs or mice shown not to be harbouring any spiral micro-organisms. Recently Brown and Nunemaker,[7] in a review of the literature and cases occurring in the U.S.A. from 1916 to 1940, found that comparatively few cases of proved spirillar aetiology have occurred. They point out that in every case both *Sp. minus* and *Str. moniliformis* should be sought for. With the use of the new special media for the latter it is interesting to note that of 9 recorded cases which occurred in the U.S.A. in 1939-40 an alleged aetiological agent was isolated in 5: *Str. moniliformis* four times and *Sp. minus* once. They themselves have investigated 8 cases, from 3 of which they isolated *Str. moniliformis*, and in the other 5 the patient's serum agglutinated the organism to an abnormally high titre. Larson[8] has also recently described 3 cases in the U.S.A., from one of which *Sp. minus* was obtained by animal inoculation; *Str. moniliformis* was isolated in a second, and was agglutinated to a high titre by the serum of the third case. None of these investigators has ever isolated both organisms from the same case. In both types of infection the main clinical features are the same. The wound at the site of the bite usually heals without any signs of local inflammation, but after about a week or two induration without suppuration occurs. Fever of a relapsing type develops, along with regional adenitis and lymphangitis. The remission of the fever is usually accompanied by decrease in the severity of the inflammation. A rash of some kind has been described in all the streptobacillus cases and many of those of sodoku. Both types usually show a leucocytosis. Brown and Nunemaker found that the most striking difference between the two types of illness was the high incidence of joint involvement in the streptobacillus cases. However, when Hershfield *et al.*[9] inoculated a large group of patients with *Sp. minus* as a method of treatment, 25% developed arthritis. Sera of a moderately high percentage of both types give a positive test for syphilis. The response to treatment with one of the antisyphilitic arsenicals is usually dramatic and complete in spirillar cases, but has not been so well marked in those caused by the streptobacillus. Recent successful chemotherapy with gold salts in the experimental disease of rats and mice with the streptobacillus and the related pleuropneumonia group of organisms suggests that this is probably a more suitable treatment for human cases of rat-bite fever of this type. Though few cases are likely to be seen in this country it is one more diagnosis to be considered in cases of so-called "P.U.O." with a rash and arthritis. Cases have been reported after bites by cats, ferrets, weasels, and ground-squirrels, dog contacts, cat scratches, and trauma; in one of the last probable cases described in England the patient had no knowledge of any such cause—but his barn was overrun with rats. This list suggests ample scope for possible infection of the large male population in the field in Great Britain.

THE CATARACT OPERATION

Cataract extraction has undergone steady and almost imperceptible changes during the last 20 years. Preliminary iridectomy, which some of the older surgeons used as a routine, is now performed infrequently and only in specially selected cases. Vitreous loss, which was the bugbear of the operation, is now a rarity in uncomplicated cases. This has been achieved largely by the introduction of blocking of the facial nerve at some point or other on its course to overcome squeezing of the eyelids on the part of the patient. Some surgeons use retrobulbar anaesthesia either by itself or with facial blocking, though most avoid this form of anaesthesia because of the lowering in tension it produces, sometimes making extraction of the lens a matter of some difficulty. With improved technique has come a revival of interest in the perennial problem of intracapsular extraction, and an increasing number of operators are resorting to this. One of the main objections to intracapsular extraction from the day it was first mooted about 70 years ago has been the greater tendency to loss of vitreous, and most operators have preferred a larger percentage of satisfactory results to a smaller percentage of brilliant results. With present-day anaesthesia the danger of vitreous loss is appreciably less, and the objections which were previously valid may no longer hold, and it must be recorded as a fact that, whereas before intracapsular extraction was done only exceptionally by operators with special facilities, at the present moment its use is fairly widespread. An interesting contribution to this unsettled controversy comes from M. Klein[1] in an extensive survey of cataract extractions performed by the intracapsular method. The complications recorded are not formidable and compare favourably with results obtained by more standard methods. What is of particular significance in Klein's paper is the challenging suggestion that the vitreous loss is an overrated danger to the eye. The accepted teaching, which is well grounded, that vitreous loss carries with it a possibility of slow infection and retinal detachment is not supported by Klein's careful studies. It is possible that the apparent contradiction between the results reported by him and the accepted teaching reflects the change that has taken place in the operation and its complications. With the older methods of anaesthesia vitreous loss was generally on a formidable scale, and with the present methods this does not often happen. Slight vitreous loss, as Klein rightly insists, is a different entity from massive vitreous loss. This is perhaps the key to the paradox.

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[3] *J. clin. Invest.*, 1942, **21**, 121.
[4] *J. exp. Med.*, 1917, **25**, 33.
[5] *Ann. trop. Med. Parasit.*, 1924, **18**, 157.
[6] *J. Path. Bact.*, 1933, **37**, 45.
[7] *Johns Hopk. Hosp. Bull.*, 1942, **70**, 201.
[8] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 1961.

TOXICITY OF MERCURIAL DIURETICS

Recent reports of a number of sudden deaths in America following the administration of mercurial diuretics have prompted further investigation and a review of the subject. De Graaf and Nadler,[2] from a study of the literature, concluded that excessive diuresis may sometimes lead to dehydration and chloride loss sufficient to cause restlessness and confusion. A rapid diuresis is unsafe in a patient being given full doses of digitalis, as it may bring on the typical signs and symptoms of digitalis poisoning through mobilization of the drug from the tissue fluids. The toxic reactions most closely related to mercury itself are the disturbances of kidney and gut. On the gastro-intestinal tract the effect is characteristically stomatitis, salivation, and haemorrhagic colitis; but the use of theophylline-mercury derivatives may be expected to lessen the risk of mercurial poisoning owing to the more rapid excretion of the drug. The main changes in the kidneys comprise degeneration of the tubular epithelium, manifesting itself by the appearance of hyaline and granular casts, albumin, and white and red cells in the urine. This is presumably only an extension of the renal irritation responsible for mercurial diuresis, and so the presence of kidney disease is a contra-indication to the use of mercurial diuretics, though such complications are comparatively rare. Chills, fevers, and reactions suggestive of anaphylaxis are probably seen no more often than with any other drug, and may sometimes be avoided thenceforward by changing to another of the mercury derivatives. The immediate fatalities so far recorded fall into an entirely different category. Within 2 to 6 minutes of the completion of an intravenous injection of a mercurial diuretic the patient coughs, flushes, and collapses; on examination the pulse is imperceptible. On some occasions[3] [4] there is clinical evidence of a disordered action of the heart, with forceful irregular ventricular beats. This is comparable to the effect of injecting an excessive dose of the mercurial diuretics into healthy dogs[3] or cats,[5] in which electrocardiograms and direct observation show depression of the T wave and extra-systoles, followed by ventricular fibrillation and death. Acute fatalities have been recorded in sufferers from congestive heart failure[4] and other disorders of the heart, as well as in kidney disease. This is only to be expected from the rapidity of death after intravenous injection of a fatal dose, though De Graaf and Lehman[5] suggest that theophylline may modify the acute toxicity of some of the mercurials by hastening their excretion by the kidneys. These workers have also shown that "esidrone" is much more toxic than the other mercurials for an equivalent weight of mercury. In a small number of fatal cases there were premonitory symptoms during a previous injection, such as a transient rash resembling measles, dyspnoea, and cyanosis.

Due attention should be paid to such warnings. But it is necessary to correct the ominous impression that this account may have given of the mercurial diuretics. The number of fatalities so far recorded is very small compared with the large scale on which such drugs are used. Provided reasonable precautions are taken and administration is stopped when untoward reactions occur, there is no reason to restrict their use in suitable cases.

WORK FOR THE BLIND IN WARTIME

The blind community of England and Wales numbers 74,324, of whom 1,626 are under the age of 16. A fine example of British resilience under adverse conditions is given by the wartime work of the National Institute for the Blind as told in its annual report.[1] Far from accepting a purely defensive rôle on the outbreak of hostilities, the Institute moved into new fields of activity and was soon ready to deal with any war-blinded casualty that might occur among civilians. In this service an important part is played by the homes of recovery, where the newly blinded, from any walk of life, are nursed back to emotional health and prepared for the changed life ahead. There the terrifying reactions to sudden loss of sight "fade away in peaceful surroundings and days of interesting work and pleasure." Meanwhile, the normal services continue. Production of embossed literature has been halved by the paper shortage, but there has been a steady flow of short and topical reading matter. Also, to keep its blind operatives employed, the Institute has been preparing the stereo plates of a number of monumental works which will be printed when paper restrictions are at an end. The war has not hindered the massage services, and the section of the report under this heading will be of particular interest to medical readers, as giving proof of what blind masseurs and masseuses can accomplish after training by experts. With regard to employment generally, which is always a difficult problem, it is said that the labour shortage created by the war is "the golden opportunity for blind labour," and a committee has been set up to secure larger use of the blind in "sighted" factories. The latest annual report of St. Dunstan's is a 6-page leaflet issued from the administrative offices, Inner Circle, Regent's Park, N.W.1. It contains an article, "You Have Conquered Blindness," by the Chairman, Sir Ian Fraser, which might well be read aloud to every newly blinded Service man and woman in the very early days of his or her misfortune.

The Robert Jones Memorial Lecture, on "Congenital Dislocation of the Hip-joint," will be given by Prof. Harry Platt at the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., on Wednesday next, November 4, at 3.15 p.m.

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[1] *Brit. J. Ophthal.*, 1942, **26**, 93.
[2] *J. Amer. med. Ass.*, 1942, **118**, 1006.
[3] Ibid., p. 1001.
[4] Ibid., p. 1004.
[5] Ibid., p. 998.

[1] Obtainable from 224, Great Portland Street, W.1.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

MEDICAL ASPECTS OF HEAD INJURY

BY

W. RITCHIE RUSSELL, M.D., F.R.C.P.Ed., M.R.C.P.

Temporary Major, R.A.M.C.

The title of this paper is inappropriate, for there are no exclusively medical aspects of head injury. Surgeons, medical neurologists, and psychiatrists have all contributed to our knowledge of the subject, while experience of working in a hospital for head injuries makes it evident that those who wish to treat these injuries should be familiar with all three aspects of the condition, whether they be surgeons, physicians, or psychiatrists. In this short article I shall refer to elementary aspects of head injury which will be of practical help to those who treat these cases and to those who as yet have made no special study of the subject.

Those who have witnessed a severe closed head injury can readily appreciate the popular alarm which is prompted by this form of trauma. The sickening thud as the head strikes on a hard surface is followed by a physical state which is nearly related to death and which must necessarily suggest serious injury to the brain. Moreover, in medical practice we are all familiar with cases of the chronic post-concussional syndrome, which appears to cause marked disability for many years. These patients are unhappy invalids and are often resistant to treatment. Experience of cases such as these causes both the medical officer and the layman to take a pessimistic view with regard to prognosis in cases of head injury.

It is important, therefore, that there should be a clear understanding regarding the incidence of symptoms following head injury. Figures for Service cases are not yet available, but in the civilian closed injuries from road accidents, falls, etc., the following figures indicate that the incidence of post-concussional symptoms is much lower than is generally realized and that the duration of disability is surprisingly short.

In Table I 200 consecutive patients, admitted to the Royal Infirmary, Edinburgh, were interviewed 18 months after their head injury. They were asked about their symptoms since leaving hospital (including slight ones, such as nervousness, occasional headache, or giddiness); and the duration of any symptoms referable to the injury was noted.

Table I.—*Duration of Symptoms (Severe or Slight) after Head Injury in 200 Unselected Cases*

Duration of Symptoms	No. of Cases
Under 2 months	80
2–6 months	11
6–18 months	30
Over 18 months	79

It will be seen from the table that in 40% of cases there were no symptoms after 2 months, but in an equal number symptoms (often slight) persisted for over 18 months.

Table II.—*Duration of Unfitness for Full Work in 100 Working Men and Women under the Age of 50—Compensation Cases excluded.*

Interval after Injury of Successful Return to Full Work	No. of Cases
Under 2 months	61
2–6 months	26
6–18 months	7
Unfit after 18 months	6

The severity of the post-concussional symptoms in the average case of the working man or woman is indicated by Table II, where the period off full work (following the injury) is recorded.

It should be noted that 87% had returned to *full* work within 6 months of the injury. Compensation cases and patients over 50 years of age were excluded.

Table III compares the period off work with the severity of the injury (as indicated by the duration of post-traumatic amnesia). This group consists of 92 working men and women under the age of 40.

Table III.—*Duration of Unfitness for Full Work compared with Duration of Post-traumatic Amnesia*

Interval after Injury of Successful Return to Full Work	Duration of Post-traumatic Amnesia		
	1 hour	1–72 hours	Over 72 hours
Under 2 months	30	25	4
2–6 months	1	8	13
6–18 months	1	3	3
Unfit after 18 months	0	1	3
Totals ..	32	37	23

This table gives a striking indication of the quick return to work of young people, even after severe injuries.

Table IV.—*Duration of Unfitness for Full Work compared with the Presence of Fracture of the Skull*

Interval after Injury of Successful Return to Full Work	Fractured Skull	No Fracture
Under 2 months	11	31
2–6 months	17	10
6–18 months	6	2
Over 18 months	6	7
Totals	40	50

In Table IV the rates of return to work in those with and without a fracture of the skull are compared: it demonstrates clearly that the duration of disability bears little relation to the presence of fracture.

These tables indicate that, though head injury may cause permanent damage to the brain and, in some, symptoms of varying degree, these disabilities should only rarely prevent resumption of manual work within 2 to 6 months of the injury. Reduction of efficiency is common after severe injuries, but is rarely sufficient to cause much disability. It is obvious, therefore, that far from being pessimistic regarding the prognosis after head injury, we can usually be confidently optimistic. The importance of expressing this optimism during treatment will be stressed.

I shall not here refer to the treatment of the acute stage. The recognition of complications in the early days, such as cerebral compression by haemorrhage, depends chiefly on the study of the temperature, pulse, blood pressure, and respiration, the degree of consciousness, and the development of abnormal neurological signs such as hemiplegia.

Meningitis is one of the most dreaded complications, but is often prevented by modern surgical treatment of wounds and by chemotherapy. All cases in which there is a persistent discharge of cerebrospinal fluid from the nose, however slight it may be, should be transferred promptly to a neurosurgeon so that he may close the meningeal fistula and thus prevent the dangerous complication of meningitis. The earliest signs of meningitis are a delayed rise of temperature, neck rigidity, and increased clouding of consciousness. An early increase in the white cell count in the cerebrospinal fluid provides the first evidence that this complication is developing. When the fluid is blood-stained both red and white cells must be counted to enable this pleocytosis to be recognized. Blood contamination of the cerebrospinal fluid will account for only one or two white cells per thousand red blood cells.

Complications which Often Cause Unnecessary Alarm

To those who are unfamiliar with the varied clinical course that may follow head injury it may be helpful to consider certain complications which sometimes cause needless anxiety and unnecessary operation.

An *epileptic fit* occurring during the first two or three weeks, whether local or general, does not indicate any serious complication unless it is followed by clinical evidence of further damage to the brain, such as hemiplegia; nor are these cases much more liable to develop traumatic epilepsy after recovery.

Delayed facial paralysis is common when there has been bleeding from the ear. The paralysis, which is usually complete, comes on within two or three days of the injury, and is probably due to some chemical change in blood clot in the facial canal. The paralysis should be treated as in Bell's palsy; recovery occurs usually in a few weeks, but sometimes by regeneration after several months (see below).

Neck rigidity is often thought to be due to meningitis, but is usually due to subarachnoid haemorrhage. Both these complications, however, may coexist; they can then only be clearly distinguished by counting the red and white cells in the cerebrospinal fluid as described above. Injuries to the cervical vertebrae are referred to later.

Bradycardia.—Abnormal slowing of the pulse often develops 2 to 4 days after severe closed head injury, and may continue for 2 weeks or more. During this period a pulse rate of 40 to 50 a minute is not uncommon. This complication need cause no anxiety, provided there is no associated deepening coma or other neurological evidence of progressive cerebral compression.

Papilloedema.—Contrary to much former teaching, increased intracranial pressure is seldom a dangerous complication in uncomplicated head injury. Papilloedema is not often present, but it occasionally develops to a slight degree 1 to 3 weeks after severe closed injury. This complication may occur without there being intracranial clot or other similar complication; apart from delaying convalescence, it is in itself of little importance.

Prolonged confusion or delirium is common after severe closed head injury and may continue for several weeks. This is not usually due to any vascular complication, such as cerebral oedema or compression by clot, but is apparently dependent on the nature of the original brain commotion. Careful nursing, with forced food and fluids if necessary, is the most important part of the treatment of these cases. Remarkably good mental recovery ultimately occurs in many severe cases, and a bad prognosis in this respect should not be given during the period of confusion. Sedatives should be avoided so far as is possible, as these delay mental recovery. Physical restraint should be minimal; after the early days a bath, sitting in a chair, or a walk along the ward will do no harm and often relieves restlessness.

Associated Injuries.—These may cause confusion in diagnosis and are easily overlooked. Injury to the cervical vertebrae sometimes results in weakness of the arms or legs which may be mistaken for cerebral paralysis. This injury causes a painful stiffness of the neck, movements of rotation being specially affected—unlike the stiffness due to subarachnoid haemorrhage or meningitis, which affects forward flexion of the head. Tearing of the brachial plexus may be a cause of paralysis, as also may fractures of the extremities or dislocation of joints; such paralysis is sometimes erroneously thought to be due to the brain injury.

Examination during Recovery—Repeated examination during recovery should be made with a view to determining whether mental and physical functions are being restored. Regarding the intellectual functions, the unskilled observer is often misled by the patient's statement that he has quite recovered and by his apparently normal speech, when in fact he is still confused and disorientated. Disorientation for time and place is common, the patient often thinking that he is living in a period several years earlier. For example, a Polish airman seen recently after a crash was convinced that he was in Poland; he said the year was 1936, and that he had crashed in a German sports plane: he discussed intelligently the prospects of future war with Germany. As the intellectual functions recover, this long retrograde amnesia usually shrinks to a period of less than half an hour before the accident. Questions and discussion regarding recent world news will give a good idea regarding the state of intellectual recovery. Simple memory and calculation tests may also be used. When there is evidence of dysphasia this requires careful investigation.

Physical Examination

Physical neurological examination is necessary to detect damage to cranial nerves and brain. *Anosmia* is common in severe fractures of the anterior fossa and in occipital injuries (by contre-coup). This disability is usually permanent, and of course renders the soldier unable to detect many poisonous gases, including coal-gas. Damage to the *optic nerves* or *chiasma* is also usually permanent, and is recognized by loss of vision, by defects in the visual fields, and by pallor of the optic disks, which appears in about two weeks. Most *oculomotor palsies*, even when complete, recover well after a few weeks; but damage to the superior oblique muscle or its nerve may result in permanent diplopia. Ophthalmologists have recently discovered how to cure this disabling diplopia by operation.

Damage to the branches of the *trigeminal nerve* produces areas of anaesthesia over the face. This usually causes no disability, but sometimes leads to a troublesome form of neuralgia, which may be difficult to relieve even by operation on the nerve.

Peripheral *facial paralysis* associated with fracture of the base of the middle fossa may be immediate or delayed, as referred to above. Many of these cases recover completely in less than two months. Others recover gradually by regeneration over a period of up to 18 months; but this recovery may be incomplete, as in comparable cases of Bell's palsy. Recovery by a process of regeneration is recognized by faulty voluntary control of the facial muscles—attempts to move the upper facial muscles causing movements round the mouth, and vice versa. Complete failure of recovery after traumatic facial paralysis is extremely rare.

Fracture through the base of the middle fossa with haemorrhage into the middle-ear causes slight *middle-ear deafness* but no permanent disability. *Inner-ear deafness* is usually permanent, and occasionally becomes progressively worse. *Tinnitus*, often associated with inner-ear deafness, may be permanent, causing mental discomfort, which varies according to the loudness of the tinnitus and the patient's sensitivity to this irritating symptom; in many cases it occasions no disability and requires no treatment. *True vertigo* may also be troublesome.

Gross injury to the cerebral hemispheres, causing, in the acute stage, hemiplegia, astereognosis, homonymous hemianopia, or aphasia, often recovers well. Most of the possible recovery occurs within 3 months, and thereafter slight improvement continues for as long as 2 years.

Treatment during Recovery

In most cases of closed injury in young subjects a good recovery can be confidently predicted if the patient survives the first 24 hours. It is noteworthy, therefore, that within a short period of admission to hospital the atmosphere around the patient should change from one of anxious care to that of cheerful optimism. The second stage should be reached, if possible, before recovery of full consciousness. The patient's mental reaction to recovery of consciousness in bed, surrounded by dim lights and shadowy figures, with a splitting headache, confused thoughts, and complete amnesia for the reason of it all, may be almost catastrophic, and frequently sows the seed of a future anxiety neurosis. Medical and nursing personnel often aggravate this reaction by talking to him of severe concussion, fracture of the base, probable long incapacity, and possible after-effects. These sadistic activities must be rigorously suppressed. Nurses and relatives must be clearly told, whenever possible, that an excellent recovery is expected within a reasonable period. The patient's fears regarding his amnesia for the accident and its possible effects are relieved by simple explanation, and the expectation of good recovery is impressed on him. It is obvious that in cases with destructive lesions of the brain causing perhaps hemiplegia or aphasia the prognosis must be more guarded. It is important to remember, especially if there is a personal or family history of nervous instability, that head injury is one of the most common nuclei around which a patient will weave neurotic symptoms or exaggerations of slight bodily sensations. Careful convalescence and rehabilitation under intelligent and interested medical supervision have proved to be of the greatest value in ensuring the quickest and most complete recovery.

The period of rest in bed is the first point to consider. There are commonly applied rules for cases of fracture of the skull that are better discarded, as the radiograph gives little indication of the degree of brain damage. There is no need to keep a man who feels perfectly well after head injury lying in bed for 3 to 4 weeks just because the radiograph shows a slight fracture. His symptoms and clinical state provide the best basis on which to judge of the necessary period of rest.

In the average case the patient should be kept strictly in bed for about 7 days after full return of consciousness, or 5 days after relief from headache. Thereafter, allow him up for half to one hour more each day, according to the severity of the injury; slow down this process, or reverse it with a whole day in bed, if symptoms recur. After he has been up all day with little or no symptoms, start graduated physical exercises of a degree which causes little headache or dizziness, and work up gradually to the full exercises of the fit soldier. While little attention should be paid to slight headache or dizziness, medical supervision should be continued, as some patients require slower convalescence than others and some should not be expected to do the heaviest forms of P.T. in the early months following the injury. Some patients will require to be kept back, while others need encouragement. Under ideal conditions the same medical officer will supervise the case till the patient is fit to return to duty.

Prognosis

The prognosis and duration of treatment in all cases, whether acute or chronic, depend on three main factors: first, the severity of the injury, as indicated by the duration of amnesia and clinical evidence of brain damage; secondly, the age of the patient—if under 30 recovery is usually very good, it is slower between 30 and 40, and at over 40 it is often definitely slower and less complete; finally—and often the most important, as Symonds has stressed—the patient's previous personality and intelligence. The man with a good brain and personality recovers best; while the neurotic, the psychopathic personality, and the mentally dull often recover slowly and with many setbacks. An essential part of the investigation is therefore an inquiry into the soldier's previous intelligence, work and service record, tendency to neurosis, and family history.

An *approximate time-table* for closed head injuries with no complications or evidence of gross brain damage is as follows, severity of injury being roughly estimated by the duration of post-traumatic amnesia:

Slight cases—amnesia less than 2 hours—should be fit for full duty, category A, in 3 to 6 weeks. Delay for 2 to 4 weeks if fractures of skull are extensive or if symptoms are severe.

Moderate cases—amnesia of 2 to 48 hours—should be fit for full duty, category A or B, in 1 to 4 months, according to severity of post-concussional symptoms.

Severe cases—amnesia of over 2 days—should be fit for duty in category A, B, or C in 3 to 6 months.

This programme suits the average case of closed head injury, but a small proportion from all three groups will be permanently unfit for any form of service. The chief causes of permanent unfitness are:

1. *Physical destruction of brain tissue or of cranial nerves*, causing, for example, hemiplegia or hemianopia.

2. *Intellectual and Memory Impairment.*—This rarely occurs in young patients to an incapacitating degree, but is commonly severe in those over the age of 40 who have had very serious injuries. It produces considerable disability in N.C.O.s, especially if their previous intelligence was below the average. They are forgetful, are easily flustered, and quickly break down with anxiety, depression, and psychogenic headache. A slight degree of intellectual impairment often causes no noticeable disability to the private soldier, unless his previous intelligence was low. Transfer to the Pioneer Corps may sometimes be a satisfactory method of disposal. Intellectual impairment may result in a striking change of personality with behaviour disorder. This occurs most frequently in children and in adults of unstable personality. Soldiers of this type usually prove to be unfit for further service.

3. *Traumatic epilepsy* develops in about 3% of closed injuries, but in a much larger proportion after penetrating gunshot wounds. The fits usually develop 3 to 18 months after the injury; but the onset may be much later, especially after penetrating wounds.

4. *Organic Complications during Convalescence.*—Though the great majority of cases of head injury improve steadily and satisfactorily during convalescence, it must be remembered that chronic subdural and chronic extradural haemorrhage, delayed cerebral haemorrhage, arteriovenous aneurysm, cerebral abscess, and meningitis are occasional delayed complications. Abnormal drowsiness and other evidences of impaired cerebral function are important early signs of those complications, and call urgently for full investigation of the case, as prompt surgical treatment may be required.

5. *The Chronic Post-concussional Syndrome.*—This syndrome consists of symptoms such as headache, dizziness, nervousness, loss of concentration, and anxiety, which persist indefinitely after a head injury that is often slight. The headache is in many cases described as "terrible," is frequently continuous, and is not relieved by headache powders. The dizziness is seldom due to true vertigo, but is usually a feeling of light-headedness during which "things go black" and the patient requires to steady himself or to sit down for a few seconds to get relief. On careful analysis of the chronic cases it generally becomes apparent that the physical symptoms are slight but are grossly aggravated and exaggerated by psychological factors, of which, as a rule, anxiety is the most prominent—the patient having become "head-conscious," in the same way that the dyspeptic may become "stomach-conscious."

This troublesome syndrome can usually be prevented if convalescence and rehabilitation are organized and supervised as described above. The point to be emphasized is that though headache, dizziness, and nervous symptoms may persist as occasional post-concussional complaints for many months or even years, they cause negligible disability in the stable young soldier or airman.

The mental attitude of some Service patients to their injury corresponds to that observed in civilian compensation cases, and consequently the duration of disability is prolonged by the aggravating effect of anxiety neurosis or sometimes by deliberate exaggeration. In soldiers a fear of future head injury is a common cause for anxiety, and may develop, for example, when doing guard duties at night.

It is important to realize that graduated physical re-education will do these chronic cases no harm, and indeed has been proved to be the best treatment for the chronic headache and dizziness: it must, however, be combined with simple psychotherapy.

Psychoneurosis following head injury is more easily prevented than cured, especially when there is an element of malingering; but much can be done by explanation, encouragement, physical re-education, and discipline. For the difficult cases, duties should be chosen which suit individual temperament, interests, and capabilities. A feeling of discontent or a sense of grievance will greatly increase the difficulty of handling these cases.

Conclusion

It should be noted that modern treatment of head injuries aims at returning the soldier to duty sooner than some old traditions would allow. As has been pointed out, this programme is based on a study of the quick rate of recovery in patients of good type in whom there was no compensation or other factor which retarded progress. Experience has fully justified this aim, and has led to a considerable reduction in the period of disability. We have some failures, but even with these it is evident that vigorous methods of physical rehabilitation have at least done no harm.

In an experimental investigation into the effect of plasma transfusion on serum proteins, E. W. Shearburn (*Surg. Gynec. Obstet.*, 1942, **74**, 343) fed dogs with what was essentially a protein-free diet. On this diet the blood protein and blood volume decreased. A single transfusion of plasma calculated to restore the concentration of serum protein to animals proved ineffective, but the hypoproteinaemia was corrected by small plasma transfusions given once or twice daily.

CLOTHES AND FUEL SAVING

BY

Sir LEONARD HILL, LL.D., M.B., F.R.S.

If when France fell and her coal supply ceased our miners had all been kept in the pits and none enlisted, through foresight of future demands of new munition factories, no shortage of fuel would have resulted. The shortage has now come at a time when there is rationing of food, and particularly of fats, which have the highest heat-producing value, and of clothes by means of which body heat is conserved. If no fires are lit and people feel cold they can keep warm by greater activity, some 80% of the energy spent in muscular work appearing as heat. In consequence, however, there will be greater need of food, and if this is not available, loss of body weight. The alternative is to put on more clothes, and this is the most economical plan. Eskimos, Arctic travellers, and airmen keep warm by suitable garments enclosing all the body except the face in wind-proof manner. An Eskimo clad in furs will watch by a seal hole for hours, and even days, when there may be 50 degrees or more of frost and Arctic winds blow. Roman Catholic priests nurtured in Europe live in the far north in like manner with the Eskimos, whose diet of fat fish and seal meat and blubber is of high energy value. The greatest saving of fuel will be made if people will clothe themselves so that the temperature of factories and rooms can be kept at a lower level than usual. For those adequately clothed only enough artificial heat is needed to keep the hands warm enough for doing skilled work. To effect this great saving the clothing ordinarily worn out of doors for travelling can be brought into use, an overcoat, cloak, or raincoat being worn over the underclothes. The factory workers can wear their warmest underclothing under the trousered overalls supplied for their work.

Conservation of Body Heat

The northern Chinese withstand months of rigorous cold weather, using little fuel, by wearing long-sleeved wadded gowns, and wadded trousers bound round the ankles. The thin "undies" and skimpy dresses of women require warm rooms in winter; to save fuel they must be amplified as set out above. It is not the fibre of a garment which protects from heat loss, but the air which—a bad conductor of heat—is entangled in the woven mesh and between the layers of clothing. This air, if kept stationary in the meshes of the garments, becomes warmed up nearly to body temperature. Draught or wind must be prevented from blowing this air away, and replacing it continually by fresh cool air. A given volume of fur contains about 2% of solid and 98% of air, and an animal orientates to wind so as to keep its fur from being disordered. Fur and feathers have very great heat-retaining power combined with lightness and flexibility. The water bird by greasing its feathers keeps the water out. A penguin maintains a body temperature some degrees higher than ours when exposed to blizzards and 50 or more degrees of frost. Sedentary workers can keep warm at their desks, as they do when travelling in a car, by wearing an overcoat, a rug round the knees, and, if needed, a hot-water bottle at the feet. So protected, with no fire and window open, work can be done with improvement in health, as in the case of patients given open-air treatment.

While children taken from city tenements are benefited by exposure to open air and sun, this must not be beyond their power of assimilating food and increasing body heat production. Open-air workers suffer little from so-called "colds." These affections are spread by infection in shut-up artificially heated rooms. In sanatoria it is the nurses, who use such rooms when off duty, and not the patients exposed to open-air conditions, who catch "colds." "Colds" only affect Arctic settlements when ships visit them and bring in infection. It will be far better for health to wear more clothes than to cut down ventilation of factories in order to save fuel.

Protective Value of Fabrics

The heat capacity of water is more than 3,000 times, and its thermal conductivity at least 240 times, that of air. The cooling power of water is thus very great. The effect of cold wind is also great. The heat loss of a naked man in a room at 40° F., with the air moving at a rate of 6¼ ft. per second, was twice as great as when clothed. The cooling power of the environment and the protective effect of clothes can be measured by the katathermometer—a large-bulbed spirit thermometer—which is warmed above 100° F., the time to cool from 100° to 95° F. being then taken with a stop-watch. Three knitted gloves put on the "kata" reduced the cooling power to about one-third of that of the naked instrument when suspended in air. The cooling power of water exerted on the naked "kata" was fourteen times that of air at the same temperature. If a thin rubber glove be put on over a thick woollen glove and the "kata" put in water its cooling is very greatly lessened compared with a naked "kata." The protection becomes considerably less when the under-glove is wet, but is still noteworthy, some air being entangled in the wet glove and evaporative loss impeded by the rubber glove. Wool is the best material to wear when clothes are wet, for it does not cling to the skin owing to its elastic fabric. Otherwise, so far as concerns warmth, it is the weaving and not the nature of the fibre which matters. Smooth-woven linings to coats increase their wind-proofness. Water-proofed garments are also wind-proof. Some years ago on inquiry of the Board of Trade concerning the maintenance of life in shipwrecked people, Argyll Campbell and I carried out tests on the heat loss of man when exposed to wind and splashing of waves, and found that a one-piece suit of water-proofed material, designed for them by Sir Robert Davis, lessened such loss by about one-half—that is, when worn over ordinary clothing.

I drew the attention of the Minister of Transport to this research, with the result that our merchant seamen are now all provided with a two-piece dress, designed by the Ministry, made of light oilskin material, and coloured yellow to be visible to air pilots. The dress packs into its hood and can be always carried in the same way as is a gas-mask. This dress adds greatly to their powers to resist exposure when the sailors, after wrecking of their ships, are in boats or on rafts. Given warmth and enough water to drink, they can survive with little or no food for many days.

Physiological Common Sense in Hot Climates

Black or dark garments are worn in cold climates, because the dark colour absorbs the radiant heat of sun and sky, while white is worn in the Tropics because it reflects much of the rays. The black skin of the negro, absorbing the rays, is excited to transpire water vapour and sweat; the glistening moist skin then reflects the rays. Protected by pigment the negro skin can be thin and heat loss is thus made easy from shaded parts. Convention should not keep white children clothed in the Tropics; they should go nearly naked and tan in the sun. Heatstroke is favoured by tight clothes, crowding, hot ground, high humidity of the air, and little wind. It results when the sweat glands cease to be effective; and can be warded off by a wet sheet placed over the patient and a fan set to blow on this and cause evaporative cooling. To secure efficiency of work in hot surroundings clothes must be mostly discarded, ventilation made adequate, and enough water for drinking supplied to keep up sweating. This is best slightly salted to balance the loss of salt in the sweat. The diet must be a light one so as to reduce heat production in the body.

At a quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men, held on Oct. 7, the chairman, Dr. R. A. Young, senior vice-president, reported the death of the president, Mr. V. Warren Low, who had held office for thirteen years, and whose death will be a great loss to the society, as he had always taken the greatest interest in its work and was rarely absent from meetings. One new member was elected, and the audited accounts for the half-year ended June 30 were presented and approved. The receipts amounted to £3,611; the half-yearly grants to widows came to £1,937; and £2,090 had been invested in Defence and Saving Bonds. After being in abeyance for some years it was decided to make a Christmas present of £7 10s. this year to each widow in receipt of grants. Membership of the society is open to any registered medical man who, at the time of his election, is residing within a twenty-mile radius of Charing Cross. Relief is granted only to the widows and orphans of deceased members. Full particulars may be obtained from the Secretary, 11, Chandos Street, W.1.

Reports of Societies

STILLBIRTH AND NEONATAL MORTALITY

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on Oct. 17, Dame LOUISE McILROY presiding, a discussion took place on "Stillbirth and Neonatal Mortality."

Prof. D. BAIRD (Aberdeen) said that statistical analyses showed great differences in this mortality as between one country and another and between different areas of the same country. In 1936 in England and Wales 25,045 stillbirths and 18,200 neonatal deaths were recorded. It had been long recognized that infant mortality was largely dependent on poverty and low standard of living, and stillbirth and neonatal mortality rates might be similarly influenced. The exact cause of stillbirth was often difficult to determine, especially in domiciliary practice; and even in hospital, with the aid of routine post-mortem examinations, it was not easy. The appendix to the Registrar-General's report for Scotland (1937) classified 37% of stillbirths as of unknown or ill-defined causation, 14% as due to difficult labour, and 13% to foetal abnormalities. The speaker had attempted an analysis of cases in the only maternity hospital in his area, thus obtaining a cross-section of the stillbirth rate in Aberdeen during the period taken. The rate was 36 per 1,000. In 30 cases out of a total of 82 the cause was unknown, in 24 it was difficult labour, and in 9 toxaemia. Among emergency cases admitted to hospital difficult labour naturally entered largely, and, with placenta praevia, accounted for 50% of the cases.

The importance of neonatal mortality was evidenced by the fact that, in Scotland, 50% of the infant death rate related to the first month of life. In Scotland in 1937 the neonatal mortality was 38 per 1,000 births, in the North of England 34, in the South-East of England 24, while in large cities it varied from 43 in Glasgow to 24 in London. The London figure was about the same as for New York and Chicago, whereas Amsterdam had the low figure of 16. Among the booked hospital cases the biggest factor was infection. One of the chief problems was the prevention of prematurity. Many hospitals lacked provision for dealing with premature babies. Maternity hospitals should have special nurseries on the cubicle system for such infants. The incidence of premature labour in booked hospital cases, which represented the working-class community, was about 9%; among the middle and upper classes (in a series of 885 cases) it was 6%, and among booked specialist cases (330)—that is, patients coming in the early months of pregnancy, not because they were ill, but because they wanted to be under specialist care from the beginning—it was 2%. The neonatal mortality in these three groups was respectively 3.3, 1.35, and 0.6%. Stillbirth and neonatal mortality rates, as well as the infantile death rate, were higher in Scotland than in England, but 60 years ago the reverse was the case, and presumably there was no inherent weakness in Scottish offspring. In depressed areas measures to lower the mortality should take the form of better feeding of pregnant women and nursing mothers, intensive teaching of mothercraft during pregnancy, the provision of more antenatal beds for the treatment of complications, better postgraduate training of doctors and nurses, and better training of health visitors.

Paediatric Aspects

Prof. CHARLES MCNEIL (Edinburgh) said that the first month of life formed a bridge-head between obstetrics and paediatrics. He based his remarks on an analysis of 416 cases of stillbirth and, during the same period, 236 neonatal deaths. Post-mortem examinations had been carried out in 540 of these 650 cases. There was found to be a much higher incidence of congenital defects in premature children, so that congenital deformity was somehow linked with prematurity. Asphyxia had a prominent position in causes of death of both premature and immature infants, the anatomical explanation being that the infant's lungs were stiff and difficult to inflate. Paediatrics as a medical service, in contrast to obstetrics, was poorly equipped. There should be a strengthening of paediatric staffs in maternity hospitals. The diet of expectant mothers should also receive more attention. More needed to be learned about the first beginnings of the complicated process called digestion, which after birth was for the baby an entirely new mechanism. Measures should be taken to protect the baby in hospital from the great danger of infection, particularly from gastro-enteritis, which stood out easily first among infections as a cause of death. Every maternity hospital should have a follow-up clinic for its babies, and a much closer supervision of them during the first month of life, whether in hospital or out of it, especially as regards dietetics.

Dr. DOYNE BELL said that the treatment and prevention of immaturity—which he defined as some degree of unsuitability for extra-uterine life, as contrasted with prematurity, which denoted merely a time factor—were highly relevant to the present discussion. He criticized both the recent Toronto investigation which had been mentioned by Prof. Baird and that of the People's League of Health in London. In the former investigation the control series of patients was not strictly comparable with the subjects of the dietetic experiment, and the records of infant deaths were not stated in such a way as to permit of any valid conclusion being drawn. With regard to the latter investigation he gave reasons for thinking that the yardstick was not accurate enough to warrant the significance attached to the figures. An analysis of a series of unselected pregnancies showed that the range of error likely to occur in the estimation of the duration of gestation rendered conclusions based on the concept of prematurity highly unreliable. In spite of loose certification of neonatal deaths, both as to their exact cause and as to their exact age, it was probable that immaturity played an important part in their causation, but there was no reason at present to suppose that the problem of preventing immaturity had been solved. The prevention of neonatal death from immaturity could, however, be assisted by an adequate paediatric service. The maternity hospitals were not at present required by any Act or regulation to provide proper paediatric supervision of newborn infants.

Sir FRANCIS FREMANTLE, M.P., said that the neonatal mortality figures had improved slightly during the last three years, although infant mortality as a whole had risen, but not much, even on the very low figure for 1939. The increase and improvement of ante-natal clinics had taken place on a large scale. At the end of last year there were in England and Wales 1,600 of these under the aegis of local authorities and 260 under that of voluntary associations. The attendances last year were 452,000, and first visits paid by health visitors numbered over half a million. In all the surveys the general finding was that conditions of infant life were much more alarming when associated with poverty. But the economic conditions which created poverty were in some degree the result in present or previous generations of weakness of character or intelligence. It was not merely the social conditions which produced the statistics so much deplored; they were partly due to the fact that many of the people concerned were not able to look after themselves. Merely to improve the housing, necessary as that was, would not bring about the desired results. On the other hand, there were countless instances of people living in slums in the midst of penury who yet, because the mother was scrupulously clean and a good manager, brought up a healthy family. The problem must not just be left to Government provision, national or local, but the people themselves must be taught to use their own powers and intelligence.

The League of Health's Inquiry

Prof. JAMES YOUNG said that the report of the People's League of Health (*British Medical Journal*, July 18, 1942, p. 77) was probably the most comprehensive and best-controlled investigation ever carried out on this subject. It revealed two important results of statistical significance from the standpoint of the present discussion. The incidence of pregnancy toxaemia was about 30% less in women who received additional dietary supplements than in the control women, and toxaemia was known to be one of the chief factors in prematurity, stillbirth, and neonatal death. In the second place, the prematurity rate was about 17% less. The investigation could not be expected to reveal the full effect of the improved nutrition because in the majority of cases the women first entered the experiment at a stage of pregnancy when the major risk of abortion had passed. The food supplements were given in the form of tablets and capsules, the only method by which such a large nutritional experiment was possible, and no doubt it was true that natural foods would be even more effective, so that the results, striking as they were, represented rather the minimal than the maximal influence of good nutrition. He added some up-to-date figures relating to changes in infant birth weights, prematurity rates, and toxaemia rates since the war began. The study had been carried out by Dr. Hargreaves at the British Postgraduate Medical School on "booked" cases during 1937 (1,597 cases), 1938 (1,765), 1940 (954), 1941 (846), and 1942 (662). The average birth weights of full-time children had shown a decline since the pre-war years from 7.3 to 7.1 lb. in primigravidae and from 7.6 to 7.4 lb. in multigravidae. The percentage prematurity rates had declined, though not so consistently, from 19.7 to 14.2 in primigravidae and from 16.7 to 13.6 in multigravidae. The percentage toxaemia rates had shown no consistent change.

Prof. **Baird**, in his reply, said that the appointment of paediatricians to emergency hospitals was desirable, but this would be only a wartime measure, and what he desired to see was appointments of the type recently made in Newcastle, where a doctor had been appointed "Professor of Child Health." He had been interested in Prof. Young's figures. The incidence of toxaemia in primigravidae in Aberdeen in booked cases was 8%, which was very close to the London figure, and he had always understood that there was relatively little toxaemia in maternity cases in London. In a small series of cases in private practice the toxaemia rate was only 3%, or less than half the hospital figure. The percentage prematurity rate in Aberdeen among hospital cases was 23, but in private practice only 8.

Correspondence

What is "Sterile Blood"?

Sir,—Recent contributors to the *Journal* have raised the above question and answered it to their seeming satisfaction, but not without leaving an opening for legitimate criticism. The question as to what constitutes "sterility" is evidently a matter of some perplexity. This is borne out by the report of four experts from the Blood Transfusion Service of the Medical Research Council as published in the *Journal* of March 21, 1942. These workers eventually decided that the ordinary bacteriological tests for the sterility of plasma were of little value, and they discarded them in favour of the naked eye as a check on their plasma storage technique.

Now the experienced bacteriologist may be able to say that cloudiness of plasma or serum means contamination and that clearness argues for probable sterility, but it is a departure from our usual scientific standards to dispense with proof of absolute sterility. It is quite obvious that in dealing with blood the bacteriologist is missing the free use of his autoclave, and that when he speaks of sterile blood he does not mean the same thing as when he refers to a sterile dressing. Everyone knows what is meant by the usual sterile fluids; they have been boiled or otherwise sterilized in order to kill off all forms of life within them. On the other hand, "sterile blood," although free from bacteria, is still a living tissue, but the activities of the living elements in stored blood have so far not had much consideration. There is in fact a widespread belief that the changes which take place in clean stored blood are purely physico-chemical, when as a matter of fact they must include the biological reactions of living things. It becomes necessary therefore to differentiate between those changes which are due to the inherent vital elements in blood and those which are due to contamination. Nor should we forget that the value of blood for many transfusion purposes is greatly diminished by the present storage processes, which aim at suppressing the extraneous forms of life but at the same time destroy the inherent vitality of the blood cells.

This vital aspect of blood was recognized by Crosbie and Scarborough,[1] who, among other criteria of the viability of the white blood corpuscles, described a curious "spinning" of the granules of the cytoplasm. This rapid oscillatory movement stops immediately when the cell is overheated—in short, when living protoplasm enters into its dead state. I have confirmed this observation, but I have gone further and found that, as the white cells break up, these spinning and, as I hold, living bodies can be seen floating free in the blood serum. With suitable technique, such as the use of dark-ground illumination under a high-power objective, it is also possible to demonstrate that there are other highly motile bodies in disintegrating "sterile blood."

We are faced then with the need for a more intensive investigation of the biological phenomena of stored blood which has been pronounced "sterile." It is clear also that the word "sterile" is not a suitable term in this connexion, because the state of sterility is inconsistent with the presence of vital elements in stored blood.—I am, etc.,

Medical School, University of Capetown M. R. Drennan.

Rehabilitation Centres

Sir,—I enclose a brief memorandum which expresses the general opinion of the members of the British Orthopaedic Association in regard to rehabilitation, and I am doing so at the request of some of the senior members of the Association. We feel that it should be clearly understood that the orthopaedic surgeons of the country are wholly in favour of this constructive medical and sociological movement.

I think we all feel that rehabilitation should begin very soon after the accident or wound, and be carried on throughout the patient's period in hospital in the form of occupational therapy and gymnastic or remedial exercises. There remains as a logical and very necessary development the organization of Rehabilitation Centres where the final and more concentrated stages of rehabilitation are given to enable the patient to be returned to the Services or to industry with the least possible delay.—I am, etc.,

G. R. Girdlestone,

Headington, Oxford President of the British Orthopaedic Association.

*** The memorandum runs as follows:

The members of the British Orthopaedic Association recognize the value of measures already adopted by the Ministry of Health in introducing rehabilitation into E.M.S. orthopaedic, fracture, and accident services. They are not, however, satisfied that the later stages of rehabilitation have been adequately developed throughout the country; and for this particular purpose they urge the importance of establishing special Rehabilitation Centres, in association with existing orthopaedic, fracture, and accident services; under the same administrative and surgical control, but as a rule geographically separated in order to avoid the hospital atmosphere; and affording all facilities needed for the completion of treatment right up to the stage when work can be resumed. From undoubted evidence of grave wastage of man-power through accidents, they believe that the developments recommended are of immediate urgency in the prosecution of the war.

Listerism

Sir,—I have read the correspondence on the Lister technique in your issues of Sept. 5 and 26 and Oct. 3. A good case made out can't have too much backing, but there seems some confusion as to Listerism among others who think aseptic surgery is different from what Lister taught. The three main principles of Listerism are: (1) disinfection of the skin, (2) destruction or inhibition of the germs in the wound, and (3) prevention of the entrance of germs into the wound. Lister used antiseptics to produce asepsis, and he introduced dressings and a "protective" (oiled silk). We are indebted to him for the undermentioned: In 1866 he used crude creosote for wounds and banished pyaemia from his wards. He made a "plaster-of-Paris putty" for a compound fracture and covered it with tin foil, and so paved the way to the present-day method. (This was at a time when there was no bacteriology.) He tied the carotid artery of a horse under antiseptic conditions with good results, using first kangaroo tendon; this work then led him to chromic acid catgut. He invented a spray and this led to aerial disinfection. He taught the immobilization of wounds and fractures. He showed the possibilities of skin grafting. He insisted on sharp knives, so as not to bruise tissues. He showed the correct way of giving chloroform without a death. He introduced drainage of wounds. He was the first to open a knee-joint under antiseptics. He introduced the gauze bandage and the double cyanide gauze—thus aimed at asepsis. He introduced "protective"—oiled silk coated with dextrine; it was soaked in boric solution. Here is added proof of his goal—asepsis. You can't have antiseptic treatment without simultaneous asepsis. He introduced boric ointment. He invented a sinus forceps. He introduced massage after fracture treatment. He insisted on instruments in trays being covered (asepsis). He first wired a fractured patella under antisepsis. He advocated the defensive power of human tissues.—I am, etc.,

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[1] *Edinb. med. J.*, 1940, **47**, 553.

Portsmouth. A. G. NEWELL.

Release of High-frequency Apparatus

SIR,—So much has been said of the hardship suffered by practitioners and patients from the impounding of diathermy and short-wave apparatus by the Post Office that I think it is only right, now that the restrictions have been modified, to put on record that my apparatuses have been returned to me with promptitude, efficiency, and in good working order. Although they have been stored for fully two years by the Post Office, it is pleasant to report that they have been extremely well cared for, and have come back in as good condition as they were in when they were taken away. The B.M.A. has been largely instrumental in securing this relaxation of the original order, and deserves the thanks of those who use high-frequency apparatus.

One further point I should like to mention. Although it has been considered necessary to retain screening restrictions, the Post Office have recognized the desirability of being able to treat cases without having to move them into screened cubicles. They have, in consequence, offered their technical help and collaboration in evolving an apparatus which would be free from the drawback of causing so much interference as the existing diathermy and short-wave apparatus and yet be sufficiently portable and robust that it could be taken to the bedside of patients. This would make it possible to treat cases of pneumonia, shock, and burns. Their help will be of the greatest practical value.

An experimental apparatus has already been constructed which, while itself not satisfactory, has shown the pitfalls to be avoided and also that the problem is one capable of solution. From the clinical and physical medicine point of view the use of short-wave currents in cases of shock is better than electric blankets, radiant heat cradles, and methods that have to rely on the conduction of heat from the skin. The Postmaster-General points out, however, that the supply of the necessary valves during the war may be extremely difficult. This would be overcome if, on clinical trial, the apparatus provided an improved method of combating shock.—I am, etc.,

C. B. HEALD,
London, W.1 Chairman, Physical Medicine Group, B.M.A.

Periodic Medical Examination

SIR,—It is to be hoped that the article on this subject by Dr. Frank Ellis (Sept. 26, p. 365) will arouse widespread interest. At the present time it is inevitable that experiments in preventive medicine should be side-tracked in favour of more urgent problems. The fact that the work of the Peckham Health Centre, which Dr. Ellis mentions, has had to be suspended must be considered perhaps a minor tragedy of the war. Nevertheless, those of us who have been inspired by the teachings of the late Sir James Mackenzie realize with Dr. Ellis that medical science can make little further progress without a better understanding of the early stages of disease. Further, we can only arrive at this understanding by reorganizing the medical services in such a manner as to permit of facilities for periodic medical examination of the whole population. Such facilities could be fitted without difficulty into most of the plans which have been elaborated recently.

The purpose of this letter is to point out certain difficulties and to make a concrete suggestion. Dr. Ellis mentions and discusses the work of the Life Extension Institute in New York. I was familiar with their published work, and also paid them a long visit in 1939. I was impressed by the efficiency of their organization, but I had two criticisms to make. (1) The Life Extension Institute were not able to persuade the American general practitioner to co-operate with them. In fact the overwhelming majority of practitioners were not only non-cooperative but hostile. This is a cardinal fault in any organization which sets out to do systematic preventive medicine along the lines of periodic examination. As Sir James Mackenzie emphasized at St. Andrews, the general practitioner is the most important instrument in any such scheme. It is the general practitioner who is in closest contact with the patient, his family and background. (2) A more important criticism of the Life Extension Institute is a technical one. Their methods of physical and radiological examination of each patient were beyond criticism. They had also evolved a system of careful "history" taking, which represents a real advance. But physical and *x*-ray examinations of so-called healthy people are not sufficient. If we are to detect those functional abnormalities which inevitably precede disease—the stage of symptoms (or even earlier) rather than that of signs, as Sir James Mackenzie put it—we must have a new technique of examination. This, in my view, is where the Life Extension Institute fail. Their methods are admirably adapted to the detection of early disease, but that is not enough.

I have been engaged for many years in an attempt to devise and standardize a more sensitive and comprehensive technique for this sort of examination. The vast and fertile field of applied physiology and biochemistry is open to those of us who are doing this work. Now that this subject is arousing more general interest it is desirable that all who are actively engaged in this sort of research should combine and agree upon: (*a*) A standardized technique to be used for periodic examination. If we expect facilities we must be clear as to exactly what facilities should be provided. The correspondence in the same issue of the *Journal* on the subject of methods for the determination of blood sedimentation rate is sufficient proof, if such were needed, of the desirability of standardization. (*b*) A method of approach to the general practitioner. The best method of enlisting the support of the practitioner would be to enrol him inside the framework of any such preventive organization. In the meantime articles and books should be written setting out what knowledge we have and the manner in which such knowledge, applied to practical problems, could be of invaluable assistance to every practitioner.

Finally, a suggestion. Could not a committee or subcommittee be set up for this purpose within one of the planning organizations? In peacetime this committee could be expanded to form a society which should bear the name of Sir James Mackenzie.—I am, etc.,

London, E.C.1. E. OBERMER.

"Constipation" in Breast-fed Babies

SIR,—Dr. E. F. Chapman (Oct. 3, p. 408) pertinently alludes to a principle of wide application—viz., a child should be allowed to perform its functions of intake and output with the minimum of interference. The process of "training" as to times for feeds and as to times, places, and occasions for actions of the bowel is not merely unwelcome to the natural constitution of the child, it is reacted to by many children with feelings of angry defiance, aggression, hate, and obstinacy. In her desire and anxiety to "train" her child as soon as possible, the mother, unknown to herself, may be "getting her own back" for similar interference in her forgotten childhood. Furthermore, the child has to suffer interference emanating from ignorant, alarming, and misguided ideas as to what constitutes "constipation." The child is constituted to anticipate a pleasurable satisfaction from release of tension in the rectum in accordance with the timing of its own feelings and experience, its timing being neither that of the clock nor of mother. It therefore resents any form of interference, most of all if thereby pain is substituted for pleasure, as is apt to accrue from administering purges, enemata, suppositories, and the like by anybody however wittingly well-intentioned. An enema is all too prone to become an enemy in the mind of a child, hence resistant anal spasm and more prolonged "constipation" can result, even from the very thought of one, or of its giver.

Those who are concerned with the psychogenesis of many undesirable and handicapping character traits and of many psychoneurotic symptoms are convinced of the close association between such traits and symptoms and interference with the child's natural pleasures of ingestion and of elimination by *force majeure*. An interesting example of the evil that mothers do living after them has been observed by Dr. Joan Malleson in her paper, "Vaginismus: its Management and Psychogenesis" (Aug. 22, p. 213). Under the section "Aetiology," she produces convincing evidence of the close association of this distressing disorder with anal pain of childhood. Dr. Malleson's paper merits the attention of all those concerned in the "training" of children and gratitude for her original observation of yet another malady that, in some cases, is otherwise inexplicable than by unwarranted and cruel "training." We live and learn!—I am, etc.,

London, W 1. R. Travers Smith.

Sir,—Your correspondent Dr. E. F. Chapman (Oct. 3, p. 408) disagrees with Prof. Charles McNeil's remarks in his alphabet of breast-feeding on "one type of constipation." No experienced paediatrician, least of all Prof. McNeil, will disagree with Dr. Chapman's observation that "large numbers of perfectly healthy breast-fed babies will only have a bowel action every two, or three, or even four days . . . there is nothing whatever the matter with these babies, and they should be left alone. The regular daily habit will establish itself later on." Dr. Chapman infers, however, that he does not believe in anal spasm, and accuses Prof. McNeil of inventing "an imaginary pathology to explain a non-existent disease." There is no doubt that such a condition exists, and it accounts for a considerable minority of the cases of infrequent defaecation in breast-fed babies. In both the habitual type of infrequent defaecation and anal spasm the stools are normal in colour and consistence, but anal spasm is characterized by excessive straining at stool, with severe congestion of the face and tight spasm of the sphincter ani muscle, which can easily be distinguished by inserting the little finger.

It is important to differentiate these two causes of infrequent defaecation so that appropriate advice can be given to the anxious mother. In the habitual type I usually explain to the mother that the small amount of residue and the contentment which occur in breast-feeding account for the infrequency, and that daily motions will be resumed when a mixed diet is introduced, if not before. Such an explanation usually persuades mothers not to interfere with spontaneous bowel action and allays their anxiety. In cases of anal spasm I advise dilatation with the lubricated little finger daily for a few days and then less frequently. There is absolutely no indication for the administration of aperients in either condition, yet most mothers and many doctors give them freely and produce a needless disturbance of intestinal function.—I am, etc.,

Edinburgh. J. L. Henderson.

Sir,—I have read with interest Prof. McNeil's alphabet of breast-feeding (Sept. 5, p. 271), and as one who is nowadays almost solely interested in the psychological side of things, I am delighted that he—so distinguished a paediatrician—should stress the importance of breast-feeding for infants whenever possible. The evidence I have been able to collect in my work establishes beyond reasonable doubt the superiority of natural over artificial methods of feeding for the psychological well-being of both mother and child. There appears too often a tendency among doctors to wean children prematurely, even when such weaning does not appear to be absolutely imperative. Dr. Mathias (Oct. 17, p. 465) seems to imply this when he ends by saying: "If artificial feeding were such a second-rate thing, why are there not more miserable children in doctors' families?" Is he not coming near to a recognition of one of the basic factors behind melancholia?

Although Prof. McNeil recognizes the possibility of psychological faults in mother and baby as giving rise to difficulties, does he not run the risk of artificially inducing them by the treatment that he advocates for constipation in the infant? It is on this account that I am reluctant to accept unchallenged his dictum that when constipation arises in breast-fed babies it should be relieved by the repeated passage of the doctor's little finger into the baby's anal canal. I have believed that constipation arising in early life will right itself if left severely alone. Psychologically it seems to be established that for a child under 6 the less physical interference it has the better, and the less the chance of a breakdown later in life. Prof. McNeil seems to have overlooked the alarming fear and primitive hate that can be aroused and stored up in the mind of a small child and the distressing psychogenic repercussions that may ensue from anal interference, the more so because the child is too young to understand what is happening. In mental research work I have had the opportunity of treating certain obsessional and border-line cases over a considerable period, and I have found definite evidence that traumatic environmental factors in infancy have played an important part in their symptom formation and character traits in the adult, and certainly have influenced their adult behaviour.

In his article Prof. Charles McNeil does not appear to go with the psychologist in these respects. To my mind the procedure he advocates runs the risk of inducing certain undesirable characteristics to develop as the child grows up. Reaction formations are liable to set in, among them shyness, asocial tendencies, over-sensitivity to criticism or control, acquisitiveness, etc., and the "difficult" adult may eventuate. Such treatment may contribute towards changing a social being into an antisocial one, in accordance with how much or how little the child has registered the feeling of having been raped. He or she may well react to the intrusion into their private affairs or "house" of the doctor's finger (however well lubricated) by repaying the compliment and later developing habits of a retaliatory nature. They would then become the over-curious person—that "nosey Parker," always poking into other people's business—or even worse, the delinquent, who "takes it out" of society by breaking into other people's houses and stealing their goods.

There is a danger, too, of reinforcing an unconscious passive homosexual bias in the male or of setting up a vaginismus in the female. (Dr. Malleson has referred to such a contingency in her article published on Aug. 22.) Fear of loss of sphincter control is a very real thing to the small child, and this is temporarily at any rate increased, with its concomitant fear of dirtying. It seems to me that no treatment that savours of violation should be administered to the very young child unless such procedure be absolutely necessary for that child's physical health, and that this is so in the technique under discussion Prof. McNeil does not appear to have established.—I am, etc.,

London A. Cyril Wilson.

Breast-feeding

Sir,—Dr. J. Gordon Mathias (Oct. 17, p. 465) states that the feed "should not be a sensuous orgy for the infant and a sexual experience for the mother." The real question is not what a breast-feed should or should not be (according to Dr. Mathias) but what in fact it *is*, physiologically. As to whether it is a "sensuous orgy for the infant" we can infer from observation of the feeding infant; we have evidence that Nature intended it to be a "sexual experience," using the term broadly, for the mother, in the well-known relation between stimulation of the breast and the uterus.

If Nature intended woman to feed infants woman should be pronograde, he argues; are our simian relatives all pronograde? As to caloric feeding for the (mythical) "classical ten-pound infant," the fallacies of rigid adherence to caloric or other fixed systems in dealing with that most individual problem—infant feeding—are common knowledge. Dr. Mathias argues that if the doctor is of the opinion that "the baby and the mother would fare better on artificial feeding, he should be equally competent to advise," but earlier in his letter he says "doctors in general know so little about infant feeding." I am afraid one must endorse both of these statements!—I am, etc.,

Darwen R. C. Webster.

Correct Use of Sulphonamides for Gonorrhoea

Sir,—May I appeal, through your *Journal*, to all practitioners to help the campaign against venereal diseases by using sulphonamides for the treatment of gonorrhoea in such ways as are calculated to make the patients non-infectious as quickly as possible and to run the least possible risk of creating sulphonamide-resistant strains of gonococci. From all parts of the country complaints are being received in the Ministry of Health that many practitioners start treating for gonorrhoea without first taking specimens for confirmation of the diagnosis, and give sulphonamides in quite inadequate dosage. Failure to take specimens makes it very difficult, whenever the symptoms have not abated or elapsed, to decide if the original infection was or was not gonococcal because gonococci may have been merely driven to ground by the remedy. Inadequate dosage may abate the symptoms without eradicating the infection; thus by creating in the patient's mind the impression that he is cured it conduces to the spread of the disease. The evidence that it is possible to create sulphonamide resistance in gonococci by underdosage is sufficiently strong to warrant every effort to avoid it, because the spread of such strains throughout the country would take our anti-gonorrhoeal measures back to the pre-sulphonamide era. A timid dosage with sulphapyridine may perhaps be understandable when the infection is not life-endangering and the patient is ambulatory, because of the toxic effects of this remedy, but there is no reason for it in the case of sulphathiazole, which is now available in sufficient amounts for the eradication of gonorrhoea from the community.

There is now good evidence that administration of 5 grammes of sulphathiazole on two successive days eradicates the disease, in males at least, in over 90% of cases, and four days' treatment on the same lines affords still better results; in neither case does such a dosage give rise to any undue proportion of toxic effects, provided that the patient is made to drink plenty of water during the period of the chemotherapy. It requires only slight imagination to see the possibilities of this treatment from the point of view of the public health, if only all members of the profession will collaborate in exploiting it properly.—I am, etc.,

Ministry of Health, S.W.1. L. W. HARRISON.

SIR,—In view of the great importance of the control of gonorrhoea among the civil population, especially in wartime, I should like to draw attention to one easily avoidable hindrance to attaining this end. I refer to the common and, to judge by this clinic, increasing custom of practitioners to give sulphapyridine (M & B 693) at sight in cases of urethritis. Not only is this done without any bacteriological confirmation of the diagnosis, but, what is even more serious, the doses and rate of administration of the drug—e.g., one tablet t.d.s. for perhaps ten days or more—are often almost perfectly calculated to produce a drug-resistant strain of organisms. Only after this regime has been continued for a week or two and has failed to clear up the discharge is the patient referred to a clinic, by which time, it will be agreed, both diagnosis and treatment have been rendered considerably more difficult than they need be.—I am, etc.,

Croydon V.D. Clinic. P. W. HAMOND.

First-aid Treatment for Fractured Spine

SIR,—The greater part of my time in the last 3 years has been taken up with teaching and examining in first aid and other subjects for the B.R.C.S. and Order of St. John and teaching the Home Guard first aid. I have been impressed with the difficulty the first-aid student often seems to have in following and grasping the essentials of the first-aid treatment of fracture of the spine. For some time past I have thought that the instruction on this subject should be simplified and standardized. I was therefore interested to read an article in *First Aid and the Medical Practitioner*, one of the *Practitioner* booklets, on "First Aid in Fractures," by H. Osmond Clarke, F.R.C.S., of Manchester, in which he writes as follows:

> "Fractures of the spine at any level should be transported in the supine position on a hard flat stretcher, maintaining as far as possible the normal contour of the spine by inserting a small pillow or pad (e.g., a folded garment) beneath the lumbar and cervical spines. It is of the greatest importance that an individual with an injured spine should be lifted on to the stretcher with his back supported at several points. If the spine is allowed to sag excessively into hyperextension or hyperflexion, as may occur when a man is lifted by his shoulders and legs, irreparable damage may be done to the spinal cord. To summarize . . . *Spine*.—Lift the patient with his spine supported at numerous points on to a hard, flat stretcher with a pad behind the lumbar and cervical regions."

This teaching of Mr. Clarke's appeared to simplify very much the first-aid treatment of fracture or suspected fracture of the spine, and to obviate the difficult (for first-aiders) question of the location of the injury, the difficult method of turning the patient on his side, and the stretcher on its side, and placing the patient in the prone position on the stretcher, in the case of fracture or suspected fracture of the dorsal or lumbar region. As this matter is one of considerable importance, I wrote to my old friend Prof. Harry Platt and asked his opinion. He writes as follows:

> "With regard to the first-aid teaching of the immediate handling of fractures of the spine, I think there is a tendency—and it is a laudable one—to simplify the instructions. The distinction between cervical injuries and those in the dorsal or lumbar region is well enough for the expert, but liable to be confusing to those untrained people who may be called upon to move the injured person. I myself, therefore, would agree with the teaching that all spinal injuries can be *safely* transported in the supine position, provided (i) the natural contour of the spine is maintained—e.g., by appropriate pillows; and (ii) no *flexion* movements—or, indeed, *extreme* hyperextension movements—are permitted during the lifting of the patient. I do not think this subject has been debated recently by orthopaedic surgeons, but most of them would be keen on having a simple standardized method laid down for the guidance of the non-expert. I think your scheme is sound."

The scheme to which Prof. Platt refers is one which I suggested should be used as a standardized treatment for all cases of fracture or suspected fracture of the spine at any level by all first-aiders as immediate treatment. In all cases where there is a history of accident or injury to the neck or backbone with pain and shock, even though there is no paralysis of arms and/or legs, treat as follows:

> (i) Warn the patient not to try to move; (ii) keep him warm; (iii) send for the doctor, and if there is any chance of getting medical assistance in a very short time, *do nothing more* till the doctor comes; (iv) if there is no chance of getting medical assistance within a reasonably short space of time, and (v) if you have trained assistants with blankets, triangular bandages, and stretcher, (vi) proceed as follows: if the patient is found in any other position except on his back, with great care and all the assistance possible turn him gently on his back; (vii) tie the lower limbs together by applying broad triangular bandages round thighs and knees, and a figure-of-8 bandage round both feet and ankles; (viii) five broad triangular bandages are passed under the natural hollows of the body, so that they come to lie under his head, chest, hips, thighs, and calves; (ix) two strong poles are used and the bandages are looped or tied round the poles, and the patient is slowly and gently lifted on to the stretcher by two or, if possible, three assistants on each side; (x) the stretcher, which is hard and flat, is prepared by folding the blankets as in the Army method, with a small pad or cushion made out of folded garments placed on the stretcher behind the cervical and lumbar regions respectively.

It will be seen that this method incorporates the teaching of Prof. Platt and Mr. Osmond Clarke (to whom I am very grateful), together with other details already in use, and it is for the immediate first-aid treatment of fracture or suspected fracture of the spine at any level. I think not only orthopaedic surgeons but also teachers and students of first aid would welcome some such simplified standardized method of treatment.—I am, etc.,

J. L. MOIR, M.B., Ch.B.,
Lt.-Col., Zone Medical Adviser, Anglesey Home Guard;
County Medical and County Civil Defence Officer,
Anglesey Branch B R.C.S

Subcutaneous Ligature of Varicose Veins

SIR,—As the originator, to the best of my belief, of this method I should like to express my gratification that Major E. L. Farquharson (Oct. 17, p. 453) has found it useful.

Further experience has somewhat improved the original technique (*B.M.J.*, 1941, **1**, 626). I find Mr. Dickson Wright's method of introducing the stitch through a hypodermic needle rather easier than using a curved needle, and I have given up the standing position for the patient. If the position of the vein is marked on the skin with ink in the standing position it is quite easy to carry out subsequent manipulations while the patient lies down. I still use the intradermal wheals of novocain, which take very little more time, and certainly relieve the patient of some discomfort.

As regards the permanence of the method, I have had a recurrence in a case of ectasia which required Trendelenburg's operation, but my other cases are still satisfactory, after more than two years in some of them. Whatever theoretical objections may be raised, the fact remains that the method is successful and that no hospitalization is required while the patient is being treated, which would be impossible for injection alone. Incidentally, several of these people who have been treated by subcutaneous ligature are among my most grateful patients.—I am, etc.,

Bradford. H. S. RUSSELL, M.D.

Shock Treatment in Psychiatry

SIR,—I would like to comment on your leading article on shock treatment in psychiatry (Oct. 3, p. 397). While one must fully agree with the need for systematic and planned treatment in psychiatry and also regret the tendency to regard electro-convulsant therapy as a panacea, yet it would appear a mistake to consider insulin shock and electro-convulsant treatment as therapeutically discrete.

Your article makes the important point of the need for standards of diagnosis and prognosis; and surely it is here that the schizophrenias produce the most difficult problems. Most psychiatrists would agree that the term "schizophrenia" covers a group of more or less closely related syndromes, and the value of insulin may be found greater in the schizophrenia-like psychoses than in true dementia praecox, or possibly even the other way round. In the former group of psychoses we can certainly claim some striking results with electro-convulsant therapy. In this clinic, for example, we have seen the resolution of thought disorders, depersonalization, in fact every kind of schizophrenia-like symptom-complex.

We do not assert that electro-convulsant therapy should replace insulin, but I feel sure that the time has not yet come for any generalizations upon their respective merits. We should base our therapy on the most prolonged and careful observations, and to this end one must again reaffirm the need (expressed in your columns in 1940) for more clearly defined criteria in psychiatry.—I am, etc.,

JONATHAN GOULD, M.B., B.Sc.

Department of Psychological Medicine,
St. Bartholomew's Hospital.

Prevention of Small-pox

SIR,—Now that the outbreak of major small-pox in Glasgow is at an end it is permissible to discuss the question of the measures taken to combat it, and, in particular, the effort made to secure the mass vaccination (or revaccination) of the entire population of the city. It will not be disputed that such a measure is a serious one to take from more than one point of view. Vaccination is a much more serious operation than, say, immunization against diphtheria. In the majority of cases it constitutes a definite interference with health, and, although this is usually only temporary, it often lasts for over a week, and occasionally for very much longer. It is often serious enough to necessitate absence from work for several days or a week, and it may affect working efficiency even though the individual continues at work. We are told that the total number of persons vaccinated in the Glasgow campaign was 378,000. It would be interesting to know (were the figures available) the total amount of time lost from work as a consequence, direct and indirect, of all this vaccination.

Moreover, a vaccination drive, such as must have been practised in Glasgow, inevitably gives rise to, or at least must have greatly intensified, public alarm and upset—i.e., "scare," a psychological condition scarcely conducive to maximum productive efficiency. Lastly, the great administrative effort required for a vaccination drive on this scale must, it is reasonable to suppose, have tended to divert effort from really important measures such as the effective following up and control of contacts.

If promiscuous mass vaccination of a community were really essential for controlling an outbreak of small-pox and preventing it becoming a serious menace, not only to the city in question but to the whole country, then the effort, costly though it be in the ways indicated, could doubtless be justified. But is it essential? Surely the evidence available from the behaviour of major small-pox in the past half-century is all against such an assumption. During this period the proportion of the population protected against small-pox by vaccination has continuously declined, until it is now only a minority, yet the disease has shown itself less and less able to establish itself in this country, although it has been introduced again and again, sometimes under conditions apparently very favourable for spread.

Take the case of Leicester, with which city I am best acquainted, having been M.O.H. there for over 30 years (1901 to 1935). During my term of office I had to deal with a number of outbreaks of major small-pox, but mass promiscuous vaccination of the population was never attempted, or indeed advocated. Yet the disease never got out of hand, still less was there any general conflagration—as had been so often prophesied—and this in spite of the fact that the general population was, for all practical purposes, entirely unprotected by vaccination. Thus, during the 50 years 1885 to 1934 the percentage of children vaccinated averaged only 8.5. During the same period the total deaths from small-pox numbered only 53 in an average population of, say, over 200,000. Other towns have had a similar if less striking experience. In view of this, what serious grounds are there for thinking that general vaccination of the population plays any important part, under modern conditions, in the effective control of small-pox?

To prevent possible misapprehension may I say that I have a profound belief in the utility of selected individual vaccination—e.g., in protecting sanitary and hospital staff, and (to a less extent) in protecting actual contacts.—I am, etc.,

Leicester. C. KILLICK MILLARD

"Duodenal Ulcer Battalions"

SIR,—Large numbers, probably many thousands, of men suffering from duodenal ulcer (and allied conditions) are being discharged from the fighting Services. The majority of these individuals are the best type of fighting man—sthenic, energetic, vigorous, and of high courage; many are discharged against their wishes. Is there any insurmountable reason why their services should not be retained? Why not form battalions or even divisions of "duodenal ulcers"?

With collaboration between the Ministries of Health and Food and the medical branches of the Services provision for feeding and the treatment of large bodies of men should present no real difficulty. Indeed, it should be easier and more economical to cater for, say, a thousand men living together under strict discipline than for the same number scattered throughout the country in individual homes.

And what a field for research: an opportunity which is not available in peacetime! Few will claim that our present methods of treatment of duodenal ulcer are entirely satisfactory. Medical treatment is generally inadequate: the surgical operations in vogue are drastic and crude.—I am, etc.,

Dundee. F. R. BROWN.

Interchangeable Shoes

SIR,—In the annotation on laterality, dominance in Shakespeare (Oct. 10, p. 432) it is remarked that Dr. Johnson made the "surprising comment": "He that is frighted or hurried may put his hand into the wrong glove, but either shoe would equally admit either foot," and Sir Walter Raleigh inferred that Dr. Johnson possibly wore his boots indifferently, "either on either foot," and believed that other people did the same thing. Is it not possible that in Johnson's time boots and shoes were made for either foot indifferently?

Lord Cockburn, in *Memorials of His Time*, a classic volume dealing with life in Edinburgh, especially the life of the Bench and the Bar, in the beginning of the 19th century, describes his outfit when he was first sent to the Edinburgh High School in 1787. He was provided, among other garments, with "brown corduroy breeches, tied at the knees by a showy knot of brown cotton tape; worsted stockings in winter, blue cotton stockings in summer, and white cotton for dress; clumsy shoes made to be used on either foot, and each requiring to be used on alternate feet daily; brass or copper buckles."

Some square-toed shoes seen on statues and in portraits of the 16th and 17th centuries appear as if they could be worn on either foot as the wearer inclined. Long pointed shoes of a much earlier period, such as those worn by the Prior of Jorvaulx in *Ivanhoe*, were almost certainly interchangeable for the feet.—I am, etc.,

Glasgow JOHN PATRICK.

The King has granted Dr. Harry Chapman Sinderson, C.M.G., M.V.O., O.B.E., Dean of and Professor of Medicine in the Royal College of Medicine of Iraq, authority to wear the Insignia of the Second Class of the Order of El Nahda conferred upon him by

Obituary

LEONARD KIDD, M.D.

The death has taken place at Enniskillen, Northern Ireland, of Dr. Leonard Kidd, who for forty years held the post of medical superintendent of Fermanagh County Hospital, and for thirty-six years was direct representative for Ireland on the General Medical Council. Dr. Kidd, who was in his eightieth year, had been ill for a long time.

He was a native of County Louth and spent his early youth in Armagh. At one time he was a master at Foyle College, where he taught classical and modern languages. He was a keen player of rugby football, and once played for Ireland. He received his medical training at Trinity College, Dublin, and at Edinburgh, qualifying L.R.C.P.&S.I. in 1887, and taking his Dublin medical degrees in the following year. After various hospital appointments he settled in practice in Enniskillen, where his "monument" is the county hospital which he served as medical superintendent for so many years with marked ability and devotion. He transformed the institution from a comparatively small, poorly equipped building for the aged and infirm into one of the most modern and best furnished hospitals in all Ireland. It was no longer necessary for patients, well-to-do or poor, to undertake the hundred miles' journey to Dublin to undergo an operation. A theatre was installed, trained nurses introduced, proper accommodation for nurses provided, and the progress went on until, just before his resignation in 1937, a new maternity ward and children's clinic were added. Dr. Kidd was also for forty years medical officer to Portora Royal School, and took a deep interest in the welfare of its boys, including its old boys. A portrait of him was unveiled in the hall of the school early during the present year. He was president of Enniskillen District Nursing Society, and the high state of efficiency of nursing in Fermanagh was due largely to his efforts. For a time he was a member of his urban district council, where he zealously advocated improved housing, water supply, and sanitation.

In medical politics he was a prominent figure. One of his ideals was a Ministry of Health for Northern Ireland, and he had many consultations with the Prime Minister, the late Viscount Craigavon, and the Ministry of Home Affairs on the subject, but his advocacy was unavailing. He became a member of the British Medical Association as long ago as 1889, and in 1906 he was a very acceptable president of the Ulster Branch. He had also been chairman of his own, Fermanagh, Division. When the Association visited Belfast in 1937 he acted as vice-president of the Section of Medical Sociology. He had also been president of the Irish Medical Association (now merged with the B.M.A. in the Irish Free State Medical Union). His long membership of the General Medical Council, from 1906 until quite recently, introduced him to prominent medical men in Great Britain, by whom he was greatly esteemed. In the war of 1914-18 he served in the R.A.M.C., holding the rank of major. A deserved honour which came to him a few years ago was his appointment as Deputy Lieutenant for his county.

LOUIS C. PARKES, M.D.

The death of Dr. Louis Coltman Parkes at the age of 84 will recall to senior members of the Public Health Service a man who in his day did notable work in sanitary science and was long known to students and practitioners as the author of a standard textbook on hygiene which passed through eight editions. From University College Hospital he graduated M.B.Lond. in 1880 and M.D. in 1882, and he was one of the first to take the D.P.H. For many years Dr. Louis Parkes was medical officer of health for Chelsea and consulting sanitary adviser to H.M. Board of Works, retiring from the service of the Metropolitan Borough of Chelsea in 1923; he was also honorary sanitarian to the East End Maternity Hospital. He had been vice-president of the Royal Sanitary Institute, and was a Foreign Associate Member of the Société Française d'Hygiène. He held office at three Annual Meetings of the British Medical Association—as honorary secretary of the Section of Public Medicine in 1890, vice-president in 1895, and president of the Section of Hygiene and Public Health in 1909. He was the originator and sole author of the early editions of *Hygiene and Public Health;* Prof. H. R. Kenwood joined him later as co-author of that work, and collaborated in 1929 with Prof. Harold Kerr in preparing the eighth edition. Dr. Parkes also wrote small books on *Infectious Diseases. Notification and Prevention* in 1893, on *Elements of Health* in 1895, and on *House Drainage, etc., in Relation to Health* in 1909. He edited the third edition of Corfield's *Treatment and Utilization of Sewage.* He died in retirement at Holmbury St. Mary, near Dorking, on Oct. 11.

Dr. Robert Applegarth Hendry died at Rugby on Aug. 13, and medicine was the poorer for the loss of a general practitioner and gynaecologist who overcame his own disabilities in so heroic a manner that his fellows and patients always looked to him as the leader of local medical thought. He was a sufferer from arthritis for many years, but this he never allowed to interfere with the needs of his patients. He was always the same kindly administrator to the sick and suffering, wherever or whenever he was called. I have watched him operate late at night, and his thoughtfulness towards the theatre staff was a model for any young surgeon. Whenever a meeting was held at which controversy might arise he was an automatic choice as chairman, so respected was he by his colleagues for scrupulous fairness and honesty of thought. His academic career was brilliant, and he took the gold medal at the M.D.Lond. examination in obstetrics and gynaecology in 1908. He then became demonstrator of obstetrics and gynaecology, subcurator of the obstetrical and gynaecological museum, and Ethel Boyce Fellow, University of Liverpool; and honorary assistant gynaecological surgeon, Hospital for Women and Liverpool Royal Infirmary. When the highest honours in his specialty appeared within his reach, illness snatched them from him, and in 1925 he gave up his work in Liverpool and entered general practice. His love for gynaecology was so strong that in 1936 he again took up hospital work, joining the honorary staff of the Hospital of St. Cross, Rugby. He was elected chairman of the Medical Board, was chairman of the Rugby Division of the B.M.A., and had held the chair of various other committees, including the local Rotary Club. Dr. Hendry leaves a widow and two sons. The elder, Capt. Preston Hendry, R.A.M.C., is on active service in the Middle East. Shortly before his death Dr. Hendry received the news that this son had been mentioned in dispatches.—P. T. D.

Universities and Colleges

UNIVERSITY OF OXFORD

Dr. Alexander M. Cooke, F.R.C.P., May Reader in Medicine, has been elected to a professorial fellowship at Merton College.

In Congregation on Oct 20 a decree was passed establishing a professorship of social medicine. This gives effect to the decision announced in these columns on July 25 (p. 101) to establish at Oxford an Institute of Social Medicine and to appoint a professor to be in charge of it. The Nuffield Provincial Hospitals Trust will devote £10,000 a year for the next ten years for the purposes of the chair and the institute in which the professor will work.

UNIVERSITY OF CAMBRIDGE

Prof. H. R Dean, M.D., Master of Trinity Hall, has been elected the representative of the University on the General Medical Council for the five years from Oct. 22, 1942

The late Sir Joseph Larmor, F.R.S., has bequeathed to the University £2,000 to be devoted to providing medical and surgical assistance and sick nursing to junior members of the University.

At a Congregation held on Oct. 16 the following medical degrees were conferred by proxy:

M.B., B Chir —R. M. Emrys-Roberts, A J. Rook, W F. Felton, M Koettlitz, J. B. Stanton, G. Wetherley-Mein, I. N. Darbyshire, M. M. Brown, K. H. Lim, W. P. U Jackson, R. J. F. H. Pinsent.

M.B —J. Mackellar

Cecil Clifford Dobell, M.A., F.R.S., of Trinity College, protistologist to the Medical Research Council, has been approved for the degree of Doctor of Science.

UNIVERSITY OF SHEFFIELD

Drs. H. Le Brun and W. A. Harney have been appointed temporary demonstrators of anatomy. The University Council has accepted, with regret, the resignation of Mrs. M. G. Happey, M.B, of the post of assistant bacteriologist, and has accorded its thanks to Dr. Happey for her services.

QUEEN'S UNIVERSITY OF BELFAST

Dr. William Lyle, a medical graduate of Queen's University, Belfast, and County Director of the Red Cross in that city, has been returned unopposed as a representative of Queen's University in the Northern Ireland Parliament, to fill the vacancy caused by the death of Col. A. B. Mitchell, F.R.C.S.I.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

It is proposed to hold a meeting of Fellows and Members at the College in Lincoln's Inn Fields on Thursday, Nov. 19, at 2.30 p.m., when a report from the Council will be laid before the meeting.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh, held on Oct. 21, with Mr. J. W. Struthers, President, in the chair, the following who passed the requisite examinations were admitted Fellows:

W. R. Black, D. G W Clyne, P. G. L Essex-Lopresti, T. B FitzGerald, R A Fleming, L. Gillis, E. Gledhill, J. E. V. Jones, A N Reid, E. L. Salingar, M. Sugar, H. Winter

The Services

CASUALTIES IN THE MEDICAL SERVICES

In an Admiralty list of casualties in H.M. minesweeper *Leda*, published on Oct. 16, the name of Temp. Surg. Lieut. WILLIAM WILSON TENNANT, R.N.V.R., is included as "missing, presumed killed." He was born on May 21, 1909, and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1940. He entered the R.N.V.R. soon after qualification.

Surg. Lieut.-Cmdr. MAURICE CAY, R.N., who is reported "missing, presumed killed" in Oct., was the son of the late Capt. Cay, R.N., and graduated M.B., Ch.B. at the University of Edinburgh in 1934. After holding the post of assistant medical officer at the Hope Hospital, Salford, he entered the Royal Navy in Jan., 1935, and was recently promoted. He leaves a widow.

Missing.—Lieut. P. T. Chopping, R.A.M.C., Capt. L. B. Gunn, R.A.M.C., Temp. Surg. Lieut. B. H. O'Neill, R.N.V.R, Surg. Lieut. J. G. Reed, R.N.V.R.

Medical Notes in Parliament

Nutrition Council

On Oct. 20 Sir E. GRAHAM-LITTLE asked whether the Parliamentary Secretary to the Ministry of Food would consider the desirability of setting up a Nutrition Council, consisting of clinicians, laboratory workers, and medical officers of health, as urged from many authoritative quarters. Mr. ERNEST BROWN, who replied, said: I have read with interest the expressions of opinion about possible developments in the realm of nutrition, and have had an opportunity of discussing them with my colleagues. Though the advocates of the establishment of a Nutrition Council appear to differ somewhat among themselves both about methods and objects, the main purposes which they appear to have in view are already secured by existing arrangements. Technical investigation and research are adequately provided for through the Medical Research Council, the Agricultural Research Council, and the Department of Scientific and Industrial Research. A great volume of work is continuously in progress under the auspices of these bodies, and the first-named comprises among its members and officers a number of scientists outside the medical profession, and from the outset much valuable research on nutritional problems has been conducted on its behalf. The application to current problems of the results of scientific investigation is primarily the responsibility of the Health Departments, to which the Ministry of Food and the Agricultural Departments look for guidance in nutritional matters when framing their programmes of production, import, and distribution of foodstuffs Co-ordination of the policies of the various Ministries concerned is fully provided for by appropriate interdepartmental machinery. As regards the international aspects of the subject, the Allied Governments last year appointed an interallied committee to prepare estimates of post-war relief requirements, and I understand that this committee has already arranged for a subcommittee of Allied nutrition experts to examine the estimates from the nutritional standpoint.

Mass Radiography

Mr. ERNEST BROWN stated on Oct. 15 that production of the standard apparatus for mass radiography had not reached a stage at which its cost could be closely determined, but it was expected to be in the region of £1,500. Apparatus of this kind was not subject to purchase tax. It was not proposed to make special grants towards this particular item of cost to those county councils and county borough councils who would be concerned, but Exchequer assistance was given towards the cost of the treatment of tuberculosis.

Diphtheria

Replying on Oct. 15 to Mr. James Griffiths, Mr. BROWN said the number of cases of diphtheria notified during the first three quarters of this year was 29,939. This represented a decrease of about 6,500 on the corresponding period last year. The provisional mortality figures for the first half of 1942 showed a decrease of 0.8% on the corresponding figures for 1941.

Making Sea-water Drinkable

The Department of Scientific and Industrial Research has investigated on behalf of the Minister of War Transport various methods of converting sea-water into drinking-water, and the conclusion has been reached that the most suitable apparatus for use in a lifeboat would be a small still. Such a still must have a high standard of efficiency in view of the restricted space available for storage of fuel in lifeboats Experimental stills have been made and are now under test.

The Glasgow Small-pox Outbreak

Mr. LEACH inquired on Oct. 14 whether the Glasgow sanitary authority had tried to ascertain the vaccinal condition of the electrical engineer who was found to be suffering from confluent small-pox when removed to hospital from a steamer at Glasgow on May 29. Mr. JOHNSTON said this patient had been too ill to be questioned and the vaccination marks, if any, could not be seen because of the rash. The patient's companions stated that he had never been vaccinated. Inquiries to his relatives would have been difficult because they were in Australia. Answering further questions on the same date, Mr Johnston said that when the outbreak began revaccination was offered to all staffs likely to come into contact with small-pox. A medical officer was vaccinated on May 29 without success, after he had been in contact with infection on a ship. The shipping company was not responsible for notifying small-pox on this ship, as the ship's doctor had diagnosed the case as measles complicated with pneumonia. No blame attached to a ship doctor who made a mistaken diagnosis in good faith. The case was recognized as small-pox on admission to hospital.

Fees for Medical Certificates

On Oct. 20 Mr. MOLSON asked the Minister of Health whether he proposed to take powers to restrict the fees charged by doctors for certificates recommending extra diet or fuel on account of ill-health. Mr. BROWN replied in the negative, but said he understood that the B.M.A. had recommended practitioners to forgo any fees for certificates of this kind where they believed that hardship would result to the individual.

Prevention of Frost-bite in Seamen.—Full instructions have, Mr NOEL BAKER announced on Oct. 14, been given by the Minister of War Transport to seamen for the prevention and treatment of frost-bite. Every man sailing in Arctic waters is provided with a rubberized protective suit to guard against exposure in lifeboat or raft. Oil is also provided for further protection and for massage. Other aspects of protection are under consideration.

HOSPITAL REGIONALIZATION IN LANCASHIRE

The Manchester Joint Hospitals Advisory Board, which represents the voluntary and municipal hospitals of Manchester, the University, the local Division of the British Medical Association, and the Local Medical and Panel Committee, has issued its fifth annual report, which covers the two years 1940-1. An account is given of the institution in Manchester of the blood transfusion service, whereby four hospitals are centres for the distribution of stored blood to fourteen. The service is under the general direction of the medical officer of health and the administration of a medical committee of which Dr. J. F. Wilkinson of the Royal Infirmary is chairman The other matter dealt with in the report is an account of the events following the adoption of a resolution by the Board supporting the proposals of the Nuffield Provincial Hospitals Trust, but requesting the Trust to approve of the Board being accepted as responsible for the inauguration and formation of a properly constituted regional council for a wider area. These views were accepted by the Trust, and steps have been taken for extending the area of the Board by approaching adjacent hospital authorities. An invitation has been accepted by the hospital authorities of Salford and Stretford to become members of a reconstituted Joint Hospitals Board covering these two municipal areas as well as that of Manchester. The amendments to the constitution and functions of the Joint Board are being made.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there was a sharp rise in the incidence of the common infectious diseases of childhood. The notifications of measles, scarlet fever, diphtheria, and whooping-cough were 849, 190, 131, and 127 in excess of the previous week's totals.

The rise in the notifications of scarlet fever was fairly general, the biggest increases being in Lancashire 53 cases, Northumberland 38, and Middlesex 36. The incidence of whooping-cough was little changed in London and the southern section of the country, where there was a tendency towards a slight decline, and the increase was confined to the northern counties.

The large rise in diphtheria was contributed mainly by two counties—Lancashire, where the cases rose from 140 to 195, and Cheshire, with an increase from 39 to 78. The principal centres of infection in Lancashire were Liverpool C.B. 63, Manchester C.B. 26; and, in Cheshire, Ellesmere Port U.D., 28, had the largest number of cases.

The biggest rise in measles was in Yorks West Riding, where notifications went up from 332 to 1,123. There were 108 more cases in the C.B.s, 201 in the U.D.s, and 23 in the R.D.s, and the county contributed 24% of the total cases in England and Wales. The largest returns were those of Leeds C.B. 264, and Bradford C.B. 131. Other big increases were recorded in London and Wales, with 106 and 104 more than last week's totals. In London the rise was greatest in St. Pancras, with 49 more cases than the previous week. The chief centres of infection in Wales were Flint (Rhyl U.D. 22), Glamorgan (Cardiff C.B. 22), and Merionethshire (Ffestiniog U.D. 21).

In *Scotland* the chief feature of the returns was the rise in the notifications of measles from 185 to 303: the rise was confined to the counties of Lanark and Renfrew, with Lanark County 52, Glasgow Burgh 26, Greenoch Burgh 56, and Paisley Burgh 68. The only other outbreaks of note were in the cities of Aberdeen 33 and Dundee 31. Diphtheria has been slowly rising in incidence, and the 220 cases notified constituted the largest total during recent months, almost half of these cases, 99, being reported in Glasgow.

In *Eire* the incidence of acute poliomyelitis remained at a high level with 28 cases; they were scattered throughout the country and involved fifteen areas.

In *Northern Ireland* scarlet fever, with an increase from 34 to 60 cases, was the only disease to show any marked variation. One-half of the cases were recorded in Belfast.

Dysentery

The notifications of dysentery are still at a very high level, but there was a slight fall, 23, in the total. A new outbreak was reported from Devonshire, 26 cases occurring in Barnstaple M.B. Essex was the only one of the existing centres of infection where a considerable drop, from 33 to 4, took place. In Norfolk the cases rose from 13 to 18, involving five administrative areas, and in Yorks North Riding from 25 to 30 (notifications for the week under review in Middlesbrough C.B. 28). In Wales there was a rise in Glamorganshire, Cardiff C.B., from 30 to 36, and in Caernarvon, Conway M.B., a drop from 13 to 8. 16 cases were reported in London, and also in Southampton (Droxford R.D. 12).

Small-pox

Further cases and deaths have been reported from the outbreak at Methilhill, Fife. According to the daily press, up to Oct. 23 there have been 7 deaths and 21 cases in hospital; there were over 100 direct contacts.

In reply to questions in the Commons, Mr. Johnston, Secretary of State for Scotland, stated that the amount paid by the Glasgow Corporation for lymph used in the recent small-pox outbreak was £5,402, of which £1,075 was recoverable from the local authorities of adjoining areas. In addition lymph to the value of £6,000 was supplied by the Department of Health for Scotland. 358 doctors and 190 senior medical students received fees for vaccinations, the largest individual amount paid being £271 2s. 6d.

Returns for the Week Ending October 17

The returns of infectious diseases in England and Wales during the week included the following: scarlet fever 2,703, whooping-cough 907, diphtheria 971, measles 5,796, acute pneumonia 608, cerebrospinal fever 59, acute poliomyelitis 24, dysentery 165, paratyphoid 6, typhoid 6.

Dr. Edmond R. Long, professor of pathology and president of the American Association for the History of Medicine, and Dr. Henry E. Sigerist, director of the Institute of the History of Medicine at Johns Hopkins University, have been elected honorary members of the Society of the History of Medicine at Buenos Aires.

No. 40

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 10.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	57	5	17	1	—	109	5	34	3	5
Deaths		1	—				—	—		
Diphtheria	991	47	220	71	29	997	58	227	37	45
Deaths	12	—	3	2	—	26	3	3	1	1
Dysentery	209	16	45	—	—	108	9	175	—	—
Deaths				—	—			—	—	—
Encephalitis lethargica, acute . .	3	—	—		—	4	—	1	—	—
Deaths		—	—				—	—		
Erysipelas		—	63	11	2		—	59	9	1
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				62						
Deaths	57	8	7	22	7	33	—	13	47	9
Measles	4,650	329	303	40	11	715	34	14	84	—
Deaths	8	—	1	—	—	—	—	—	—	—
Ophthalmia neonatorum	104	6	28	3	—	80	4	15	2	—
Deaths										
Paratyphoid fever ..	11	2	4			87	6	11		
Deaths	—	—	—		—	1	1			
Pneumonia, influenzal*	541	27	9	—	6	629	16	1	—	6
Deaths (from influenza)	12	—	1	—	1	14	21	1	—	6
Pneumonia, primary ..			160	9				141	8	
Deaths				9	7				4	—
Polio-encephalitis, acute	2	—				2	—			
Deaths										
Poliomyelitis, acute ..	23	—	2	28	—	31	1	6	5	2
Deaths		—	—				—	—		
Puerperal fever ..	—	1	8	4	—	2	2	18	1	—
Deaths		—					—			
Puerperal pyrexia ..	192	12	8		—	149	5	11		2
Deaths										
Relapsing fever ..	—	—			—	1	—			—
Deaths										
Scarlet fever	2,613	165	407	54	60	1,217	44	249	52	16
Deaths	1	—	2	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever† ..	6	—	3	7	5	34	5	4	7	—
Deaths	1	—	—	—	—	3	—	2	1	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	972	96	26	31	3	2,078	223	56	43	13
Deaths . .	6	3	3	3	—	11	—	3		
Deaths (0–1 year) .	325	34	50	43	26	276	15	75	71	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,826	534	518	204	119	3,598	466	505	219	100
Annual death rate (per 1,000 persons living)			11·7	13·6	‡			11 0	14 5	‡
Live births	6,292	739	894	426	248	4,899	460	898	397	195
Annual rate per 1,000 persons living ..			18·5	28 4	‡			18·3	26·4	‡
Stillbirths	229	25	35			204	16	33		
Rate per 1,000 total births (including stillborn)			38					35		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

Medical News

A meeting of the Manchester Medical Society will be held at the Medical School, University of Manchester, on Wednesday, Nov. 4, at 4 p.m., when Sir Charles Wilson, P.R.C.P., will deliver an address on "Morale in Leadership." All graduates and students of medicine are invited to attend.

Prof. W. V. Mayneord, D.Sc., will give a discourse on "The Measurement of Radiation for Medical Purposes" at the Royal Institution, 21, Albemarle Street, W., on Friday, Nov. 6, at 5 p.m.

A meeting of the main executive committee of the Medical Superintendents' Society will be held at Station Hotel, Derby, on Saturday, Nov. 7, at 11 a.m.

An appointments system for out-patients will be instituted at St. George's Hospital from Nov. 2. Private and panel doctors are asked to co-operate by telephoning to arrange appointments with the appointments clerk at the hospital (Sloane 7151).

The *Zentralblatt für Chirurgie* of July 4 is dedicated to Prof Carl Henschen, director of the surgical clinic at Basle. The issue contains his portrait, a foreword by Prof. Sauerbruch, and several articles by his Swiss colleagues.

The *Yorkshire Post* announces that a gift of £50,000 is to be made to the General Infirmary at Leeds by Mr. Charles Brotherton to cover the cost of building and equipping the private patients' wing which was opened in November, 1940. This new benefaction will make available from the Infirmary's special appeal fund a similar sum for proceeding with other much-needed extensions and developments after the war. The private patients' wing gives accommodation for 90 patients, and 79 beds are now in commission.

Nursing mothers are to be allowed priority supplies of eggs for 12 instead of 6 months, but doctors need only issue an initial certificate at the time of birth, the local food office arranging the priority thereafter automatically.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1.

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Telegraphic Addresses.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

First-aid Treatment of Wounds

J. R. L. writes: I am lecturing to a St. John Ambulance class on first aid, and I have stressed the importance of antiseptic measures in dealing with such wounds as they may have to treat. It occurred to me to suggest that bad wounds might be well sprinkled with sulphanilamide. I will be much obliged by an authoritative opinion on the advisability of recommending such a procedure to first-aid workers.

Reconditioning of Corks

Dr. C. **Heap** writes: It is grossly wasteful to throw away corks from returned empty medicine bottles. Boiling, though it sterilizes, produces a dirty-looking cork which I do not like to use. Can anyone tell me of a method of bleaching suitable for use in general practice?

LETTERS, NOTES, ETC.

Aid for the Women and Children of Abyssinia

In these days of so many deserving appeals to individual generosity it is often a help to be reminded of causes which, by their nature, can lay some claim to support from the medical profession. One such cause is that of the Ethiopian Women's Work Association, which was first started to provide medical supplies and comforts for the troops in Abyssinia, but which is now tackling the even more difficult task of social welfare work among the women and children of that country. The London office of the association has recently received an urgent request for a woman doctor and for a social welfare worker to go out to Abyssinia to open clinics for women and children in all parts of the country, and to organize homes for children who, through the war, have been separated from or lost their parents. For this a minimum of £3,000 is needed. £1,000 has been received as a result of a broadcast appeal in September, but the balance and more is needed at once if this humanitarian work is to proceed at all It is hoped there will be a generous response to the appeal. Donations should be sent to Lady Barton, Hon. Treasurer, 19, Neville Street, London, S.W.7.

Treatment of Furunculosis

Dr. A. I. **Cemach** writes from Capel Garmon, N. Wales: The type of "furunculosis" described by Dr. G. L. Davies (Sept. 19, p 351) was well known to Austrian doctors in the last war. It was eventually overcome by a single treatment which proved to be as specific as SUP 36 in Dr. Davies's case. A 15% solution of formaldehyde was applied locally to the initial papule and its surroundings as early as possible, and repeated once or twice a day, with slight covering of the lesion to prevent chafing. As a rule the papule was arrested by this and dried up within a couple of days, no further crops appearing after two or three lesions had been checked in that way.

Naphthalene in Bedrooms

Dr. E. B. **Hazleton** (Torquay) writes: It is not generally known that the vapour from naphthalene as used in bedrooms with the object of preventing the depredations of moths may be injurious to human beings. I have noticed the following symptoms: a feeling of weariness and lassitude in the morning with loss of appetite and a muddled head.

MEDICINE 100 YEARS AGO

Extract from a letter from John Barrett to the *Provincial Medical Journal*, published on October 29, 1842:

"Gentlemen,—If we may judge from some late communications to your Journal and the 'Medical Gazette,' the *questio vexata* of what is Asiatic cholera has yet to be solved. Thus, we have on the one side two cases of Asiatic cholera forwarded you by Mr. West, of Poole, and one to the 'Medical Gazette,' by Dr. Ayres, of Thame ('Medical Gazette,' Sept. 30), whilst on the other we have Mr. Salter, a gentleman of thirty years' experience in the locality of Mr. West's cases, giving us an article on the 'Diagnosis of Asiatic and English Cholera,' in which, though he courteously disclaims any 'desire to impugn the correctness of your very respectable correspondent's observations,' he urges the importance of correct diagnosis, and in the latter part of his article remarks with respect to what he terms the 'genuine oriental cholera' 'In the first case that came under my observation, I felt that I was in the presence of a new disease, and that what I then witnessed I had never before seen; and I have no hesitation in saying that, since the disappearance of that epidemic, nothing resembling it has crossed my path.' There can be no misunderstanding this; he considers Asiatic cholera, if cholera at all, to be a cholera sui generis, whilst the communications of Mr. West and Dr. Ayres would lead us to the conclusion that they consider 'the Asiatic cholera itself,' to quote the words of Dr. Ayres, 'may be nothing more than an aggravated form of the disease so long familiar to us.'

"On which side does truth rest? No doubt, if we consider the intensity of the cholera such as it appeared in 1831-2-3, it was a new disease; at least, for my own part, I have seen nothing approaching to it in this respect, and there were circumstances attending it which I have never met with except then—e.g., the *intense* blueness, and, if the expression be allowable, the more deadly coldness of the body during life, with the singular return of warmth and natural color after death; the insusceptibility to blisters and sinapisms at the commencement; and the occurrence of vesication some days after at the parts where they had been applied; and lastly, the much talked of post-mortem muscular action—circumstances which, no doubt, were witnessed by most medical men conversant with cholera at the period in question.

"Few of your readers will, I think, dissent from Mr. Salter's opinion that rice-water evacuations, spasmodic tension of the muscles, and the blue skin cannot be considered pathognomonic of Asiatic cholera; and I must add, that whilst I allow that cholera cases do not now (at least under my observation) present us with any approach to the intensity of what was termed Asiatic cholera, yet in a modified degree they exhibit most of the symptoms mentioned by Mr. Salter as 'the symptoms belonging to the early stage of Indian cholera most to be relied upon'—viz., 'a remarkable shrinking or shrivelling up of the person, and especially of the hands, fingers, and tongue, with cold breath, and squeaking, indistinct voice, scarcely to be heard,' or, as Dr. Barry has described it, 'the low whine like that of a dog dying from arsenic.' Several of these symptoms I have seen in the cholera of this season"

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THE CLINICAL SIGNIFICANCE OF THE Rh FACTOR*

BY

K. E. BOORMAN B. E. DODD, B.Sc.

AND

P. L. MOLLISON, M.B., M.R.C.P.

The discovery of the Rh factor† (Landsteiner and Wiener, 1940) and the demonstration of its importance in various fields of medicine (Wiener and Peters, 1940; Levine, Katzin, and Burnham, 1941) have recently aroused the greatest interest. Not only has an explanation now been found for many of the hitherto unexplained haemolytic reactions following certain homologous-group blood transfusions, but also a dramatic advance has been made in the understanding of the haemolytic anaemias of the newborn.

It is well known that human erythrocytes contain, in addition to the A and B agglutinogens of Landsteiner, a variety of antigenic components. These other antigens, of which M and N have hitherto been the best known, are usually ignored by clinicians in the selection of blood donors because the corresponding antibodies occur only very rarely in human sera, and, moreover, these factors, although they act as antigens when injected into certain animals, very rarely stimulate the production of immune antibodies in man. By contrast, the importance of the Rh factor lies in its ability to stimulate the formation of specific immune agglutinins in man.

The presence of the Rh factor in certain human erythrocytes was first discovered by testing samples with anti-rhesus sera, prepared by injecting the blood of rhesus monkeys into rabbits. It was found that 85% of human bloods, irrespective of group, were agglutinated, whereas 15% were not. The former are termed "Rh-positive" and the latter "Rh-negative." Persons whose erythrocytes are Rh-negative are capable, under certain circumstances, of forming an antibody which reacts with the Rh antigen. This may occur after transfusions of Rh-positive blood or, probably more commonly, when a woman (herself Rh-negative) becomes pregnant with a baby whose erythrocytes are Rh-positive.

The first demonstration of the practical importance of the discovery of the Rh factor was made by Wiener and Peters (1940). These authors described 4 cases in which haemolytic reactions occurred after the repeated transfusion of blood which would ordinarily have been considered compatible. They were able to demonstrate that the sera of 3 of these patients contained an atypical agglutinin which gave identical reactions with the anti-rhesus serum. They showed that all 3 of these patients were Rh-negative and that the blood responsible for the haemolytic transfusion reactions was Rh-positive. Ten further similar cases were next reported by Wiener (1941). In many of these cases it was possible to show that the transfusion of Rh-negative blood was by contrast as successful as an ordinary compatible transfusion.

Slightly earlier, Levine and Stetson (1939) had suggested that immunization of the pregnant woman to an antigen contained in her foetus might explain the presence of atypical agglutinins in her serum and thus account for the comparative frequency of intragroup transfusion accidents in pregnant or recently delivered women. Later Levine, Katzin, and Burnham (1941) pointed out that these women in whom atypical agglutinins were found had often given birth to infants affected with erythroblastosis. They suggested that the haemolytic anaemia in the foetus might be due to the passage of the immune agglutinin across the placenta, with subsequent destruction of the foetal erythrocytes. At the same time they stated that the majority of the atypical agglutinins had been found to give reactions identical with those of anti-Rh sera.

The rôle of iso-immunization in the pathogenesis of erythroblastosis foetalis was more fully considered by Levine, Burnham, Katzin, and Vogel (1941). These workers showed that whereas only 15% of the random population were Rh-negative, of 153 mothers whose infants were affected with erythroblastosis foetalis 141 (92%) were Rh-negative. Of 76 infants and 89 husbands in this group who were tested, all were found to be Rh-positive. In 70 cases the mother's serum was examined within two months of delivery; Rh antibodies were demonstrated in 33 of these. From this examination it was concluded that iso-immunization of an Rh-negative mother to the Rh antigen contained in her (Rh-positive) foetus, with subsequent passage of the immune anti-Rh agglutinin back across the placenta, was the cause of the erythroblastosis in the great majority of cases. In the small remaining group, in which the mother was Rh-positive, it was considered that other blood group differences were responsible. Attention was drawn to the fact that 8 out of the 141 mothers had had severe transfusion reactions although homologous-group blood had been used (but no attention had been paid to the Rh grouping of the donor). In the same paper it was claimed that the affected infant maintains higher levels of haemoglobin and R.B.C. counts after transfusion of Rh-negative blood than after transfusion of Rh-positive blood.

The heredity of the Rh factor was considered by Landsteiner and Wiener (1941). They suggested that two allelomorphic genes—Rh and rh—were concerned, Rh being dominant. When the husband's phenotype is Rh-positive and that of the wife Rh-negative the phenotype of the baby will depend upon whether the husband's genotype is RhRh or Rhrh. If the former, the infant's genotype will always be Rhrh and the phenotype therefore Rh-positive; if the latter, the phenotype will only be Rh-positive in 50% of the siblings. These considerations help to explain the different incidence of erythroblastosis in different families.

From this brief consideration of the circumstances in which the Rh factor has been shown to play an important part, it is clear that tests for Rh antigens and antibodies have considerable application in clinical medicine. This paper seeks to confirm many of the observations reported above and to present some new findings.

Sources of Test Serum

Test serum may be obtained from two sources. Either an animal, preferably the guinea-pig (Landsteiner and Wiener, 1941), may be immunized by being given a course of injections of blood from rhesus monkeys, or serum may be obtained from a human individual who has become immunized to the Rh antigen. In the first case the serum will always have to be absorbed, since it will contain other antibodies acting upon human erythrocytes. Furthermore, only certain animals produce satisfactory antibodies, and even from the good reactors only a small amount of serum will be obtained. The advantages of animal sera are simply that they can be produced at will and that their reactions are more uniform than those of human sera. By contrast, the advantages of using immune human sera for testing are that with good fortune a comparatively large amount of serum may be obtained with very little trouble. Unabsorbed human immune sera containing anti-Rh agglutinins can only be used for testing bloods of the same group or of group O, however, because, of course, they may also contain anti-A and anti-B agglutinins. These agglutinins either can be removed by absorption with appropriate human erythrocytes or, according to Wiener (1942), may be neutralized by the addition of saliva from individuals of groups A and B who are known to be "secretors."

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* A report to the Medical Research Council from the S.W. London Blood Supply Depot.

† Throughout, the terms "Rh factor" and "Rh antigen" are used interchangeably, and the corresponding antibody is referred to as the Rh antibody, Rh agglutinin, or anti-Rh agglutinin.

In the present work a start was made by finding a serum, from a woman who had recently given birth to a baby with icterus gravis, which agglutinated the majority of bloods of its own group. The reactions were better at 37° C. than at 5° C. This serum was found to give reactions identical with those of a second similar serum that was obtained shortly afterwards, and the incidence of positive reactions produced by these sera suggested strongly that the agglutinins concerned were anti-Rh. Shortly afterwards, by the courtesy of the Rockefeller Institute, a sample of anti-Rh serum was sent to the Medical Research Council, and so it was possible to confirm that these human sera contained anti-Rh agglutinins. Through the kindness of Dr. Morgan of the Lister Institute we also had at our disposal some other samples of animal anti-rhesus serum obtained by the injection of guinea-pigs.

During the course of the work some 49 sera were found which contained demonstrable Rh antibodies. In accordance with the findings of other workers (Wiener and Peters; Landsteiner and Wiener; Levine, Burnham, Katzin, and Vogel) it was noted that the sera did not give entirely parallel reactions. The majority were observed to react with the same cells as those with which the animal sera reacted. A few sera, however, gave a higher percentage of negative reactions with a random selection of human bloods. Also, in occasional cases bloods were negative with one serum and positive with another. If human sera are used for testing, as they were in most cases in the present investigation, it certainly does not seem advisable to use less than 3 anti-Rh sera for testing (see also Davidsohn and Toharsky, 1942). At least 3, and often more, different sera were therefore used as a routine.

Test Cells

In agreement with the findings of Landsteiner and Wiener great differences were observed between the sensitivity of the cells of different Rh-positive individuals towards a given anti-Rh serum. Whereas with a given serum the cells of one individual may be completely agglutinated, those of another may show only a weak reaction. We have found that, although these differences are constant with any one serum, they differ from one serum to another, so that cells which react well with one serum may react poorly with another, while other cells may react poorly with the first serum but well with the second.

In examining a given serum suspected of containing anti-Rh agglutinins it is clearly advisable to test it against several different known Rh-positive bloods. Furthermore, in titrating the serum against Rh-positive cells it is essential to use the same cells for every estimation if accurate information is to be obtained about the changes in titre of the serum.

Technique of the Tests

Historical

In the reports of the first cases in which anti-Rh agglutinins were detected in human sera it was stated that the reactions were more pronounced at low temperatures and that no noticeable reaction at all occurred at 37° C. (Wiener and Peters). Accordingly, it was recommended that the mixture of cells and serum should be chilled. It was also suggested that the mixtures should be centrifuged before being examined microscopically for evidence of agglutination.

By contrast, sera described by Levine, Katzin, and Burnham (1941) were found to contain Rh agglutinins more active at 37° C. than at low temperatures. In a paper published a little later Wiener (1941) also recorded the finding of sera containing Rh agglutinins more active at 37° C. He stated that, despite the use of the centrifuge technique, no Rh agglutinins were found in 6 cases, in all of which there was a strong suspicion of their presence. At the end of the paper, however, Wiener refers to the fact that the tubes containing the mixtures of cells and serum from one of the cases showed a peculiar pattern of the sediment. In an article published soon afterwards (Landsteiner and Wiener, 1941) particular attention was drawn to this sediment pattern as a sign of a positive reaction. It was pointed out that after a mixture of cells and serum has been allowed to stand for some time the sediment at the bottom of the tube presents different appearances, according to whether or not agglutination has occurred. "Negatively reacting bloods [then] show a circular deposit with a smooth edge, while positive bloods have a wrinkled sediment with a serrated border or show a granular deposit."

It was pointed out that sometimes, in spite of a distinctly positive sediment picture, when the suspensions are examined microscopically the clumping may be quite weak. In our experience, rough treatment, such as sharp tapping of the tubes before the withdrawal of a sample for microscopical examination, can completely break up weak agglutination.

Using the cold centrifuge technique originally advocated by Wiener and Peters, we had several failures at first in attempting to demonstrate Rh antibodies. Later, by treating the mixtures more delicately and by working at a temperature of 37° C. instead of 5° C., it was possible to show that some of the sera examined did in fact contain Rh antibodies. Wiener (1942) has stated that the majority of Rh antibodies are more active at 37° C. than at 0° C., although in his opinion many of them are not much affected by alterations in temperature.

Procedure Recommended

(*a*) *Testing Unknown Cells.*—The following technique is very similar to that recommended by Landsteiner and Wiener (1941), although the importance of carrying out the tests at 37° C. when using human immune sera was first emphasized by Levine (1941).

A suspension of the cells to be tested is prepared by adding one small drop (0.02 c.cm.) of blood to 1 c.cm. of saline; the final concentration should be approximately 1 to 2% in terms of blood sediment. One volume of this suspension is placed with one volume of the test serum in a small tube, 7 mm. in diameter. As mentioned above, it is desirable to test cells with not less than 3 different sera. At the same time known Rh-positive and Rh-negative cells should be put up with the same sera to act as controls. The tubes should be left for at least one hour, and preferably for two hours, before being examined. For reasons discussed above, the tubes should be kept at 37° C. whenever possible, although with animal sera the reactions are just as satisfactory at room temperature (Wiener, 1942).

After the tubes have stood for one to two hours the sediment which has formed is examined, preferably with the help of a hand lens. The difference between typical negatives and positives has already been described, but it must be added that only the examination of a large series of sediments can make one familiar with all the possible appearances. When the sediments have been examined and the reactions have been scored, the sediment in each tube is gently mixed with its supernatant serum by means of a Pasteur pipette, and a little of the mixture is then withdrawn and spread on a slide, and examined microscopically. Usually, definite clumping is seen in blood taken from the tubes giving macroscopic positives. Occasionally, however, only very small agglutinates are seen despite a characteristically positive sediment, and, as we have said, harsh treatment of the mixtures in such cases sometimes completely abolishes the agglutination. Nevertheless we prefer to rely upon seeing agglutinates, macroscopically or microscopically, as a sign of a positive reaction, and simply to use the sediment pattern as a strong suggestion of the reaction to be expected. The danger of false negatives is of course reduced by the use of 3 different sera.

When the reactions are weak it may be very difficult to decide from the microscopical appearance whether the reaction is true agglutination or pseudo-agglutination (rouleaux-formation).

This is a further reason for the use of several different sera and for carrying out control tests with known Rh-positive and Rh-negative cells. Whenever sufficiently potent sera can be obtained it is desirable to add a volume of saline to the volume of serum and of cells in order to diminish rouleaux-formation.

(*b*) *Testing Unknown Sera.*—Sera suspected of containing Rh antibodies should be tested against at least 10 different group O bloods collected at random and also with not less than 2 known Rh-positive and 2 known Rh-negative bloods, using the technique described above. If the reactions are positive with the known Rh-positive bloods and negative with the known negatives, and if the serum reacts with the majority of the unknown group O bloods, it is practically certain that the atypical agglutinin is anti-Rh. It is advisable to test the serum with the cells of the individual from whom it came, to exclude the presence of abnormally powerful auto-agglutinins. If the latter are present they may be partially removed by leaving the serum in contact with its own clot at refrigerator temperature and then removing the serum while it is still cold.

(*c*) *Direct Matching Test.*—In any case in which there is a possibility that the recipient's serum contains Rh agglutinins it is most desirable to perform the direct matching test in such a way that reactions due to the presence of these agglutinins will be detected. As emphasized by Wiener (1942), Rh reactions are usually not detectable by an open slide method, and it is therefore necessary to set up the reactions in tubes as described above. We have tested the most potent anti-Rh sera that we have encountered against known Rh-positive cells, using the ordinary slide technique, and failed to detect any evidence of agglutination. It is therefore necessary to prepare a suspension of the donor's blood and mix it with the recipient's serum in a small tube as described above. Wherever possible the tube should be kept in an incubator for 1 to 2 hours; when an incubator is not available the tubes should be left to stand at room temperature for a similar period. Although it appears from Wiener's observations that occasional anti-Rh sera are more active at refrigerator temperature, it is our impression that such sera will prove to be very uncommon, and since testing at low temperatures introduces considerable additional difficulties it is suggested that in the present state of knowledge it is unnecessary to carry out a test at this temperature as well.

At the end of 1 to 2 hours the sediment at the bottom of the tube is examined, and the impression gained is confirmed by gently withdrawing a portion of the sediment and examining it microscopically. The least evidence of agglutination must be taken as a definite contraindication to the use of the particular donor.

When it is desirable to complete the test as rapidly as possible the tube containing the mixture of cells and serum may be centrifuged slowly at the end of 30 minutes (500 r.p.m. for one minute) (Levine, 1941). The tube is then gently shaken and the contents examined. We do not, however, consider this technique to be as reliable as that already described.

It may be emphasized that Rh agglutinins occurring in human sera are immune bodies and that therefore their titre varies considerably, according to the time which has elapsed since their stimulation by the Rh antigen. Following the transfusion of Rh-positive blood, for instance, there may be a negative phase in which the titre is low and it may be impossible to demonstrate Rh antibodies at all. During the next few days the strength of the antibody increases, and reaches a peak some 7 to 21 days after the transfusion. Thereafter the titre falls slowly.

Little evidence has so far been collected about the period of gestation at which Rh antibodies occur in cases where their formation is stimulated. We have, however, noted that the titre is low soon after delivery and that it rises to a maximum between 7 and 21 days later. The antibody may have practically disappeared in a few months or may still be detectable 5 years later, as in one of our cases.

Results

Random Samples of the Population Examined

A random sample of blood donors (all white; groups A + O) was tested with several human anti-Rh sera. All the sera used for these tests were considered to give similar reactions to the guinea-pig sera, and presumably correspond to the standard type described by Wiener (1942) or to the "No. 1 in our series" of Davidsohn and Toharsky (1942).

Of 1,610 cases, 1,371 (85.15%) were found to be Rh-positive and 239 (14.85%) Rh-negative. These figures correspond closely with those recently quoted by Wiener (1942) (of 777 persons examined, 14.4% were found to be Rh-negative)

Mothers of Infants affected with Erythroblastosis

Diamond, Blackfan, and Baty (1932) first suggested that universal oedema of the foetus, icterus gravis neonatorum, and anaemia of the newborn were all manifestations of the same underlying disease process and could be conveniently grouped together and known as "erythroblastosis foetalis."

Before mentioning the findings in a group of these cases, attention is drawn to the difficulty that is sometimes encountered in diagnosing erythroblastosis in the infant. Clinicians have stated that no line can be drawn between mild "icterus gravis" and physiological jaundice of the newborn (Hawksley and Lightwood, 1934). Certainly, if the passage of immune incompatible agglutinins across the placenta is accepted as the main causative factor in this disease, all degrees of severity will be expected.

According to Diamond, Blackfan, and Baty, the features which enable jaundice associated with erythroblastosis to be differentiated from "physiological jaundice" are its earlier appearance and greater duration, and the associated features of an excess of erythroblasts in the peripheral blood at birth and their persistence for many days or weeks after delivery, together with anaemia, splenomegaly, and hepatomegaly. However, even when these diagnostic criteria are considered there may still be doubt as to the diagnosis because great variations in all these features are encountered. In making observations upon the serological findings in the mothers of infants with erythroblastosis it has been thought preferable to keep to classical cases of the disease, and this we have done. Nevertheless, attention will be drawn to a group of jaundiced babies who possibly exhibit a mild form of the condition.

We tested 48 mothers whose babies had definite erythroblastosis; 46 of these were found to be Rh-negative, and in 44 cases Rh antibodies were present. In all 48 cases the infant was Rh-positive. In the 4 cases in which no Rh antibody was found in the mother's serum, other group differences were evident—e.g., the mother belonged to group O and the foetus to group A. The difference was always such that the mother's serum contained an agglutinin incompatible with the infant's erythrocytes. The possible relevance of this finding is discussed below. In 9 cases in which the mother's serum contained Rh antibodies the infant's serum was examined for the presence of these antibodies. In 8 cases in which the infant was 3 to 10 days old at the time of examination no antibodies were detected. In the ninth case, however, in which the sera of identical twins were examined within 24 hours of birth, definite Rh agglutinins were found in both. This is believed to be the first recorded instance of this finding.

The Rh agglutinins in the mother's serum were titrated at room temperature and at 37° C. in every case, using a standard technique (Taylor and Ikin, 1939), but the mixtures were handled more delicately than usual. In most instances the agglutinins were titrated at intervals after delivery, and these results will be reported separately. It may be useful, however, to mention that out of 41 cases examined within a month after delivery very high titres (over 512) were found in 3, moderate titres were found in 19, and very low titres (under 8) were found in 19 cases. These figures refer to the maximum titre recorded in each individual case; in the majority of instances the figures probably approach the maximum titre reached, but they do not necessarily do so in all cases.

Cases of "Physiological" Jaundice

As mentioned, this does not seem to be a sharply defined group. For the present purpose any baby developing jaundice has been included provided that there were none of the classical features of erythroblastosis described above and provided that there was reasonable evidence that syphilis, sepsis, or congenital obliteration of the bile ducts was not responsible for the jaundice. Tests were made in 24 mothers; 3 were Rh-negative. In these cases the baby was found to be

Rh-positive and the mother's serum contained an Rh antibody. Moreover, in one of these cases the mother had previously given birth to an infant affected with icterus gravis neonatorum. This finding suggests that certain cases usually diagnosed as physiological jaundice would be more properly regarded as mild cases of erythroblastosis. The supposition that the aetiology of some cases of mild jaundice of the newborn is connected with the passage of incompatible agglutinins across the placenta receives further support from the findings in the other mothers and infants investigated. In these the incidence of cases in which the mother's serum was incompatible with the infant's erythrocytes (due to the presence of anti-A or anti-B agglutinins) was considerably higher than the expected incidence in a random sample of mothers and infants.

(*The concluding part, with a list of references, will appear in next week's issue*)

TREATMENT OF SHOCK BY DIRECT ACTION ON THE VEGETATIVE NERVOUS CENTRES*

BY

LENA C. STERN, M.D.

Professor of Physiology, Second Moscow State Medical Institute

The Mechanism of Traumatic Shock

Efforts to produce shock experimentally play an important part in the elucidation of the mechanism of traumatic shock. The criteria of shock conditions in all these experiments were: (1) sudden and persistent fall in blood pressure, with a rapid and feeble pulse, (2) shallow breathing, (3) the absence of reaction on irritation, (4) lowering of the temperature. All this points to a disturbance of the vegetative nervous system, particularly the sympathetic, which in itself leads to a diminution of volume of the circulating blood, due to the accumulation of blood in the blood depots and diminution in the liquid part of the blood from plasmorrhoea. This disturbance of the vegetative nervous system is also a cause of chemical changes which characterize the course of shock (appearance of acidosis, diminution of glucose, etc.). This work also showed that with the weakening of the sympathetic nervous system there is a stimulation of the parasympathetic system which shows itself by a number of inhibitive effects.

Experiments made by us and our colleagues (Rosin, Chvoles) have proved that sensitivity, especially to pain, plays an important part in the development of shock. They showed that irritation of the skin by an induction current for 2 to 6 hours causes shock, whereas with preliminary anaesthetizing of the skin with novocain much longer electrical stimulation is without effect. Given the same conditions, shock is most easily produced by irritation of the skin on the inner surface of the thigh, the peritoneum, and the periosteum, whereas irritation of the dura even for as long as 8 to 12 hours does not cause shock. The rhythm of irritation is important, shock usually appearing much more quickly when the rhythm is quicker.

The significance of the preceding conditions for the development of shock in man has been proved by clinical observations. Excessive tiredness, prolonged insomnia, insufficient nourishment, fear, exposure, loss of blood, and, not least, painful irritations, lead, after transient overstimulation of the sympathetic nervous system, to its exhaustion and thus facilitate shock. The results of these experiments show that shock is caused, apart from loss of blood, by a whole complex of circumstances connected with a definite condition of the nervous centres. Only when all these conditions are present does shock develop. In clinical studies of shock, attention has been mainly directed to the functional state of the peripheral organs, such as the cardiovascular and respiratory organs. A more detailed analysis, however, has shown that all these cardinal changes, including the changes in metabolism and in the physical and chemical state of the blood and the tissues, are not actually specific to shock. In fact, similar changes, such as a fall in blood pressure, diminished nervous reactions, etc., can be caused by a depression of the sympathetic nervous system such as occurs also in other pathological states. All these changes form a syndrome which characterizes shock and shock-like conditions and can be caused by action on the vegetative centres; this points to the important part played by the central nervous system in the production of shock. It therefore follows that in order to be able to understand the mechanism of shock and to apply useful therapy and prophylaxis one must concentrate on the functional conditions of the nervous centres, on their metabolism, and, in conjunction with this, on the character of the cerebrospinal fluid—i.e., their immediate nourishing medium.

Function of Cerebrospinal Fluid

The importance of the cerebrospinal fluid to the functioning of the nervous centres has been shown by observations in laboratories and clinics for many years. These observations have proved that the cerebrospinal fluid (taken in its broad sense as the fluid which fills not only the ventricles of the brain and the subarachnoid space, but the whole of the perivascular and pericellular spaces of the brain tissue) is the immediate nourishing medium of the central nervous system. The chemical composition, as well as the physical, chemical, and biological character, of the cerebrospinal fluid mainly depends on, and is determined by, a special mechanism—the so-called haemato-encephalic barrier. The anatomical substratum of this barrier is, apart from the vascular plexus, the capillaries and precapillaries of the brain, in the first place their endothelium. The haemato-encephalic barrier has a great selective capacity, on account of which not all substances which normally circulate in the blood, or get there accidentally, pass from the blood stream into the c.s.f. There takes place "a certain choice" as the result of which a relative constancy of the composition of the c.s.f. is maintained, and there is a certain independence of possible changes in the consistency and quality of the blood.

It has been shown that not only the introduction of abnormal substances from the blood into the c.s.f., but even a simple disturbance of interrelations between the normally existing substances in the c.s.f., such as between certain electrolytes, causes a more or less severe reaction in the nervous centres which sometimes leads to the death of the animal. In certain cases we were able to notice that definite changes in the c.s.f. are accompanied by some features which resemble the complex of symptoms characteristic of shock and similar states. This particularly applies to the ions of Ca and K. It was shown that change in the concentration of these ions in the c.s.f., leading to a change in the coefficient K/Ca, has a very strong influence on the condition of the central nervous system, particularly on the vegetative centres. For example, the introduction of minimum doses of Ca salts directly into the c.s.f., especially into the ventricles, brings about in the animal a condition of severe depression, whereas the introduction of minimum doses of K salts produces pronounced excitement. This suggests that the direct cause of the change in the functional condition of the cerebrospinal system may be a corresponding change in the composition of the c.s.f. Comparing the occurrence in shock of changes in the different physiological systems, particularly in the cardiovascular and respiratory systems, with the action which causes a stimulation of the vegetative nervous system, we conclude that the sympathetic and parasympathetic nervous centres play the most important part in the production of shock. The cause of changes in the vegetative nervous centres may be strong irritation coming from the periphery. The intensity of effect brought about by such irritations depends on the preceding condition of the vegetative centres (their greater or lesser excitability and reactivity), which in itself is closely connected with the chemical composition of the c.s.f.

The possibility of varying the reaction of the sympathetic and parasympathetic centres by introducing into the cerebrospinal canal certain substances such as K salts and Ca salts points to the influence of the electrolytic composition of the c.s.f. on the condition and activity of the vegetative nervous system. Diminished tone of the sympathetic centres causes those disturbances of function characteristic of shock, and especially of the haemodynamics, the disturbance of which is quite sufficient to bring about in different physiological systems those changes which characterize shock. It is therefore understandable that all efforts to combat the signs of shock are mostly directed to the re-establishment of circulation and the normal action of the cardiovascular system.

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* Translated by Dr H. W. Swann.

Failure of Shock Therapy

However, the ordinary methods of fighting shock generally do not give positive results, because they do not influence the condition of the central nervous system. These negative results are explained to a great extent by the presence of the haemato-encephalic barrier.

As regards certain medicinal substances, it has been noted that, introduced into the circulation, they have no effect on the central nervous system, whereas the introduction of minimal quantities of the same substances directly into the cerebrospinal canal, particularly into the ventricles, often has a marked effect. The conclusion, therefore, is that in order to obtain a positive effect one should introduce the substance intrathecally. The action of a substance admitted into the general circulation differs from the action of the same substance introduced straight into the c.s.f. This applies particularly to those substances which are normally present in the c.s.f. and the blood, such as K and Ca salts and some hormones. Many experiments have proved that there is an antagonism between the central and peripheral parts of the vegetative nervous system as regards their reaction to the same substance. This antagonism more or less explains the absence of a positive anti-shock action of the medicinal substance when introduced straight into the circulation. Actually, if these substances do penetrate into the central nervous system, particularly the vegetative centres, they may produce an opposite effect and thereby neutralize the immediate action which they have produced on the peripheral vegetative organs. It follows, therefore, that in order to understand the action of a given substance one must take into consideration not only the permeability of the haemato-encephalic barrier for this particular substance, but also the fact that the substance which easily passes through the haemato-encephalic barrier into the c.s.f. may, on contact with the vegetative centres, cause an action which is opposite to the one on the peripheral organs. There is, therefore, an interference, and the final effect may be negligible or even opposite to the one expected. To produce a direct action on the vegetative nervous centres one must administer the substance directly into the c.s.f.

One must add that a positive effect can be obtained only in cases in which the given substance is introduced into the ventricles of the brain, whereas the introduction of the substance into the subdural or subarachnoid spaces is usually without effect because it passes rapidly from the c.s.f. into the blood stream and does not come into contact with the nervous centres.

Intraventricular Injection of K Salts

Laboratory experiments (Chvoles) have shown that in many cases of experimental traumatic shock the direct injection into the c.s.f. of a solution of K salts gave a positive result. In most of the experiments the signs of shock disappeared very quickly, the blood pressure rose rapidly to normal, the rhythm of respiration became normal, as also the reactivity and excitability of the animal.

It is interesting to note that in those cases in which trauma was accompanied by a severe loss of blood (up to 50%) the introduction of potassium phosphate into the c.s.f. without a preliminary blood transfusion brought the animal out of shock, whereas in control experiments the introduction of a physiological solution as well as a transfusion of blood had no effect. It appears, therefore, that under the influence of increased excitability of the sympathetic centres there is a mobilization of the blood from the depots and simultaneously a transference of fluid from the tissues into the blood, as a result of which the volume of the circulating blood is increased.

The best results have been obtained by injecting potassium phosphate directly into the lateral ventricles or into the cisterna magna, provided that definite rules are followed. If these rules are not observed, the injected fluid often does not reach the cerebral ventricles, but, following the normal flow of the c.s.f., passes into the subarachnoid space without reaching the vegetative centres. The introduction of the fluid into the subarachnoid space does not produce the necessary effect, because it passes into the blood stream very quickly without coming into contact with the nervous centres. It can now be positively stated that by fulfilling the necessary conditions as regards concentration, temperature, and reaction of the solution of potassium phosphate, as well as the rules of technique of its introduction into the cerebrospinal canal (i.e., the ventricles), a definite effect can as a rule be obtained. It is obvious that a positive action of potassium phosphate on the vegetative nervous centres is possible only if the centres have still retained the ability to react. Completely exhausted vegetative centres which have lost their reactivity cannot be re-established by this method.

Taking into consideration the fact that the introduction of potassium phosphate into the cerebrospinal fluid increases the tone of the sympathetic centres, its use is indicated in those cases in which symptoms of weakened tone are present. Irrespective of whether we deal with shock or a shock-like condition, we cannot possibly expect any useful effect in cases in which there is an anatomical injury to the vegetative centres. An effect can be expected only in a purely functional disturbance of the vegetative nervous system.

The time factor is of great importance. One obtains the best results in cases when the potassium phosphate is introduced into the ventricles of the brain within a short time after the appearance of shock. This applies not only to traumatic shock but also to anaphylactic, peptone, and histamine shocks. This can be explained by the fact that the exhaustion of the vegetative centres gradually increases, and when it reaches a certain stage the possibility of stimulating them by any method disappears.

The results obtained by laboratory methods have been fully corroborated by clinical experience and at the front. To obtain a positive effect 1 c.cm. of a solution of potassium phosphate in a concentration of 1/6 gramme-molecule, with pH of 7.6, was found best. Introduction of potassium phosphate into the lateral ventricles not only increases the concentration of potassium but also diminishes the concentration of the Ca ions, which leads to a considerable increase in the coefficient of the K/Ca ions. When the potassium phosphate is injected, one must remember the necessity for rapid penetration into the ventricles so that direct contact may be obtained with the vegetative nervous centres. Laboratory experiments, as well as clinical observations, have shown the importance of the preceding condition of the sick or wounded, particularly the increased excitability of the nervous system in the development of shock. In prophylaxis it is rational to counteract the increased excitability so as to prevent exhaustion, which causes shock, by giving sedatives, and blood transfusion when there is loss of blood. To prevent a possible relapse this prophylaxis can be successfully applied also in the initial stages of shock, as well as after the shock has disappeared. The first condition for preventing a repetition of shock syndrome in traumatic shock is the removal of the direct cause of shock, particularly the source of painful sensations, as, for example, by local anaesthesia. Fluid can be introduced into the ventricles of the brain by way of cisternal puncture. The following rules must be observed.

Technique of Cisternal Injection

The patient must be in a horizontal position (preferably on his left side); the head must be lower than the body and bent on to the chest; the lower limbs must be flexed (a position similar to Trendelenburg's). The landmarks are the external occipital protuberance and the first cervical spinous process. These landmarks are felt on the back of the head, which has been shaved and thoroughly disinfected. One fixes with a finger the skin between these two points and inserts the needle exactly in the midline at the level of the external auditory meatus. Sliding along the occipital bone one reaches the atlantoid membrane. The moment this membrane is perforated one hears a crackling sound. For this puncture one may use a graduated cisternal needle or an ordinary lumbar puncture needle. As a preliminary measure one estimates the length which corresponds with the depth of the puncture (from 4 to 5 cm.). The criterion that the needle has penetrated into the cisterna magna is the appearance of translucent c.s.f., which escapes from the needle after removal of the stylet. On account of weak pressure in shock conditions the c.s.f. very often does not appear spontaneously and has to be drawn out by a syringe. After 1 to 2 c.cm. of the c.s.f. have been withdrawn with a syringe, 1 c.cm. of the solution of potassium phosphate, which has been warmed to body temperature, is injected with a syringe under a definite pressure, so that it penetrates into the ventricles. This method of treatment is very easy and can be applied at the front. The preparation of the potassium phosphate solution is not complicated, but must be done very carefully. The glass of the ampoules must be neutral. The solution is a mixture of the monometallic and bimetallic potassium phosphate (concentration 1/6 gramme-molecule), and can be prepared either from these salts (K_2HPO_4 and KH_2PO_4) or by adding the orthophosphoric acid to a solution of corrosive potassium up to pH 7.6.

As a rule the effect of this injection takes place in 1 to 2 minutes or even sooner (i.e., in the first place the blood pressure rises and the respiration becomes deeper). The absence of effect within a few minutes is generally due to the fact that the fluid has not reached the ventricles, as a result of the incorrect direction of the needle or of insufficient pressure. In these cases one must repeat the operation. When toxaemia is threatening—i.e., when toxic substances which form in the injured tissues enter the blood—the further formation of these substances must be stopped by excising the injured parts where possible; positive results, which are obtained by the direct action of potassium phosphate on sympathetic nervous centres, do not exclude the possibility of the appearance of toxaemic shock later on

Conclusions

1. In the last phase of traumatic shock there is first of all a considerable fall in the tone of the sympathetic nervous system and a partial rise in the tone of the parasympathetic nervous system.

2. The most effective way of combating traumatic shock in its later phase is to raise the tone of the sympathetic centres by direct action on the vegetative centres; potassium phosphate simultaneously raises the tone of the sympathetic centres and lowers the tone of the parasympathetic.

3. By direct action on the nervous centres the ionic potassium causes an excitability of the sympathetic nervous centres, whereas the ionic phosphates, by concentrating the ionized Ca, cause a diminution of the tone of the parasympathetic nervous centres.

4. A direct introduction of potassium phosphate into the cerebrospinal canal contributes to a quicker action of this substance on the nervous centres and at the same time obviates the possibility of its opposite effect on the peripheral part of the vegetative nervous system.

5. The use of potassium phosphate as an anti-shock remedy is indicated in all those cases in which there is a diminution of the tone of the sympathetic nervous centres, such as a fall of the blood pressure, a lowering of cardiac activity and respiration, diminution of excitability, reactivity, etc.

6. Potassium phosphate must never be used in cases in which there is increased excitability of the sympathetic nervous centres, such as sometimes occurs in the first stage of shock.

7. If haemorrhage is present it must be arrested by all available means, because the considerable rise of the blood pressure through the introduction of potassium phosphate will definitely increase haemorrhage.

8. To avoid a repetition of shock it is necessary after the introduction of potassium phosphate to remove the actual cause of shock, in particular painful stimuli.

9. To ensure the direct action on the vegetative nervous centres, which are situated in the ventricles of the brain, potassium phosphate must be introduced directly into the ventricles. This is done by means of cisternal puncture. The fluid must be introduced with a definite pressure and the direction of the needle must be correct. The position of the patient must be horizontal, preferably on the left side, and the head must be lower than the body.

10. One must act quickly, without loss of time, so as to avoid a complete exhaustion of the vegetative centres.

11. The introduction of potassium phosphate does not exclude all the other measures against shock, especially blood or plasma transfusion.

12. Blood transfusion must be done in all cases where there is marked loss of blood. In other cases a blood transfusion is not absolutely necessary.

RECENT TRENDS OF SOME INFECTIOUS DISEASES

BY

W. J. MARTIN, Ph.D.

(Of the Medical Research Council Statistical Staff)
London School of Hygiene and Tropical Medicine

The results obtained by the introduction of new methods of treatment in certain types of infectious diseases have in hospital experience been almost dramatic. It seemed worth while to find whether any change could be shown in the number of deaths for the whole country from the numerically more important causes for which control has been attempted. The estimated saving in lives following the introduction of new methods forms an interesting speculation. The death rates cannot be used as a statistical index, since the populations at risk in 1940 and 1941 are not definitely known, so the ratio of deaths to notifications has been adopted.

Cerebrospinal Fever

The employment of chemotherapy in cerebrospinal fever has resulted in a very large decline in the fatality rate from this cause. A large increase in incidence of cerebrospinal fever occurred after the outbreak of war, an experience similar to that of 1914-18. The statistics for recent years in England and Wales are:

Year	Deaths	Notifications	Deaths per 100 Notifications
1934 ..	729	1,080	68
1935 ..	617	865	71
1936 ..	635	967	66
1937 ..	698	1,113	63
Average of 1934–7	670	1,006	67
1938	652	1,258	52
1939	517	1,500	34
1940	2,584	12,767	20
1941 ..	2,163	11,073	20

If the average of the years 1934-7 is taken as representing the endemic level immediately before the general use of sulphapyridine, it will be seen that a great improvement has been effected. The fatality rate was halved in 1939, and in 1940 and 1941 it was less than one-third of the average value. On the basis of the average fatality rate of 66.60% during 1934-7, the expected number of deaths in the three years 1939-41 would have been 16,876. The number actually registered was 5,264, or 11,612 fewer than expected. This is probably an over-estimate, since in a period when a disease is prevalent fewer mild cases are missed and there tends to be a greater proportion of wrongly diagnosed cases than in non-epidemic periods—factors that produce a decrease in the fatality rate. The most recent pre-war epidemic occurred during 1931-3, when 5,919 notifications with 3,595 deaths were reported, giving a fatality rate of 60.74%. The expected deaths in 1939-41 on the basis of this fatality rate would be 15,392 —i.e., 10,128 in excess of the observed. An objection that could be raised to this comparison is that the conditions of life were vastly different in the two periods. To obtain approximately similar conditions of life—the aggregation of large sections of the population—it is necessary to go back to the last war. During the epidemic of 1915-17 there were 5,222 deaths and 8,068 notifications, yielding a fatality rate of 64.72%. Taking this rate as a standard, the expected deaths in 1939-41 would have numbered 16,400, or 11,136 more than were recorded.

It seems reasonable to suggest that as a consequence of the discovery and adoption of treatment by sulphapyridine about 10,000 lives were saved during 1939-41.

Pneumonia

The response of cases of pneumonia, particularly lobar pneumonia, to treatment with sulphapyridine has been very successful, and large declines in hospital mortality have been recorded. The effect of this treatment on the mortality of the whole country cannot be measured directly by means of the case-fatality rate, since we have no knowledge of the number of cases. Many factors influence the trend of the mortality from pneumonia, and consequently large fluctuations occur in the annual rates. These variations prevent a straight comparison being made between the number of deaths occurring in each year. The incidence of bronchitis has been used as a criterion to test whether the years in question were favourable or not to respiratory diseases. Unfortunately the deaths from lobar pneumonia are not available for 1940-1; the only data available are for all forms of the disease at all ages. There has been a change in the method of classification of causes of death in these years: previous to 1940 the Registrar-General gave priority to certain causes, and now he accepts the order of death stated by the medical attendant on the certificate. The deaths for 1938 and 1939 can be ascertained by both methods, and a comparison shows that the new classification slightly increases the total of pneumonia deaths and doubles those from bronchitis. The factors for reducing the totals to the old classification are 0.9466 for pneumonia and 0.5007 for bronchitis. Applying these corrections to the years 1940 and 1941, we obtain the following:

	All Forms of Pneumonia		Bronchitis	
	Deaths	Percentage of Average of 1934–7	Deaths	Percentage of Average of 1934–7
Average 1934–7 ..	28,281	100	17,048	100
1938	25,945	92	13,273	78
1939	22,207	79	15,463	91
1940	27,636	98	23,179	136
1941	25,006	88	17,050	100

The deaths from bronchitis suggest that a particularly severe respiratory mortality was experienced in 1940. The difference between the percentage value for pneumonia and bronchitis was 12 in 1939 and 1941, but the difference of the percentages was much larger—38—in 1940. This difference of 12% might be used as an estimate of the effect of the new therapy on the mortality in 1939 and 1941, but the value for 1940—38%—would be an overstatement, since bronchitis tends to fluctuate more than pneumonia. This can be illustrated by taking the deaths for the previous 10 years and expressing them as a percentage of the mean number of deaths. The deviations then found are:

	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Pneumonia ..	0·4	41·9	−10·2	8·7	−4·3	−2·7	−7·3	−13·3	−8·8	−4·4
Bronchitis ..	11·0	58·1	−7·5	19·2	−3·7	−0·2	−19·7	−25·3	−16·6	−15.3

Although there has been an undoubted decrease in the mortality rate from pneumonia, an estimation of its extent is rather speculative. It seems probable that the deaths would have been 10% higher, and if we can accept this as a not too optimistic approximation then 7,500 lives were saved during 1939-41.

The deaths from lobar and other forms of pneumonia are differentiated in the returns for Scotland. The statistics for recent years in Scotland were:

	Lobar Pneumonia		Other Forms of Pneumonia		Bronchitis	
	Deaths	Percentage of Average of 1934–7	Deaths	Percentage of Average of 1934–7	Deaths	Percentage of Average of 1934–7
Average 1934–7	1,441	100	3,256	100	3,104	100
1938	1,188	82	2,644	81	2,462	79
1939	782	54	2,167	67	2,653	85
1940	873	61	3,367	103	4,317	139
1941	873	61	2,699	83	3,091	100

The experience of Scotland is very similar to that of England and Wales if the trend of the deaths from bronchitis is used as a standard of comparison of respiratory mortality. It is evident that there has been a reduction in mortality from pneumonia, with a very large decrease in lobar pneumonia. In 1940 the deaths from bronchitis were 39% above the mean value, while the deaths from lobar pneumonia were 39% below the average and the deaths from other forms of pneumonia were only 3% in excess of the mean.

The reduction in the number of deaths from pneumonia was relatively greater in Scotland than in England and Wales. The mean annual number of deaths during 1939-41, expressed as a percentage of the mean of 1934-7, was for all forms of pneumonia 88% in England and Wales and 76% in Scotland, while the values for bronchitis were almost the same—109% in England and Wales and 108% in Scotland.

Puerperal Sepsis

Puerperal sepsis forms numerically the most important component of maternal mortality. In the 10 years preceding the war 40% of the total maternal deaths were attributed to this cause. The continuity of the statistics was broken in 1940 by the adoption of a new classification: beside the modification in the method of classification, described in the paragraph on pneumonia, several causes were added to puerperal sepsis. The statistics for recent years, using the 1940 mortality classification, were:

	Total Births	Puerperal Pyrexia		Puerperal Sepsis	
		No. of Notifications	Rate per 10,000 Births	No. of Deaths	Rate per 10,000 Births
1931 ..	659,014	8,085	123	1,208	18
1932 ..	640,443	7,567	118	1,162	18
1933 ..	605,497	7,899	130	1,213	20
1934 ..	622,851	8,431	135	1,350	22
1935 ..	624,191	8,142	130	1,165	19
1936 ..	630,337	8,267	131	1,035	16
1937 ..	635,363	8,849	139	731	12
1938 ..	645,933	9,307	144	682	11
1939 ..	643,661	9,245	144	649	10
1940 ..	629,760	7,582	120	478	8
1941 ..	608,130	7,352	121	499	8

Since the number of cases of sepsis is unknown the best measure of the trend of the mortality is to relate the deaths to the births. Although the case rate cannot be found, the incidence of puerperal pyrexia suggests that the prevalence of sepsis at the beginning and that at the end of the period were similar, with possibly an increase in the intervening years. The above figures show that the mortality from puerperal sepsis has declined considerably and the rate during 1940-1 had decreased to less than a half of the value of a few years earlier.

Measles

A considerable decrease in mortality from measles has occurred during the past 20 years, but this disease differs from those previously discussed, as, although there has been steady progress in the control of measles, especially in the large towns, no sharp line can be drawn dividing the period into pre-treatment and post-treatment years. The number of deaths in England and Wales in two-year periods, to eliminate the fluctuations in the annual deaths due to the periodicity of measles, were:

Period	Deaths	Period	Deaths
1922–3	11,010	1932–3	5,348
1924–5	10,171	1934–5	5,114
1926–7	7,205	1936–7	3,802
1928–9	7,690	1938–9	1,942
1930–1	7,476	1940–1	2,129

Although the character of the attack and the severity of the accompanying complications vary from epidemic to epidemic there has been an almost progressive decline in the number of deaths. Serum prophylactics have been employed during the past decade, and special therapeutic measures—e.g., oxygen therapy—have probably influenced the trend of mortality. Other important contributing factors were the improved standards of nutrition and hygienic conditions and, in London, a greater proportion of admissions to hospital. A lowering of the virulence of the causative organism may also have had an effect. It is impossible to assess the relative importance of these various causes of the decline in mortality.

A comparison of case fatalities cannot be made, since measles has been notifiable only since the start of the war.

The population at ages 0–15 has fallen by almost one-fifth during the past 20 years, and this must be taken into account when estimating the change in mortality. If the deaths are related to the average population aged 0–15 in 1922-5 and this factor is applied to the estimated population at 0–15 in 1940-1 (obtained by extrapolating a straight line fitted to the population at 0–15 of 1935-9) the resulting expected deaths for 1940-1 would be 8,722—i.e., 6,593 in excess of those observed.

We may conclude that the sum of the various factors operating towards a decline has resulted in a reduction of childhood mortality from measles of about three-quarters of what it was 20 years ago.

REDUCTION OF OLD-STANDING DISLOCATION OF THE KNEE-JOINT

BY

F. P. FITZGERALD, M.B., B.Ch., F.R.C.S.I.

Orthopaedic Surgeon to St. Anthony's Hospital, Cheam, and Wellhouse Hospital, Barnet (E.M.S.)

There are two main indications for attempting reduction of a long-standing dislocation of the knee-joint: first, to relieve pain; secondly, to overcome shortening as a preliminary to an arthrodesis, or excision of the joint. Forcible manipulation for such cases is usually contraindicated, and wedge plasters are obviously ineffective. The case here described was treated by the method devised by Hamilton Russell (1924) for the treatment of fractures of the shaft of the femur. This was slightly modified, skeletal traction being used instead of strapping extension.

Case Report

History.—A man aged 56 had suffered from rheumatoid arthritis "for years." He had been confined to bed for over two years and, according to his doctor, the duration of the dislocation was about 18 months. On examination the right knee was obviously dislocated. It was flexed to 140 degrees, with the leg externally rotated through 50 degrees (Fig. 1). Under an anaesthetic there were about 10 degrees of movement present.

Treatment.—The hip was placed on an adjustable Braun splint, so that traction could be exerted in the line of the deformity (Fig. 2). Skeletal traction was applied through the os calcis. This was used instead of strapping so that the external rotation could be controlled. A sling was passed under the knee and attached to a cord which passed over a pulley (*a*) on a Balkan beam. Thence it was continued to another pulley (*b*) on the vertical limb of the Balkan beam at the level of the leg. A third pulley was fixed to the Böhler stirrup on the os calcis nail (*c*), and a fourth (*d*) tied to the upright just below *b*. The cord was then threaded over these and finally attached to a weight of 7 lb. The foot of the bed was elevated.

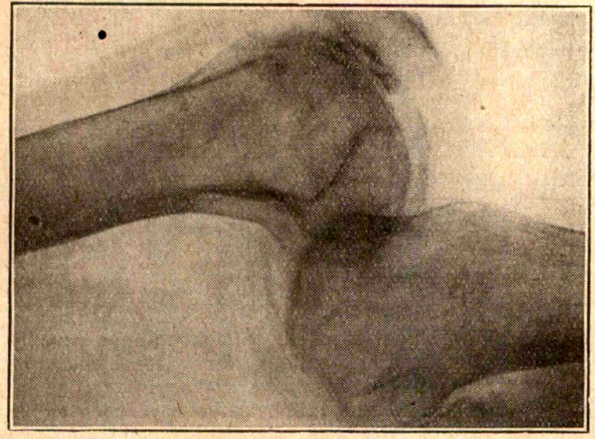

FIG. 1.—Note the clear view of the tibio-fibular joint due to the marked external rotation of the tibia.

A cord was fixed from the outer side of the nail to a weight suspended by a pulley (*e*) on the horizontal limb of the Balkan beam to control external rotation.

Three weeks later a radiograph was taken, and it showed that the dislocation had been reduced (Fig. 3). During this time the patient did not complain of any undue discomfort. As the knee was on the adjustable type of Braun splint (Fig. 4), it was possible to lower its horizontal position and thus gradually to extend the knee. By doing this and altering the line of pull accordingly, the limb could be straightened completely. This took approximately 7 weeks.

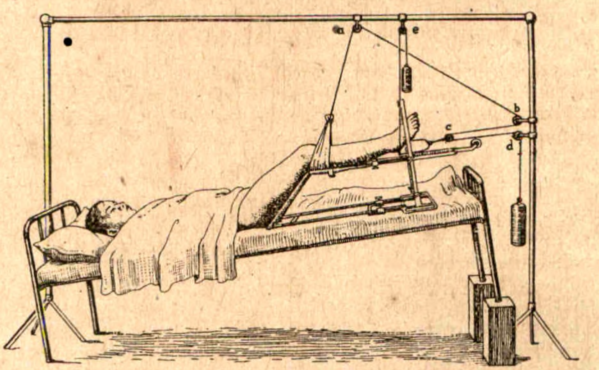

FIG. 2.—The traction under the knee pulls the head of the tibia forwards. The cord attached to the nail and passing over the pulley (*e*) helps to rectify the external rotation. The adjustable splint has been flexed to fit the contracted knee.

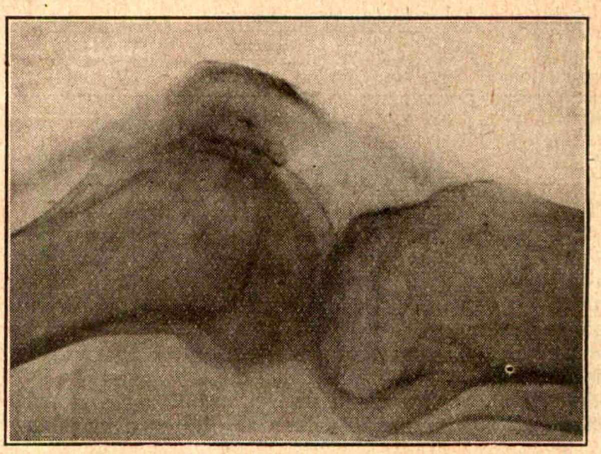

FIG. 3.—The dislocation has been reduced.

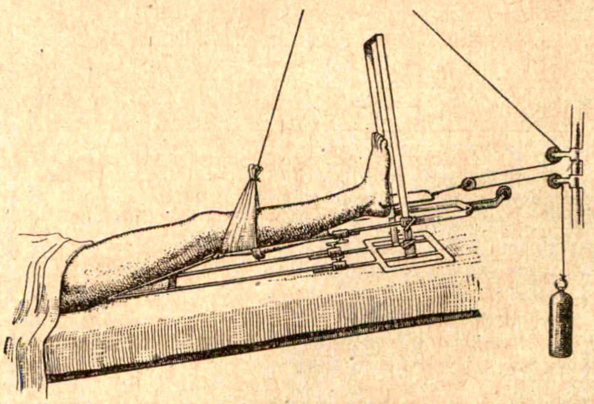

FIG. 4.—The external rotation has been corrected and the splint has been lowered so that the knee is almost straight.

Summary

A simple method of reducing an old dislocation of the knee-joint is described. The ease with which the reduction was achieved makes it possible that this case was exceptional; but the simplicity of the manœuvre would seem to warrant a trial in such cases.

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Medical Memoranda

A Pencil in the Urinary Bladder

There are many accounts in the literature of an endless variety of foreign bodies in the urinary bladder, but I could not find another exactly comparable to the present case, and it therefore seems worth placing on record.

CASE HISTORY

A married man aged 28 was admitted to hospital complaining that he had a pencil in his bladder. He was accompanied by his doctor, who gave the history that the patient had introduced the foreign body the previous night.

On examination he was seen to be a well-developed man. His temperature was 98.6°, pulse 80, and respirations 20. He had only slight pain. He was able to pass water, but micturition was accompanied by pain, especially at the end of the act. On occasion there was obvious blood in the urine. The frequency of micturition was every 4 to 5 hours during the day and night. The stream was only a little impaired. The bladder was not distended. The end of the pencil was palpable in the perineum, projecting from the region of the bulb of the urethra and lying close under the skin. There was no extravasation of urine. By deep palpation above the symphysis pubis the pencil could be felt bimanually and movement conveyed to its extremity. There was no discharge of blood from the urethral orifice, but the latter showed signs of having been stretched, probably on a number of previous occasions. A radiograph (Fig. 1) showed the pencil lying vertically in the pelvis behind the symphysis pubis and projecting into the perineum.

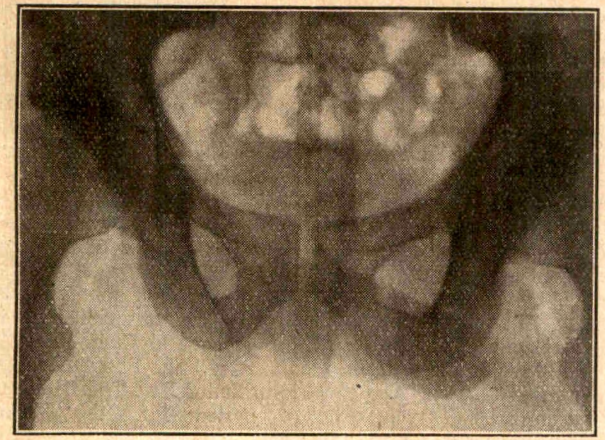

FIG. 1.—Radiograph showing position of the foreign body.

Cystoscopy was performed under general anaesthesia. The cystoscope on reaching the bulb of the urethra touched the pencil but slipped through the prostatic urethra alongside the foreign body without any difficulty. A good view of the pencil was obtained, and the inscription on it could be clearly seen; there was a moderate cystitis. Suprapubic cystotomy was then performed. On opening the bladder the pencil was found to be lying vertically. Its unsharpened end was impacted in the mucosa of the fundus of the bladder, producing a small round ulcer but not penetrating the muscular coat. The distal end of the pencil lay in the prostatic urethra; the point penetrated the urethra in the region of the bulb and projected into the tissues of the perineum. The pencil was easily removed by disimpacting the proximal end and withdrawing the distal end from the urethra. It measured 6½ in. in length (Fig. 2). The bladder was closed with suprapubic drainage.

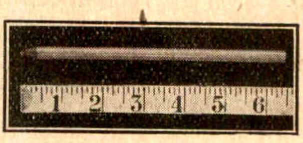

FIG. 2.—The foreign body.

The post-operative course was uneventful, the patient passing some urine naturally on the ninth day. At this time the suprapubic catheter began to leak, and was replaced by a Hamilton Irving box. The wound closed rapidly: at the end of 3 weeks it was dry and the patient up and about. He passed urine naturally, and at no time was there trouble in the perineum caused by the wound of the floor of the urethra.

COMMENT

On questioning the patient after operation he confessed that he had passed the pencil into his urethra many times, but that on this occasion it slipped out of reach and into the bladder without any great difficulty or pain. It is remarkable that an article of this length could so easily negotiate the natural curve of the urethra. True, the urethra had been dilated by previous attempts, and this was confirmed by the condition of the external urinary meatus and by the fact that the urethra could accommodate the foreign body and a cystoscope without difficulty. Presumably the point of the pencil was made to perforate the floor of the urethra by muscular contractions of the bladder during micturition.

My thanks are due to Dr. Gubbin, medical superintendent of the emergency hospital in which this patient was treated, for permission to publish this case; to Dr. Fraser for the radiograph; to Dr. Winternitz, my house-surgeon, for assistance in the treatment of this patient; and to Miss Lewis for the photograph.

ERIC W. BINTCLIFFE, M.S., F.R.C.S.,
Senior Surgeon, Ronkswood Hospital, Ministry of Pensions, Worcester.

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Cheese Itch: Contact Dermatitis due to Mite-infested Cheese Dust

We would like to draw attention to a form of dermatitis affecting persons handling cheeses the surface of which has become infested with mites of the Tyroglyphus family.

Some months ago three such cases were seen among two separate gangs of workers who were unloading imported cheeses at the dockside. While manipulating the crates they became showered with a fine brown powdery dust which thickly coated the cheeses; some hours later an acute irritable erythematous dermatitis developed over their faces, necks, and flexor wrist areas. They stated that all the other men who came in close contact with the dust were also affected, though less severely. Samples of the dust were found microscopically to be teeming with mites which were subsequently identified by Mr. E. Browning, Department of Zoology, British Museum (Natural History), as *Tyroglyphus longior* var. *Castellanii*, Hirst, the mite which is responsible for eruptions in handlers of dried coconut kernel (copra itch). An account of these cases will be published shortly in the *British Journal of Dermatology*.

Just recently another group of cases has occurred at a provision depot among girls handling cheeses that had been stored for a considerable time. The dermatitis was of the same acute diffuse erythematous type and involved the same areas. A specimen of the cheese dust showed a heavy infestation of active Tyroglyphid mites with numerous ova and dead bodies.

It is noteworthy that, except for a few small urticarial lesions on the forearms in one patient, the eruption in no case suggested a parasitic cause, but was characteristic of dermatitis due to an irritant. Moreover, as all who were exposed to the dust seem to have been affected, it would appear that the mites must generate an irritant of considerable potency.

The dermatitis has subsided quickly, though in one case scaling of the eyelids persisted for over a fortnight.

Tyroglyphidae are of world-wide distribution and, apart from cheese, may attack foodstuffs of many kinds, such as flour, grain, sugar, dried meats and fruits, and jams. They may therefore present a problem not only as a cause of occupational dermatitis but as destroyers of stored foods, which is of added importance during wartime. In the case of cheese they live mainly in the rind and appear to cause little or no material damage to the cheese itself. They are not, of course, related in any way to cheese maggots, which bore into the cheese itself and are the larvae of a fly, *Piophila casei*.

G. B. DOWLING, M.D.
St. Thomas's Hospital. E. W. PROSSER THOMAS, M.D.

Reviews

CYTOLOGY

Cytology and Cell Physiology. Edited by Geoffrey Bourne. (Pp. 296. 20s.) Oxford: The Clarendon Press.

It is to be hoped that the title of this book will not restrict its readers to cytologists. It contains a whole range of information on aspects of the subject on which attention is most focused now. This means that it provides both the outlook and the facts which are so essential to every biologist.

Knowledge of the morphology of the cell has not made any great advance recently, although much can probably be expected of new techniques such as micro-incineration and the electron microscope. But many facts of great interest have been found concerning the changes in structure in different physiological and pathological conditions. Knowledge of them would resolve many of the mysteries that worry those to whom cytology has until now appeared as an art of artefacts. Neurophysiologists have learnt to think of the mechanism of the nervous system in terms of the action of its component cells and the properties of their membranes. Others, such as biochemists, pharmacologists, and pathologists, will have to think more and more in terms, not of organs and tissue slices, but of cells and intracellular systems. It must not be thought that the debt will be one-sided. The cytologist owes much to a wide range of sciences. Physical chemistry has helped in the study of cell membranes; biochemistry has suggested methods for identifying enzymes within the cell; genetics has led to advance in the knowledge of the nucleus.

The standard of the work of the different contributors is uniformly high despite the difficult conditions under which they were working. Indeed it is just those chapters which appear to have been written in the absence of easy access to reference libraries that would be most readable and instructive for those whose interest in the subject is greater than their knowledge of it. The only criticism of the book that can be offered is that the system of references is very awkward to use. The publishers are to be congratulated on a production which is entirely of pre-war standard.

HISTORY OF MEDICAL PSYCHOLOGY

A History of Medical Psychology. By Gregory Zilboorg, M.D., in collaboration with George W. Henry, M.D. (Pp. 606; 19 illustrations. $5.00 or 28s.) New York: W. W. Norton and Company Inc.; London: George Allen and Unwin.

This handsomely produced book is a successful attempt to trace the development of beliefs, facts, and theories about the human mind in health and disease. Dr. Zilboorg contributes the first 12 chapters, and Dr. Henry the last two, on "Organic Mental Illnesses" and "Mental Hospitals." Among the illustrations is an unusual one of Freud.

For centuries psychology was the province of the philosopher and theologian, and was neglected by medical men; a history of medical psychology must therefore, Dr. Zilboorg remarks, be approached in a way "entirely different from that required by the history of medicine and surgery." For all that, he sticks fairly closely to the story of medicine, and it would not be unfair to describe his book as a history of medicine as seen through the eyes of a psychologist.

Hippocrates observed of epilepsy that it appeared to him "to be in no way more divine, nor more sacred than other diseases, but has a natural cause from which it originates like other affections"; and that "they who first referred this disease to the gods appear to me to have been just such persons as the conjurors, purificators, mountebanks, and charlatans now are." Hippocrates gave a rational classification of mental diseases, and looked upon the brain as the centre of reason, to be displaced later by Aristotle to the heart. To Hippocrates the action of the four humours on the brain was an important determinant of mental disorder. The clear-headed view of Hippocrates—that mental disease was the result of natural causes—was not followed by Plato, who said there were two kinds of mania, one due to disease, the other "a gift of the gods." So back again came the idea of the divine origin of mental disorder. Although Aristotle believed that the "souls" of man acted as a unit, he considered that reason was independent of man or matter, and that it could not be attacked by illness because it was immaterial and immortal. This view, Dr. Zilboorg states, played a decisive part in the history of psychiatry, because it "naturally must reject the very existence of purely psychological troubles."

In the second and first centuries B.C. gleams of clear light in the history of medical psychology illumine vividly the darkness into which men were to descend centuries later. Asclepiades, it appears, realized that mental disease could be due to emotional disturbances: he prescribed baths, "musical harmony and a concert of voices" for his patients; and condemned the practice of keeping the mentally sick in cells and dungeons.

Dr. Zilboorg gives some remarkably interesting quotations from Cicero, worth reproducing here: "Man being composed of body and soul," Cicero writes, "why is it that so much attention has been paid to the art of the preservation of the body and the curing of bodily ills; why is it that this art, which because of its usefulness was attributed to the power of the gods, has so badly neglected the development of the art of healing the soul?" "Is it," Cicero asks, "that the ailments of the soul are less injurious than physical ailments, or is it that physical ailments admit of treatment while there is no means of curing souls? But diseases of the soul are both more dangerous and more numerous than those of the body."

Living in the first century of our era, and practising in Alexandria and Rome, Soranus of Ephesus was notable for his insight into mental conditions and his humane approach to treatment. He condemns the use of force and the excessive employment of drugs and purgatives. "Much tact and discretion," he said of mental patients, "should be employed in directing attention to their faults; sometimes misbehaviour should be overlooked or met with indulgence." "Maniacs must be placed in a moderately lighted room, which is of moderate temperature and where the tranquillity is not disturbed by any noise. . . . Their beds should be solidly fastened and placed in such a manner that they do not see persons who enter; a variety of irritations is thus avoided." (Soranus, it may be recalled, advocated blocking the mouth of the uterus with cotton or ointments to prevent conception.) And so we come to Galen (A.D. 129–200), of whom Prof. Major Greenwood says, ". . . It is *only* the psychological aspects of his teaching which have survived the collapse of Galenism as a medical system."

The above is a brief summary of the first four chapters of Dr. Zilboorg's book. Then follow chapters called, "The Great Decline"; "The Ruthless Surrender to Demonology"; "The Blows of the Witches' Hammer"; "The First Psychiatric Revolution"; "The Age of Reconstruction"; "The Discovery of Neuroses"; "The Era of Systems"; "The Second Psychiatric Revolution"; "Epilogue." Dr. Zilboorg naturally gives a lot of space to Freud, but his treatment of Adler and of Jung, especially the latter, is too summary. It is odd that both Roger and Francis Bacon are not separated in the index, sharing the one entry, "Bacon." Dr. Zilboorg's style is undistinguished, and might well have been more terse. For his industry in compiling a book packed with so much interest, medical men devoted to the history of their profession will be much indebted.

DIRECTORY FOR THE DISABLED

Disabled? Inquire Within. Central Council for the Care of Cripples, 34, Eccleston Square, London, S.W.1.

This useful booklet has been produced with the object of assisting citizens' advice bureaux, hospital almoners, and social workers whose duty it is to direct disabled persons to sources of appropriate help. Whether disablement is the result of crippling disease, or of injury sustained in war service, in air raids, or in industrial accidents, there is now a large network of provision covering the country—though some areas are better provided than others—which it is very useful to have catalogued.

The booklet first describes the statutory services which are available, principally through the Ministries of Health, Labour, and Pensions, and then gives a list of the voluntary agencies and their particular functions. The Central Council for the Care of Cripples itself is a co-ordinating agency for all organizations working for the welfare of cripples. There are also the After-Care Association, the Invalid Children's Association, the Royal Surgical Aid Society, the British Legion, and various organizations for Service people. Then a brief description is given of the means of treatment, education, and after-care available to the physically defective child and the services for the physically disabled adult, including the orthopaedic sections of Service hospitals and the arrangements for dealing with air-raid casualties, industrial workers, and civilian disabled in general.

The impression obtained from this booklet is of an abundant provision, though it needs to be set over against the vast—indeed the appalling—extent of crippledom of one sort or another. The Ministry of Health has lately established under the Emergency Hospital Scheme seven orthopaedic centres in the London sectors and eleven in other regions of England and Wales. But there is only one in Yorkshire and only one in Northumberland and Durham. Fracture departments have been set up by the Ministry—56 of them for long-stay cases and over 200 for ambulatory and short-stay—but in Yorkshire and Northumberland and Durham there are only five of the former compared with twenty in the London sectors. Particulars are also given of the various Government and other schemes for the training and resettlement of disabled persons, including the arrangements for occupational therapy set up in E.M.S. and other hospitals and for vocational training under the Ministry of Labour's scheme. This booklet will be of service to many medical practitioners, especially in industrial areas.

Notes on Books

A Bibliography of Aviation Medicine, by **Ebbe Curtis Hoff** and **John Farquhar Fulton**, is published in London by Baillière, Tindall and Cox at 22s. This is an amazingly complete and up-to-date collection of over 5,000 references. It contains little explanatory subject-matter, for the clear indexing and tabulation are self-sufficient. The articles are listed under subject headings with detailed subheadings, and there are also alphabetical indices of authors and subjects. Several smaller bibliographies of aviation medicine have appeared before, but the present large volume prepared for the Committee of Aviation Medicine of the National Research Council of America will supersede all others and will be invaluable to that rapidly growing army of research workers who are helping the flying man to meet the increasing demands made by his machine.

The thirteenth edition of *Pye's Surgical Handicraft* is the third since Mr. **Hamilton Bailey** took this work in hand. Destroyed by enemy bombing while in preparation, with the loss of the illustration blocks and a large number of the original illustrations, this edition was again bombed when just about to be published. Its birth therefore has been a difficult one, for the ultimate success of which both authors and publishers are to be congratulated. Several of the forty contributors are now serving as members of H.M. Forces. The useful and practical features of this book are too well known to require further comment. The tribute paid to Walter Pye, the original editor who died in 1892, could be enhanced by a few words as to who he was, what his appointments were, and the nature of his work, while it would add to readers' interest to know who the intervening editors have been. What from the vicissitudes attending its production appeared to be an unlucky thirteenth edition may well prove to be the most popular and most successful printing which this well-known book has yet had. It is published by John Wright and Sons, Ltd., at 25s.

Beaumont's classical observations and experiments on Alexis St. Martin really provided the basis for the modern study of gastric digestion. Indeed he noted points which remained neglected for many years and in which interest was only revived in the 20th century, such as the regurgitation of bile and the psychical factor in gastric secretion. Dr. **George Rosen** gives an interesting account of *The Reception of William Beaumont's Discovery in Europe* (Schuman's, 20, East 70th Street, New York; $5.00). In this he shows that Germany first realized its significance, and England soon after. Its recognition in the United States, its home of origin, came decidedly later. The introduction of the stomach tube by Kussmaul in 1867 completely diverted interest from Beaumont's work until the time of Pavlov. The book is well documented and well produced, but we hesitate to recommend the expenditure of a sovereign for its 86 pages at the present time.

The report prepared by "Mass Observation" for the Advertising Service Guild entitled *People in Production* was noticed on its first appearance in a leading article in our issue of May 16, 1942, under the heading "Morale on the Home Front." This interesting document on British war production has now been reissued as a Penguin Special of 280 pages at the low price of 9d.

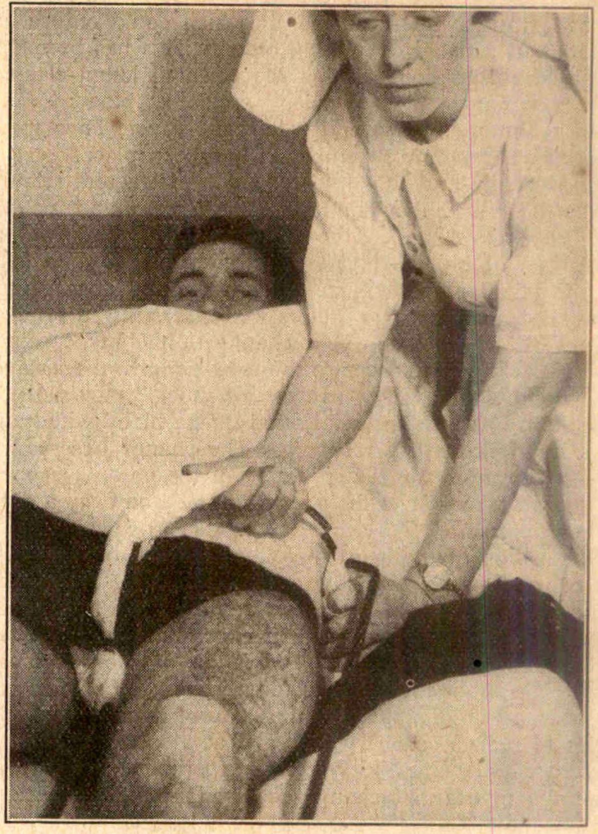
Preparations and Appliances

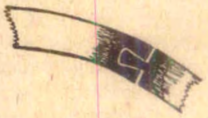
A MODIFICATION OF THE THOMAS SPLINT

Dr. M. P. **Laufer** writes from the County Hospital, Keighley:

To apply a Thomas splint to a seriously injured limb is often a very difficult matter. The main difficulty consists in the sliding of the ring up the whole length of the injured limb without pain, discomfort, or displacement.

The modified Thomas splint, as here portrayed, dispenses with all the difficulties attached to the application of the ordinary splint. Its advantages are easily enumerated: (1) There is no need to slide the ring up the limb; it is put around it. (2) The handling of the injured limb is reduced to a minimum. (3) The danger of increasing shock and displacement is lessened. (4) The number of helpers is substantially reduced. (5) The hinge is 1½ in. away from the joint formed by the internal bar and the ring; it is just outside the part of the ring which represents the effective area essential for the immobilization of the limb. (6) The "lock" is simple and secure; it is opened and locked by pulling the movable part of the ring in axial direction; the "spring" action of the halved ring makes it possible. (7) The lock is outside the pressure area. (8) Last but not least, the modification is easily made on any Thomas splint with a minimum of cost.





The photograph shows the locking of the ring. At this stage the areas of hinge and lock may be padded. The line drawing gives details of the "lock."

First-aid teams who have not the benefit of an anaesthetist's help to effect painless application of the ordinary Thomas splint to a severely injured limb will be the first to profit by the modification.

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SATURDAY NOVEMBER 7 1942

SOME ASPECTS OF SHOCK THERAPY

The gradual deterioration of the clinical condition which occurs in some cases of tissue trauma or severe haemorrhage in spite of repeated transfusions of blood or blood substitutes is only too painfully familiar. It is believed that this failure of transfusion therapy is due in large measure to a breakdown in the mechanisms involved in maintaining an adequate volume of blood. Various explanations have been given of the causes of failure, but none of them has been satisfactory. They have been concerned mostly with those factors which could reduce the amount of actively circulating blood. This has been due to the widespread belief that the essential lethal element is a reduction in the volume of circulating blood.

In recent months several significant papers have made it clear that too much emphasis has been placed on the blood volume and too little on the other factors relating to the heart and the blood vessels. Wiggers and his colleagues[1] [2] have studied the effects of the withdrawal of quantities of blood equal to approximately 40% to 50% of the initial blood volume in anaesthetized dogs. They showed clearly that two factors were necessary to produce "irreversible shock": (1) a change in the myocardium, and (2) a failure to increase the total peripheral resistance in the circulation. By "irreversible shock" they meant a condition in which the reinjection of the blood withdrawn was not followed by recovery. The change observed in the myocardium was a diminution of the normal response of the heart muscle to the stretch imposed on it by a given venous pressure. This change was due to impairment of the nutrition of the heart muscle as a result of a reduced coronary flow from a low arterial pressure. The other finding that the total peripheral resistance of the circulation was never maximal in their experiments suggests that there was some degree of depression of the vasomotor centres in the medulla. The failure to increase peripheral resistance would rapidly yield a state of hypotension sufficient to reduce coronary flow and accelerate the onset of myocardial damage. In Wiggers's experiments it was found that the myocardial change occurred in the presence of an adequate blood volume and was independent of haemoconcentration and haemodilution. If it be considered that the precipitating factor was the persistent hypotension, this might have been due to the action of the anaesthetic on those centres which would normally act to restore arterial pressure. This view receives support from the work of Fine *et al.*,[3] who noted that, while haemorrhages up to 40% of the blood volume did not cause a persistent hypotension in unanaesthetized animals, the same amount of haemorrhage caused permanent hypotension in animals anaesthetized with nembutal. It is significant that both groups of workers used barbiturate anaesthetics, which are known to depress the hypothalamic and medullary cardiac and vasomotor centres.

Dr. Lena Stern, in an article in our present issue (p. 538), has introduced a new treatment of shock which depends on a method of stimulating these cardiovascular centres directly. Without knowledge of the work of Wiggers and of Fine she has focused her attention on the condition of the vegetative nervous system and concluded that there is a reduction in the activity of the sympathetic system simultaneously with an increased stimulation of the parasympathetic. On the basis of her work on the potassium–calcium balance in the cerebrospinal fluid (c.s.f.) she decided to attempt to raise the potassium content of the intraventricular c.s.f. and in this way to increase the activity of the sympathetic while inhibiting the parasympathetic by a direct effect of potassium ions on the ganglion cells. Without increasing the blood volume by transfusion. Dr. Lena Stern observed that intraventricular injections of a potassium salt immediately raised the blood pressure and apparently brought the animal out of shock. These findings have been applied successfully to the treatment of war casualties.

Unfortunately, no details of the types of case treated are given, and so one cannot evaluate the new method of treatment. That it should fit in with the papers referred to above is a happy and timely coincidence. One point may be discussed further. Dr. Stern considers a state of parasympathetic hyperactivity to exist with depression of the sympathetic centres. The observation of Wiggers *et al.*[1] that the myocardial defect was a lack of response to stretch suggests that this defect may be attributable in part to vagal overactivity—first, by diminishing the calibre of the coronary vessels, and, secondly, by releasing potassium ions, which act directly on heart muscle. Winkler *et al.*[4] in 1938 showed that only a small increase in blood potassium was necessary to cause obvious electrocardiographic changes, and these were due to effects on the myocardium. When the potassium concentration was gradually raised there was cardiac failure in diastole, with the dilated heart observed in cases of experimental shock from trauma or haemorrhage. In the cardiac failure that finally takes place potassium may well be the lethal agent. Scudder,[5] in 1940, stressed the part played by potassium poisoning in shock and suggested the use of adrenal cortical hormone as a remedy. Unfortunately, expectations have not been realized. The reasons for the partial failure have been studied by Fine *et al.* They showed clearly that cortin alone is ineffective in treatment of shock, but when saline solutions are given intravenously with cortin there is in some animals a rise in arterial tension which tends to be maintained. Desoxycorticosterone acetate is ineffective either alone or with saline infusions. It would seem, therefore, that with the present evidence treatment should be aimed at increasing peripheral resistance and not at eliminating excess potassium from the myocardium. Given an efficient coronary flow by relaxation of coronary vessels and increased arterial tension, any potassium excess in the myocardium would be speedily dissipated.

Although there are many gaps yet in the evidence, it is clear that Dr. Stern has come forward at the right moment and has reoriented our views on the treatment of shock. That does not mean, however, that transfusions will cease to be used. Her work will need confirmation; and, granted that confirmation is forthcoming, it would appear that Dr. Stern's treatment should be reserved for those patients who do not show progressive increases in arterial tension as transfusions are given. Whitby and his colleagues[6] have made it clear that the gradual stepping up of the arterial tension with successive transfusions is the best prognostic feature in treatment of haemorrhage and shock from injury.

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[1] *Amer. J. Physiol.*, 1942, **136**, 401.
[2] Ibid., p. 421.
[3] *Surgery*, 1942, **12**, 1.
[4] *Amer. J. Physiol.*, 1938, **124**, 478.
[5] *Shock*, J. P. Lippincott Company, 1940.
[6] *Lancet*, 1941, **1**, 99.

FOETAL AND POST-NATAL CIRCULATION

The solution of the various problems which are encountered in the study of the foetal and post-natal circulation of the blood has attracted the attention of scientific workers since the times of Galen, who first described the foramen ovale, and who has himself been described as the "founder of modern physiology." He was succeeded in the seventeenth century by Harvey, Lower, and others. More recently the early embryonic stages in the development of the heart and vascular system have been studied by means of serial sections and reconstruction models by His, Born, Tandler, Prentiss, and many others. The work accomplished by these pioneer investigators, and the inferences made by them, have now in large measure been confirmed and have received a new impetus from records demonstrating the actual course of the circulating blood currents obtained by modern methods of technique, which at the suggestion of Sir Joseph Barcroft and Dr. H. Barron have been utilized and adapted for the study of the foetal circulation by Dr. A. E. Barclay, Dr. K. J. Franklin, and Mr. M. M. L. Prichard.[1] These workers have employed direct and indirect *x*-ray cinematography, combined with intravascular injection of radio-opaque media, in the investigation of the time and manner of closure of the ductus arteriosus, the closure of the foramen ovale, and the intracardiac flow of blood reaching the heart through the superior and inferior venae cavae, and also the circulation of blood reaching the foetus by the umbilical vein through the liver and ductus venosus. This work, which has been carried out at the Nuffield Institute for Medical Research, Oxford, has been extended, and was also preceded by other experimental work on the foetal circulation, including that in the pulmonary vessels; this has been supplemented by a valuable historical record of the literature and studies in comparative anatomy and embryology contributed by Dr. E. C. Amoroso of the Royal Veterinary College, London, Dr. K. J. Franklin, and others.

It will not be possible in this short article to do more than give a brief summary of some of the more important results that these authors have been able to demonstrate in living eutherian foetuses (principally sheep) delivered by Caesarean section and photographed while the foetus was still in connexion with the uterus by means of the placenta and vessels of the umbilical cord. In these operations a radio-opaque material was injected into one of the foetal veins (external jugular, femoral, or umbilical) and respiration prevented, so as to disturb the conditions of intra-uterine life as little as possible. Perhaps the most striking results which have been demonstrated by these means are: (1) The division of the inferior or posterior vena-caval flow into two streams, (*a*) a larger passing through the foramen ovale into the left atrium, and (*b*) a smaller which enters the right ventricle through the right atrio-ventricular or tricuspid orifice. (2) The flow of the whole of the superior or anterior vena-caval blood through the right atrium and right ventricle into the pulmonary trunk, and by the ductus arteriosus into the descending aorta and pulmonary arteries. (3) The flow from the placenta via the umbilical vein to the inferior vena cava; a small portion only of this blood is by-passed through the ductus venosus, and enters the inferior vena cava directly; the larger portion traverses the liver substance through branches of the umbilical vein, which carry the blood to the hepatic sinuses and so to the large hepatic veins which open into the posterior vena cava. (4) Lateral radiographs of the circulation through the heart of a foetal lamb have also been obtained which show the influence of the tubercle of Lower—well developed in the sheep—in directing the anterior vena-caval inflow, and thus preventing a mixture of this current with that which passes from the posterior vena cava through the foramen ovale.

The division of the posterior vena-caval inflow into two divisions was inferred in 1776 by C. F. Wolff, who estimated that "towards full term about two-thirds of the inferior vena-caval blood would take the left-hand route and about one-third the right-hand one." Wolff's work did not become generally known, but was confirmed by Ziegenspeck in 1905 in guinea-pig and human hearts. Ziegenspeck made drawings of the relation which the caudal, lower edge of the interatrial septum has to the posterior vena-caval channel, as seen when looking at it from below, through a transversely divided posterior vena cava in an excised foetal heart. The actual division of the inflowing blood from the posterior vena cava in the circulating blood stream of the living foetus has, however, been demonstrated for the first time by the writers whose work we are considering, as well as other records of the circulation in the intact foetus.

From the physiological point of view, and owing to variations which are met with in different types of animals rendering inappropriate certain terms that are now used in human anatomy, the authors have found it necessary to introduce some new names. Thus the projecting ridge which divides the posterior vena-caval channel into right and left terminal divisions is named the *crista dividens*, and the boundaries of the foramen ovale are described as (*a*) *a fixed portion*, consisting of the curved lower edge of the upper part of the annulus ovalis (septum II), and (*b*) an *apposable portion*, the valve of the foramen ovale or upper free portion of the septum primum, which overlaps the fixed portion, or "crista dividens," on its left side.

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[1] See *J. Anat.*, London, 1941, **75**, 100; 1942, **76**, 240. *Brit. J. Radiol.*, 1938, **11**, 570; 1939, **12**, 505; 1940, **13**, 227. *Vet. J.*, 1942, **98**, 29.

IMMUNIZATION AGAINST INFLUENZA

Early and inconclusive attempts to immunize against influenza with virus vaccines have been followed up in the United States, and several prolonged and painstaking studies have now been reported. The problem is far more complex than it originally appeared, for it is now known that at least two distinct viruses are concerned, and other indistinguishable cases occur in which the causal agent is unknown. The virus originally isolated by Andrewes, Laidlaw, and Wilson Smith is designated virus A; the unrelated virus B was identified by Francis two years ago; and influenza from which neither of these can be recovered is known as influenza Y. That the first two are immunologically quite distinct is confirmed by the observations of E. R. Rickard, F. L. Horsfall, G. K. Hirst, and E. H. Lennette[1] on the relation between the antibody content of the blood and susceptibility to influenza. Whereas a high antibody level is correlated with immunity to the corresponding virus, susceptibility to the other is unaffected. They make a further deduction which is quite unexpected and somewhat disturbing—that the higher the degree of immunity to either of the known viruses, the greater is susceptibility to influenza Y. This conclusion seems to suggest that a factor apart from humoral immunity must take part in determining susceptibility to influenza. The same workers[2] describe a clinical experiment on a large scale in which some of the inmates in a number of State institutions were inoculated with a formalinized vaccine of virus A and canine distemper virus.

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[1] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 1819.
[2] Ibid., p. 1863.

The effect on serum antibody to virus A was determined by neutralization and complement-fixation tests, and the aetiology of subsequent cases of influenza was verified in the same way. Their conclusion is that the incidence of influenza A was significantly reduced. On the other hand, M. Siegel, R. S. Muckenfuss, M. Schaeffer, H. L. Wilcox, and Ann G. Lieder,[3] in a study carried on over four years in a large institution for mental defectives, and employing similar vaccines, reach the discouraging conclusion that immunization had no effect in reducing the frequency of influenza, whether due to virus A or to other organisms. This is not only a prolonged but a detailed and thorough study, and its circumstances—confinement to a single large institution with patients under complete control, and the alphabetical separation of inoculated and control cases—entitle it to serious consideration. Several incidental observations made are not encouraging, and perhaps the least hopeful feature of the whole subject is the evidently transient nature of immunity, however produced. Not only does the antibody titre decline demonstrably within a few months of vaccination, but in several cases repeated attacks of influenza due to virus A were observed, indicating that the infection itself does not necessarily confer a lasting immunity. If this is generally true of the natural disease, what can be expected of any method of artificial immunization? In all these studies the vaccine contained inactivated virus; living virus was employed in earlier American studies, and it is of interest in this connexion that F. M. Burnet,[4] who has succeeded by intratracheal injection in producing influenza A in *Macacus cynomolgus* (*M. irus*), found vaccination in this animal by the subcutaneous route to be effective only when living virus was used. Taking this evidence as a whole, it cannot be said the influenza virus vaccines now available have much claim to be regarded as satisfactory immunizing agents. All this takes no account of the common cold, in which other viruses are believed to be concerned. An altogether new approach to this problem seems necessary if any real progress is to be made.

EPILEPTOGENIC PROPERTY OF SULPHATHIAZOLE

The local application of the sulphonamide drugs to wounds has recently been employed to a considerable extent. In this use sulphathiazole has been found in many respects unsatisfactory, and it is now apparent that, applied to the cerebral surface, it is apt to be particularly dangerous. Watt and Alexander[5] report 10 cases in which craniotomy was performed and sulphathiazole applied to the wound intradurally or extradurally after suture of the dura, as a prophylactic against operative infection. In 6 cases the craniotomy was frontal; in 5 of these the dura was opened (in one case merely punctured for ventricular tapping), and all 5 developed early post-operative epileptic attacks, often with focal features. The attacks generally ceased within a few hours, but 2 of the patients passed into status epilepticus and died. In the remaining frontal case the thickened dura was not opened, and it presumably provided an effective barrier against diffusion of the drug in solution towards the underlying brain. The remaining 4 cases of the series were spared the epileptic complication, and in these the craniotomy was lateral or posterior in position; the dura was widely opened. It is interesting that in one case of this group there was focal epilepsy as a leading pre-operative symptom, yet there was no post-operative complication; in contrast, all the affected cases had no previous history of epilepsy. The authors, in animal tests, found that in 9 out of 10 experiments sulphathiazole applied to the cerebral surface is a powerful epileptogen. This property was found not to be related to sterilization of the powder or to the source of manufacture. Their experiments also confirmed the clinical experience that sulphapyridine is not an epileptogenic substance, and sulphadiazine and sulphacetamide were found to be innocuous. Simultaneously and independently Pilcher, Angelucci, and Meacham were working on a similar experimental investigation in a larger series of animals. In a preliminary report[6] they also sound a warning against the use of sulphathiazole intracranially. In a high percentage of their experiments the application of sulphathiazole to the surface of the brain was followed by epilepsy with focal characteristics. The concentration of the drug in the blood and the cerebrospinal fluid remained at a low figure.

These observations, when followed up, may perhaps throw some light on the causation of epilepsy. But the important practical point that emerges is that sulphathiazole may not be used with impunity in proximity to the brain. It is also apparent that other chemotherapeutic substances, as they become available in the future, must be fully tested experimentally before they can be employed clinically.

EGG-WHITE INJURY IN MAN

Last year (Oct. 11, 1941) it was noted in this *Journal*[7] that it had not yet been shown that biotin, vitamin H, or co-enzyme R (probably all the same substance) was necessary for man. This year Sydenstricker and his colleagues[8] have reported certain symptoms in four patients (three white men and one negro woman) who volunteered to eat a diet free from biotin and rich in egg-white. The diet consisted of a mixture of 125 g. rice, 80 g. white flour, 75 g. farina, 205 g. cane sugar, 32 g. lard, 10 g. washed butter, 25 g. lean beef, and 200 g. dehydrated egg-white. This represented 387 g. carbohydrate, 31 g. protein other than egg-white, and 32 g. fat, with a total caloric value of 1,960 daily. In addition 928 calories were derived from the 160 g. protein and 32 g. fat in the egg-white, making a total daily caloric intake of 2,888. This diet was poor in all vitamins except riboflavin, which was present to the amount of 10 mg. per 100 g. of egg-white. The following supplements were therefore given daily: thiamine hydrochloride 6 mg., riboflavin 9 mg., nicotinic acid 75 mg., pyridoxine 5 mg., calcium pantothenate 5 mg., ascorbic acid 75 mg., vitamin A 5,000 units, ferrous sulphate 1 g., and calcium lactate 1 g.

At the beginning of the experiment all the subjects were in good general condition and free from symptoms and signs of avitaminosis. During the third and fourth weeks all developed a fine scaly dermatitis which did not itch and which disappeared spontaneously. In the seventh week one patient came out with a maculosquamous dermatitis of the hands, arms, and legs. During the seventh and eighth weeks all showed a greyish pallor of the skin, which, being out of proportion to the blood picture, was interpreted as evidence of peripheral vasoconstriction. The three white patients showed definite atrophy of the lingual papillae, patchy with the production of a "geographic" tongue in one, general in another, and on the lateral thirds of the tongue in the third. The negro woman's tongue was not affected until the fourteenth week. None of them showed the capillary engorgement seen in pellagra or ariboflavinosis. Dryness of the skin of the extremities with well-defined reticulation and a tendency to fine branny desquamation developed again in the ninth and tenth weeks. No ocular or genital lesions were observed. After the fifth week many of the symptoms associated with vitamin B_1 deficiency began to appear —e.g., mild depression to extreme lassitude, muscle pains, hyperaesthesia, and anorexia. There was a diminution in the haemoglobin content of the blood, the number of erythrocytes, and the volume of packed red cells, in spite of a theoretically adequate intake of iron and protein. The daily excretion of biotin fell from the 29–62 µg. of persons taking a normal diet to 3.5–7.3 µg. When a biotin concentrate was injected (75–300 µg. daily), depression, muscle pain, precordial distress, and anorexia were abolished on the third to fifth day of treatment. The ashy pallor disappeared in four days. The urinary excretion of biotin rose to 55 µg. and later, with a larger intake, to 150 µg. per day. When medication ceased it fell to a level slightly below that of patients eating a normal diet. Thus the experiment seems to afford clear evidence that biotin is essential to the nutrition of man.

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[3] *Amer. J. publ. Hlth.*, 1942, **35**, 55, 186.
[4] *Austral. J. exp. Biol. med. Sci.*, 1941, **19**, 281.
[5] *Lancet*, 1942, **1**, 493.
[6] *J. Amer. med. Ass.*, 1942, **118**, 927.
[7] *British Medical Journal*, 1941, **2**, 518.
[8] *J. Amer. med. Ass.*, 1942, **118**, 1199.

GASTRIC SECRETION AND ULCER

Peptic ulcer arises only in those parts of the digestive tract exposed to the action of acid gastric juice, and all experimental and clinical research seems to prove that both acid and pepsin must be present if ulceration is to occur. Exactly how the normal gastric mucosa is protected from acid digestion, and how tissue resistance, gastric secretion, and acid neutralization are precisely interrelated, are not yet fully known. Certainly the healing of chronic ulcer is not prevented by the presence of gastric acid, and such things as tone, motility, emptying time, and spasm have all to be taken into account.

Some of the many aspects of this subject were recently reviewed by Ivy[1] in a lecture under the title, "The Mechanisms of Gastric Secretion," in which he emphasizes again the two periods of gastric secretion—first, the continuous (or interdigestive), and, secondly, the digestive. The former is perhaps too often overlooked; it occurs when the stomach is empty, persists throughout long fasts, and is of variable amount and acidity. The nature of the stimuli which give rise to this continuous secretion is uncertain. It goes on during sleep, and Dragstedt[2] noted that in patients with duodenal ulcer the fasting night secretion of gastric juice totalled from 500 to 1,200 c.cm., compared with usually less than 300 c.cm. in normal persons. Experimentally it is possible in animals, by keeping up stimulation, to increase this continuous secretion, and in such cases typical chronic perforating ulcer has been produced (S. H. Walpole and others[3]). Ivy also points out that the continuous secretion is increased by operations on the upper abdomen, and describes how, after a Pavlov pouch has been made in the dog, the pouch will "hypersecrete" for days or weeks on end. Such secretion is diminished by atropine, though not abolished. The second period of digestive secretion is made up of three phases —the cephalic, the gastric, and the intestinal. The first of these acts through the appetite and is dependent upon both conditioned (cerebral) and unconditioned (noncerebral) reflexes, the vagi containing the excitatory nerves, which are inhibited by atropine and may be interrupted by cutting. Vagotomy as a treatment for ulcer will therefore depend for its effects largely upon how far the cephalic (or nervous) phase of gastric secretion is contributing to the total secretion in the individual concerned, as well as upon the other results of vagal section on gastric tone, emptying time, and circulation. The gastric phase is governed by mechanical distension of the stomach, and partly by chemical secretagogues either present in food (e.g., lean meat) or arising from its digestion. The intestinal phase is entirely concerned with chemical substances which stimulate gastric secretion when applied to the intestine, of which soap, fatty acids, and peptone are examples. Neutral fat, on the other hand, when present in the small intestine inhibits gastric secretion through the production of a substance—enterogastrone—acting through the circulation. Gastric evacuation is largely determined by the antral tone, antral contractions, the activity of the pyloric sphincter, and the character of the food. The intestine also exerts control over the pylorus.

These various phases of gastric secretion may be considered from the standpoint of treatment: for example, the possibility of controlling the continuous night secretion by atropine, the inability of gastro-enterostomy to influence the cephalic or intestinal phase of secretion, the significance of mechanical distension in provoking gastric stimulation. Various extracts resembling enterogastrone in their action have been applied as inhibitors of secretion; but so far the only extract to be used with success has been that of the posterior pituitary.

Whatever may be the ultimate cause of peptic ulcer, the immediate lines of attack on questions of aetiology and treatment would seem to be by way of a thorough understanding of the mechanisms of gastric secretion and movement.

GOOD AND BAD CHEMOTHERAPY FOR GONORRHOEA

Among experts in the treatment of gonorrhoea it has become a truism that the quicker a patient is cured the less chance (*a*) of his spreading the disease, (*b*) of his default before cure, (*c*) of his developing a blood dyscrasia, and (*d*) of the infecting gonococci becoming drug-resistant. Last week we published at p. 528 a letter from Col. L. W. Harrison, Adviser on Venereal Diseases to the Ministry of Health, appealing to all practitioners to help in the campaign against this disease by using sulphonamides for the treatment of gonorrhoea in such ways as are calculated to make the patient non-infectious as quickly as possible and to run the least possible risk of creating sulphonamide-resistant strains of gonococci. Col. Harrison's letter gained reinforcement from a letter published simultaneously from Dr. P. W. Hamond, medical officer in charge of the Croydon V.D. Clinic, who also deprecated the custom of giving sulphapyridine at sight in cases of urethritis without any bacteriological confirmation of the diagnosis and in doses likely to encourage a drug-resistant strain of organisms. It appears from these letters that many doctors are ruining the chances of eradicating gonorrhoea, and are often promoting its spread, by a timid haphazard dosage. There is now good evidence, says Col. Harrison, that administration of 5 grammes of sulphathiazole on two successive days eradicates gonorrhoea, in males at least, in over 90% of cases, and four days' treatment on the same lines gives still better results; "in neither case does such a dosage give rise to any undue proportion of toxic effects, provided that the patient is made to drink plenty of water during the period of the chemotherapy."

Mr. L. R. Braithwaite will deliver the Bradshaw Lecture, on "The Role of Bile in Duodenal Regurgitation," at the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., on Thursday next, November 12, at 3.15 p.m.

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[1] *Surgery*, 1941, **10**, 861.
[2] *Arch. Surg.*, 1942, **44**, 438.
[3] *Proc. Soc. exp. Biol. Med.*, 1940; **44**, 619.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

TETANUS

BY

LESLIE COLE, M.D., F.R.C.P.

The causal organism of tetanus, *Clostridium tetani,* is a rod-shaped Gram-positive organism. Its most important attributes are that it produces spores which are highly resistant, that these spores germinate in wounds only under anaerobic conditions, and that it produces an exotoxin which is absorbed and has a strychnine-like action on the cells of the central nervous system. It is prevalent in soil and is a common inhabitant of the digestive tract of many domestic animals, particularly horses. Perhaps for this reason the disease is most often found in agricultural districts, where the spores are spread by manure and horse ploughing.

Predisposing Causes

The incidence of tetanus in a district or on a battlefield depends partly on the prevalence of spores in the soil and partly on the type of wound. Deep, penetrating, or lacerated wounds allow spores to develop under anaerobic conditions, and growth is also favoured by pyogenic or other anaerobic infection and the presence of tissue necrosis or foreign bodies. Such conditions are a commonplace of modern war. On the other hand, uncleanliness of slight or superficial wounds with scab formation, sealing of slight wounds, or infection of body cavities may also lead to tetanus, and these are now the chief sources of infection in civilian practice. Whitlows in agricultural workers are a not uncommon cause of severe tetanus. Other, though unusual, sources of infection are intramuscular injections, grey wool used in padding plaster-of-Paris splints and infecting the wound under the plaster, felt applied over a pressure sore, infected catgut, puerperal sepsis, and umbilical infection in the newly born.

With the widespread use of prophylactic antitoxin the type of wound which causes tetanus has been profoundly modified. After the obvious wound it is prevented, but it tends to crop up when least expected.

Prevention

With thorough organization it should be possible to prevent tetanus entirely, but once the disease has developed only a certain proportion of patients can be saved. Prevention is therefore of supreme importance, and two methods are now available.

Passive Immunization.—This is attained by injecting a small dose (3,000 I.U.) of antitoxin soon after a wound has been received. The value of this was proved when it was first introduced on a large scale during the early months of the war of 1914-18. The figures given by Bruce show that when this was done the incidence of tetanus fell from 9 per 1,000 wounded in September, 1914, to 1.4 per 1,000 in the November. Even when this does not prevent the disease entirely it usually lessens the severity and lowers the mortality. After prophylactic antitoxin cases generally have a long incubation period, relatively frequent local tetanus, and a slow onset of reflex spasms or sometimes none at all. It is important to remember that the passive immunity conferred by one such injection lasts only between two and three weeks, so that a wound in which infection with tetanus persists will produce the disease at the end of this time if no further prophylaxis is given. For this reason the injection should be repeated at weekly intervals after severe wounds, and an injection should always be given before operation or manipulation of old wounds because these have been known to stir up a latent infection. After some very severe heavily infected wounds the first prophylactic dose may with advantage be doubled.

Active Immunization.—Ramon and Zoeller showed that this could be produced by injections of formolized toxin (toxoid), and a modification of their method is now used in the British Army. Two injections of 1 c.cm., at an interval of six weeks, are given to the soldier before he goes on active service, and this procedure seems to confer immunity for a year and probably much longer. It is very important to remember that the rise in antitoxin titre is much greater after the second injection than after the first, so that a single injection has comparatively little immunizing power and the second must be given. It has been shown that the immunizing effect of toxoid is increased if it is given with T.A.B., and the two may therefore with advantage be combined.

The Passive and Active Methods Compared.—The disadvantages of the passive method are that antitoxin has to be given soon after a man is wounded, which is not always possible in modern war; that, occasionally, severe reactions follow or sensitivity to horse serum, given later, is produced; and that even when repeated the antitoxin does not always completely protect. The active method, on the other hand, only rarely produces slight reactions, has the great advantage that it can be completed before the soldier goes on active service, and does not need to be repeated until a year or more. Its efficacy has not yet been tested out on a mass scale over a long period, but experimental evidence and practical experience in this war suggest that it is reliable. For reliance to be placed on this method alone in an army it is clear that every man must be immunized; therefore it is important that exact records of injections should be included in his papers. At present both methods are used; prophylactic antitoxin being given to all wounded even if they have already been actively immunized.

Description of the Disease

At onset typical tetanus is characterized by fleeting pains, chiefly in the neck and back; these are followed by the gradual onset of stiffness, first affecting the masseters so that there is difficulty in opening the mouth, and later the muscles of the trunk so that the spine is rigid and slightly arched and the abdomen board-like. In the early stages the eyebrows are drawn up, with wrinkling of the forehead, and the corners of the mouth are drawn back, producing a peculiar facial expression called the risus sardonicus. Dysphagia is sometimes an earlier symptom than trismus. The severer the case the more rapidly rigidity and trismus increase, and they tend to be more and more increased by manipulation or movement. This reflex excitability gradually becomes greater until sudden reflex spasms occur in which the jaws are forcibly clenched, the chest is fixed so that respiration is temporarily stopped, and the spine arched backwards in the position called opisthotonos. These reflex spasms may come on any time from twelve hours to seven days after the first onset of trismus, and the earlier they begin the more severe and fatal is the disease likely to be. The time between the first appearance of trismus and the establishment of reflex spasms (period of onset) can generally be estimated to within six hours, and is a good indication of prognosis. If it is less than forty-eight hours, death usually takes place within six days whatever is done; but if it is longer than this there is a good chance of recovery, which becomes greater as the period lengthens. In severe cases which recover, reflex spasms may continue to occur over a period of three weeks, increasing to a maximum, waxing and waning for a time, and then gradually getting less severe until they cease, leaving only tonic rigidity, which may persist for several weeks more, but eventually passing off. Reflex spasms are dangerous because they stop respiration, sometimes for several minutes, make feeding impossible, and exhaust the patient. Tonic rigidity in itself is harmless. In fatal uncomplicated cases death usually takes place within six days either from prolonged respiratory spasms, if these are not controlled, or from cardiac failure when toxin reaches vital centres in the medulla. It is often preceded by hyperpyrexia.

Clinical Types

For convenience tetanus may be divided into five types, as follows:

Type 1, in which at onset there is local tetanus in the wounded limb with rigidity or twitching, and in which the typical generalized picture appears later.

Type 2, in which there is generalized tonic rigidity without reflex spasms.

Both these types are mild, and usually occur after prophylactic antitoxin.

Type 3, like Type 2, but the stage of tonic rigidity passes into the stage of reflex spasms described above.

Type 4—splanchnic tetanus—in which the muscles of deglutition and respiration are involved early and generalized symptoms are slight or do not have time to appear. This form is very rare and fatal, and usually follows a visceral infection.

Type 5—cephalic (Kopf) tetanus—in which paralyses or irritation of cranial nerves, most commonly the seventh or oculomotor, appear early and generalized tetanus only later. This type usually follows wounds of the head or neck, and may be regarded as a form of local tetanus. If the wound is not severe the prognosis as a rule is good.

Diagnosis

"Lockjaw" is a good name for tetanus because it emphasizes the most significant early symptom. A small girl was told that if she cut herself between her thumb and first finger she would get lockjaw. A few weeks later she did this, and a few days afterwards, finding that she could not open her mouth, she told her parents she had lockjaw. It was only after she had been seen by three doctors, and after a good deal of delay, that her diagnosis was confirmed and treatment begun. The onset of painless stiffness of the jaw after a wound should always suggest the possibility of tetanus. Other important confirmatory signs in the early stages are: rigidity of the spine, with slight arching of the back so that the flat of the hand can be passed between the bed and the small of the back without difficulty, and almost painless but board-like abdominal rigidity, increasing when the trunk or limbs are manipulated or the patient attempts to move. The facial expression is also an important diagnostic sign.

Differential Diagnosis

From the early occurrence of trismus, tetanus has to be distinguished from local affections of the mouth such as an impacted wisdom tooth, tonsillitis, peritonsillar abscess, or glands about the angle of the jaw. All these conditions are painful, while the trismus of tetanus is comparatively painless; and this fact, along with a careful examination of the mouth and throat, is usually sufficient to solve the difficulty. Local tetanus may be mistaken for neuritis or arthritis, but, in the former, stiffness or twitching is more marked and pain is less. Cephalic tetanus with cranial nerve palsies has to be distinguished from Bell's palsy, polio-encephalitis, and meningitis, and the generalized form from meningitis and encephalitis also. Tuberculous meningitis may simulate it very closely. In these latter, diagnostic lumbar puncture may be necessary. When abdominal rigidity comes on before trismus, tetanus may be mistaken for acute abdominal conditions such as appendicitis or perforated gastric ulcer, but pain is a more pronounced early symptom in the latter.

Finally, the reflex spasms have to be distinguished from other forms of convulsion such as hysterical or epileptic fits and those of strychnine poisoning, in which trismus is a less marked feature. In these a careful history will often solve the problem.

Treatment

This is best considered under four headings: Antitoxin, treatment of wound, control of reflex spasms, and feeding and general management.

Antitoxin

When toxin is exerting its effect on the nervous system it is extremely doubtful if it can be neutralized by antitoxin; consequently if a lethal dose is so acting before antitoxin is given, this treatment cannot save the patient. Happily in most cases antitoxin can be given early enough to prevent the absorption of a lethal dose. The first need, therefore, is to flood the circulation with antitoxin as soon as possible after the first symptoms have appeared, so that toxin in the blood and lymph which is still accessible to antitoxin is neutralized and any further absorption from the wound prevented. A single large dose (200,000 I.U.) should be given by the intravenous route or, if this amount is not available, as large a dose as possible. In the case of wounds of a limb 10,000 units may also be injected into the subcutaneous tissues round the wound or deeply girdling the limb above the wound.

Repetition of Doses.—In cases with slight wounds I am very doubtful if anything is to be gained by giving further antitoxin With severe wounds 50,000 units should be repeated at weekly intervals or before any operation, until reflex spasms have ceased. It is difficult to see what is to be gained by daily repetition of injections, for it has been shown that antitoxin continues to circulate in large amounts for at least ten days after a big initial dose, and repeated injections are a worry to the patient and tend to increase spasms. To continue to give antitoxin after the reflex spasms have ceased and only tonic rigidity remains is a sheer waste.

Other Routes.—Antitoxin is also given intrathecally and cisternally, usually in combination with intravenous injections. and good results are claimed by some workers; the evidence. however, is conflicting. In my opinion nothing is gained and a great deal may be lost through the excitation of spasms by such procedures, and they are better avoided, particularly under Service conditions. If for any reason antitoxin cannot be given intravenously it should be given intramuscularly.

Before using antitoxin inquiry should be made as to previous serum therapy and for any history suggesting a tendency to allergy or anaphylaxis, and in cases of doubt desensitization should be carried out. If no contraindications are found the serum may be injected direct into a vein and need not be diluted or warmed. A solution of 1 in 1,000 adrenaline should be at hand in case of reactions.

Treatment of Wound

The wound should be touched as little as possible for an hour after antitoxin has been given. The aim should then be to convert an anaerobic into an aerobic infection by thorough drainage and removal of necrotic and infected tissue and foreign bodies. Wounds should be irrigated four-hourly with hydrogen peroxide through Carrel's tubes if for other reasons this is suitable, and dressings should not interfere with free drainage. It is thought that the practice of early excision of wounds, which was introduced in 1917, lowered still further the incidence of tetanus. The occurrence of tetanus may also be a factor in favour of amputation when this is considered for other reasons.

Control of Reflex Spasms

Tonic rigidity in itself is not dangerous; but reflex spasms exhaust the patient and stop respiration, and it is these which need to be checked. The rate at which they develop is the best indication of their approaching severity. If they begin within forty-eight hours of the first onset of trismus they usually increase rapidly both in frequency and in intensity. and may be very difficult to control. In such cases it is well to make preparations to deal with a sudden prolonged spasm should one occur without warning.

In mild cases and in the early stages before reflex spasms have begun, doses of potassium bromide up to 20 grains two-hourly or sodium luminal up to 1 grain four-hourly usually suffice for sleep and rest and to lessen the excitability of the nervous system. When reflex spasms come on they are most easily controlled by avertin or paraldehyde, given rectally as for basal anaesthesia. The dose of avertin should be between 0.07 and 0.1 c.cm. per kg. of body weight (estimated), and this usually stops spasms for from four to six hours. After this the dose has to be repeated, and it is sometimes necessary to give three such doses a day, and often two a day for some days consecutively. The effect in the individual patient and the frequency and severity of the spasms when they recur are the best indications for dosage. The dose of paraldehyde should be at least 1/2 drachm per stone dissolved in normal saline (1 drachm to 2 oz.). Both avertin and paraldehyde tend to produce cyanosis, and this should be controlled by warmed oxygen given by catheter or mask. Evipan intravenously is useful, particularly for sudden severe spasms which stop respiration completely; as also is nembutal, 1½ grains by mouth and repeated. Morphine and heroin should be employed sparingly, but are useful at times. Nitrous oxide and oxygen, chloroform, and ether are also occasionally of value, but if spasms are severe they cannot be inhaled. With all sedatives the risks of overdosage have to be weighed against the risks from the disease. If there is moisture in the lungs atropine should be given subcutaneously.

Feeding and General Management

Reflex spasms are excited by external stimuli of all kinds, and these must be reduced to a minimum. Patients should be kept as quiet as possible in a darkened room or at least be screened from others. The bedclothes should be cradled, and all necessary manipulations, such as feeding and the giving of injections, done while the patient is most deeply under the influence of sedatives. In severe cases a sister or orderly should be near the patient all the time. It is important to maintain strength by giving plenty of nourishing fluids and feeds whenever opportunity occurs. Glucose or cane sugar in water or weak lemonade, milky foods, egg and milk, broth, and bovril are all good, and the last two tend to make up any loss of chlorides from excessive sweating. When trismus is severe it is sometimes necessary to extract teeth before feeding is possible, and occasionally feeding by stomach tube is necessary. Avertin is often of great value in relaxing the jaw, and the attempt to feed should be made from one to three hours after the drug has been given. Feeding by rectal drip is also occasionally useful.

On active service the question may arise whether patients should be evacuated. The decision may be a difficult one and, apart from the wound, depends chiefly on the severity of the reflex spasms and the stage which the disease has reached. Patients who have not developed any reflex spasms four days after the onset or whose spasms have almost subsided can usually be moved with safety. Those who are developing them within four days or who are still having severe spasms should stay.

Complications and Prognosis

Pneumonia is a not uncommon and a fatal complication, and, if suspected, sulphapyridine should be given. Retention of urine occasionally occurs, and hyperpyrexia is usually a terminal event. The latter should be treated by antipyretics and tepid sponging. Sequelae of tetanus are rare.

In arriving at a prognosis the factors that have to be considered are: whether there has been active or passive immunization; the severity, degree of infection, and site of the wound; the length of the incubation period and period of onset; the age and physique of the patient; the presence of intercurrent disease or injury, loss of blood, or exhaustion; the severity of reflex spasms; and the conditions under which treatment can be carried out. An incubation period of more than seven days, a period of onset of more than two days, the presence of local tetanus, and a slight wound only, are all in favour of recovery. Other things being equal, the prognosis is better with wounds of the leg than with those of the head, neck, or arm. In war, intercurrent weakness from the severity of the wound itself, from haemorrhage, and from exhaustion has to be weighed against the beneficial effects of active or passive immunization.

The 34th annual meeting of the Medical Benevolent Society for the East and North Ridings of the County of York (including the City of York) was held in the rooms of the York Medical Society on Sept 30, Dr. C. H. Milburn of Harrogate presiding. The treasurer's report showed the society to be in a sound financial position, and it was decided to make further investments in Government securities. Since the last meeting two members had died, and sympathy was expressed with the relatives. One new member was elected. The annual grant to the dependants of an invalid member was renewed. The following officers were elected for the year 1942-3: Dr. M. Jacobs, Hull, President; Dr. Howard Jackman, York, President-Elect; Dr. G. F. Longbotham, Middlesbrough, Vice-President; Dr. D. Matheson Mackay, Hull, Hon. Treasurer; and Dr. W. W. A. Kelly of 92, Micklegate, York, Hon. Secretary, to whom inquiries may be addressed.

SOME OBSERVATIONS ON SENDING ASSISTANCE TO BOMBED TOWNS

BY

F. WILFRED WILLWAY, M.D., M.S., B.Sc., F.R.C.S.
Temp. Hon. Assistant Surgeon, Bristol Royal Hospital;
A.R.P. Officer, Bristol Royal Infirmary

I put forward these observations with some diffidence though they are written dogmatically. Many may be more experienced, but I have not had the good fortune to read their papers on the subject. If this paper provokes a discussion it will have served some useful function. Apologies are offered for the overuse of the "first person singular," but this is a personal report, and the observations and deductions are in no sense official.

In the winter of 1940-1 Bristol received its average share of air raids. I was active in all save one of these and learnt first-hand lessons. As the winter of 1941-2 approached we were all keyed up to face the bombardments that never came. Instead raids were made on smaller neighbouring towns, notably Weston-super-Mare and Bath. It is obviously possible to view a raid on a neighbouring city with considerable detachment. Such vision may be useful, and I had the good fortune to assist in the "good-neighbour policy" in all these raids. In each case we spent part of the time in the "blitzed city" and part of the time organizing in the "rescuing city." This was possible as the raids were repeated on the second night in each town.

On the whole the good-neighbour system worked well, but it is felt that many improvements could be made. I do not propose to detail what was done—this might be invidious—but the following commentary may be of interest. Admittedly some of it is painfully obvious, but most British cities found that it took actual bombs to drive the lessons home!

Communications

It is clearly vital to establish some sort of contact between the city needing rescue and the rescuer. It is true that rescue parties can be sent fully equipped and self-contained to a considerable degree, but usually fresh supplies, relays of helpers, etc., are necessary. As a busy voluntary hospital, heavily worked and with a war-depleted staff, we do not carry supplies sufficient for "self-contained" as opposed to "shuttle or circulating" rescue work. A fully self-contained unit would obviously need rations, a field kitchen, water, etc. None of this is available, nor is it considered desirable, though certain improvements along these lines could be made. In the case of the Weston raid, phone communication with Bristol was good though the line was sadly overworked (raid excitement) and messages were repeated unnecessarily—for example, a request for more sulphapyridine was separately phoned up by four officials.

In the Bath raids communication was bad. (This is written in terms of the hospital personally visited.) I arrived there at 2 p.m. on the day after the first raid. (I was then leading a surgical team under orders from the Group M.O.) We saw cases and operated till 12 midnight, staying at the hospital for the second raid. At 4.45 a.m. casualties were again arriving. Since leaving Bristol we had been unable to contact Bristol or the other Bath hospitals. The sole contact was the visit of a dispatch rider at 4 p.m. on the first day. We had then been there only two hours and were in no position to know what extra help might be needed, as the problem had only just been surveyed—e.g., some 60 casualties in an unfamiliar hospital with facilities for two teams to operate. At that time we were not *au fait* with the laundry position or the drug and dressing position.

At 6 o'clock on the morning of the second raid I returned to Bristol in my own car to obtain further aid. Clearly this was wrong. It should not be necessary to detach a surgeon to act as a dispatch rider. It is now obvious that when the dispatch rider called at 4 p.m., the aid I should have requested was the honour of a further inspection at, say, 10 p.m., when we would have understood the situation better. We should then have known enough to appeal for rations. The large team

I brought was deplorably fed, yet it worked for 24 hours except for a 4-hour break, and most of its members had been up and doing in Bristol for 14 hours previously. Good warm drinks and substantial meals are necessary for the nurses, doctors, and others in such circumstances.

It is suggested that the best system of communication would be as follows:

The Group Officer's nominee (subsequently termed the "Peripheral Group Officer") should visit the bombed city at the earliest possible moment after the raid. He should inform himself of the situation and establish a centre for his messages, probably at the largest hospital, definitely at any hospital able to telephone. He then phones his opposite number in the rescuing city or sends in his dispatch rider (who often could phone from just outside the city, saving time) and makes his wants known. This shuttle service must be kept alive until the work of "the incident" is over. The Central Group Officer can then organize all the help necessary. The Peripheral Group Officer must continually inform himself (not wait for information) how the hospitals in the bombed area are faring and their needs as they arise. For example, the destruction of a laundry at Weston created an immediate laundry problem. I initiated an immediate "lease-lend laundry system," with Bristol doing the wash. A functioning Peripheral Group Officer is in my opinion vital, to avoid overlap and duplication, often multiplication, of rescue services.

When Should Help be Sent?

When a small city is bombed there is no need to wait for a request for help. Surgical help should leave with the Peripheral Group M.O.'s team, the latter to be fully responsible for communication (detailed above). The hospital in the bombed city may be cleverly organized, but it will need help. If it is so staffed that it does not require help in an air raid, then it is over-staffed and is wasteful of man-power, and doctors should be requisitioned from it for military service! The policy of "waiting to be asked" is pernicious. Suitable help courteously offered will always be welcomed. It is not necessary to mention that the bombed cities alluded to asked for help and sensibly used it, and have sent subsequent thanks which were much appreciated. In one city that was helped, on the arrival of the rescuing team the whole resident M.O. staff of the hospital retired to bed—a sensible manœuvre.

What Type of Help should be Sent?

I have firm views on this subject, and they conflict to some extent with E.M.S. authority as stated in the "Red Book." However, I will venture to dogmatize.

1. The "Shock Troops" Team

The first help to be sent should be strong parties of medical students with a few sensible housemen. These I consider my shock troops—they are "go-anywhere-do-anything men." They will give a blood transfusion, take a blood pressure, shave a head, write notes (vital: I have seldom seen a "General" write a note), put out a small fire, act as stretcher-bearers, give simple anaesthetics, form a minor surgical team, and generally do the ten-thousand-and-one things that "proper doctors" seem to find beneath them. The supreme pull of the big city over the smaller is not in the greater excellence of its consulting staff but in the number of its medical students. Where possible I would include in the shock division that other salt of the earth, an almoner with her clerk. This division, warmly clothed* and well fed, should be on the road within 1¼ hours of news of "the incident." This news came in about 3 a.m. when there was a midnight raid 25 miles away, though I am convinced this information could be expedited. The "shock troops team" and the Peripheral Group M.O.'s team can well leave together.

2. Surgical Teams

The surgical teams that seem to be so beloved of the E.M.S. can well leave at a much later hour, say breakfast-time. They are not needed in the first few hours unless the stricken area has no surgeon at all (highly improbable), in which case a surgeon must leave with the shock troops. Most casualties can well do with a few hours' rest; the few "vitally urgent" cases can be dealt with by the local surgeons, who, having withstood the night's raid, will appreciate relief at 9 a.m. to see to their own homes, etc., but who do not want relief at 5 a.m. or 6 a.m.

The surgical team should consist of surgeon, assistant, anaesthetist, two nurses with theatre experience, and a sufficient number of medical students. The wise surgeon will pack his own kit; every surgeon will have his own fancy, but in air raids the best surgeon is the one who needs the least tools. I have a passion for taking razors (and a student to hone them) and nail-brushes; experiences of "hair like barbed wire" have developed this taste. I may here cavil at the usual theatre technique. The surgeon's clean washed hands are usually an improvement on the patient's wounds, while the ordinary theatre ritual is fantastically oversafe for a primary amputation or excision of wound edges of, say, a hole in the buttock. It is well to carry goods for one's own comfort—e.g., a theatre suit, gum boots, and a mackintosh. The visiting surgeon who bothers the visited hospital for these things is *not* helping—he's wasting time, energy, and tempers. Ideally, a surgical team should be relieved every 8 to 10 hours, otherwise efficiency will fall off. The provision of relief is the duty of the Peripheral Group M.O., whose job is always to view and review the problem, note how the work is progressing, and contact the centre. The surgeon in these teams should be a good general surgeon.

If one took the E.M.S. "Red Book" too literally the first duty of an M.O. at an E.M.S. receiving hospital apparently would be not to treat the sick but to notify them to someone else! Vide the following extracts:

> Page 17, para. 25.—"Whenever a patient with head injuries is admitted to a hospital the Regional Consultant must be informed immediately, if possible by telephone confirmed in writing, unless the patient has been admitted or transferred to a special centre, or has been visited by a neurosurgeon."
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> Page 15, para. 20.—"Chest wounds, whether admitted direct or from first-aid posts, should not be retained at casualty hospitals, but should be evacuated as soon as possible to one of the special chest centres. If a case is not transferred at once the Regional Consultant must be informed immediately, if possible by telephone as well as in writing. A copy of the notification must also be sent to the Regional Hospital Officer, or in the case of the London Sectors to the D.G.E.M.S. at Whitehall. All penetrating wounds and severe crush injuries of the chest must be notified, but there is no need to do so in the case of surface wounds or simple fractures of the ribs."

Fortunately, so far as my information extends, England is full of doctors who read these regulations with a blind eye or swallow them *cum grano salis*. It is not disputed that they may be right and proper in "quiet periods" in a hospital; certainly they are *de trop* in a blitz period.

3. The Special Technique Team

By "special technique team" I mean those surgeons and assistants whose work requires trained assistants and, maybe, special instruments, etc. These teams may be found in neurosurgery, fractures, thoracic work, burns, and facio-maxillary work. Their use calls for much thought. I do not deny that many difficulties arise. There are various possibilities, and it is well to discuss them. The "quiet period" duties of these teams are clearly those of (i) attendance to routine duties; (ii) dissemination of information to their colleagues who practise in a more general way; (iii) holding demonstrations of technique, etc.

Their duties in a raid are less easily defined. Three possibilities emerge: (A) Should they remain at their base ready to deal with what comes to hand? (B) Should they await the summons of the Peripheral Group M.O.? (C) Should they tour the hospitals in the bombed city seeking their wounded amid the debacle? It is assumed that all these "specialists" cannot do both A and B. If they can, then there are far too many of these single-minded gentlemen, and they should be drafted elsewhere! In fact, the super-specialists should be organized, like the National Fire Service, on a drafting basis.

Possibility A is not ideal. In practice the patient does not often reach the right centre, and certainly not unharmed.

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* Battle dress for shock troops is old clothes, a torch, pencil and pad, and a pair of dressing scissors.

With regard to possibility B, it is argued that the Peripheral Group M.O. will not be properly advised when to call for the special technique team and that delay may thus occur. This is surely a matter for education. (My own criterion of the "F.R.C.S. standard" is a "young surgeon who knows when he doesn't know.")

The third possibility (C), the "touring the battle-front" idea, raises interesting points—e.g., Who should tour? What should he take? The practice of the consultant touring alone is almost valueless. If he gives a little advice in the excitement of an air raid it may or may not get properly acted upon. If the consultant himself rolls up his sleeves and actually works, then he is working in strange surroundings minus his subordinates and cannot do the case justice. Further, he is likely to have a case that takes a long time, while the theatre door is crowded with fuming general surgeons waiting to lop off a leg or excise a wound.

In this connexion I put up two workable ideas for criticism.

(a) Let the consultant tour alone, *but* let him take an ambulance with him and let him seize the suitably wounded and *there and then* pack them off to his centre. Of course this will mean that the early bird will get the worm, for I must confess to having seen cases of multiple injury from air raids.* It is clear that the consultant cannot be "selecting winners" on the spot and curing them at the centre at one and the same time. It is assumed, however, that the rest of his team remain at the base, and in the absence of the General they carry on. If they are unable to act alone another consultant must move to the centre or base as its own consultant moves to the periphery.

(b) The consultant arrives fully equipped with his own team and tools and does the work on the spot. "Fully equipped," then, should mean "everything," or almost everything, the battle area supplying only a room. This method is expensive and it is slow. The necessary three-ton lorries would have to leave at the start of the incident. If their personnel was dispersed at all it would take a long time to collect. I once made plans with Brigadier Cairns for the Oxford Neurosurgical Service to relieve Bristol in this manner. We never tried the experiment, but my opinion is that if from Bristol an S.O.S. was sent at 12 midnight the lorries with relief might roll in about 12 noon the following day, probably later. Say 3 hours to get an S.O.S. out, 4 hours to collect and feed the team (one on week-end leave, one ill, one at a new address, etc.), and 4 to 6 hours on the road. Anyway, the E.M.S. has not provided fully equipped civilian teams in the sense alluded to—at least not in my region.

Probably choice *a* above is the better in view of present conditions. Choice *b* is certainly worth trial, and could be experimented with in one or two regions, and data collected.

4. Nursing Relief

This is important, and requires nice judgment and execution. A two-nights-running air raid is a heavy test of the usually busy, usually under-nursed general hospital. If to the admission of numbers of casualties be added minor bomb damage (windows blown in, no black-out, etc.) and noisy excitement in the daytime precluding rest, then the strain on the night nurses is heavy. We tried the experiment of exchanging units of nurses between the central city and the bombed town, thus providing a "quiet night." This needs much arranging and nice timing when all hospitals are working full out with minimal staffs. Two experiences in practice are related, and are instructive:

Twenty nurses were sent at 9 p.m. to the Weston General Hospital after the second night's raid (obviously no one knew if a third night's raid would occur). These nurses were courteously received and were distributed among the wards; during the night the local nurses were each given 4 hours off duty and their work thus lightened. Had a raid occurred the augmented staff could easily have shared the work. (A similar exchange of house-surgeons is desirable.) A similar party of 20 nurses were sent to another hospital, where the matron had already been advised to expect them. They were met on arrival, told they were not wanted, and sent back crestfallen to Bristol. What a lack of imagination and tact! The hospital in question did not even notify this action to the A.R.P. organizer, with the result that next day a bus was sent to fetch back nurses who had been returned the night before!

These contrary experiences merely confirm the need for good planning.

Summary

The salient features of the above observations may be summarized in the form of a time-table, thus:

Time	Duties of Central Bureau Officer at "University City"
Say 12 midnight	Incidents at Blankville (It is assumed that Blankville is 1 hour away by ordinary car)
00.30 hours	Notification received at "University City" of Blankville's blitz Immediate summoning of shock troops and Peripheral Group M.O.'s unit. Consideration: "Has Blankville surgeons enough or should a surgeon be sent *now*?"
02.30 hours	Departure of Peripheral Group M.O. and shock troops, all fed warm, transport fixed, etc.
03.00 hours	Warn special consultants and general teams to stand by for 8 hours
04 00 hours to 05.30 hours	(Depending on communications available to receive messages from Blankville.) Assess the degree of help which may be necessary
08.30 hours	Dispatch surgical relief teams *quantum sufficit*. Begin to plan for their relief S.O.S. N.B.—Information should be arriving constantly from the Peripheral Group M.O.
09.00 hours	Arrange for evacuation of beds in Blankville S.O.S. [And so on, depending on the seriousness of the air raid.]

PROPOSED NEW MEDICAL SCHOOL FOR LONDON

FOUNDED ON L.C.C. SERVICES

The establishment of an undergraduate medical school founded on the hospital services of the London County Council—which are by far the most comprehensive in the country and perhaps in the world—is proposed in a report which has been presented to the Council by its General Purposes Committee. The report is in the form of a statement of evidence to be given by the Council to the Interdepartmental Committee on Medical Schools recently set up by the Minister of Health and the Secretary of State for Scotland under the chairmanship of Mr. W. M Goodenough.

The new school would be established at one of the L.C.C.'s larger general hospitals and would utilize other hospitals and institutions as required. It is assumed that it would become an internal school of the University of London, which, in agreement with the Council, would provide the professional and teaching staffs. The arrangement would be similar to that obtaining at present between the British Postgraduate Medical School and the L.C.C. Alternatively, the Council itself might be responsible for the general direction of the school as in the case of the school for teaching in psychiatry attached to Maudsley Hospital. It is claimed that the experience which the L.C.C. has gained during the last 7 years in the case of the British Postgraduate Medical School (in which it has satisfactorily met any necessary modifications in the administration of Hammersmith Hospital) should be of great value in dealing with any new project on these lines. Any arrangement which the Council would make to extend medical education would be open to women students equally with men. On the financial side the Council would expect to be treated by the Government no less favourably than the voluntary hospitals and present medical schools.

The L.C.C.'s interest in medical education flows from its position as the major health authority for London, from the fact that it is the largest civilian employer of medical staff in the country, and from the facilities which its hospitals, numbering about 100, and its health services afford for a complete medical education. For some years past it has provided for the clinical teaching of undergraduate medical students by the affiliation of its general hospitals with voluntary teaching hospitals for teaching in obstetrics, fevers, psychiatry, venereal diseases, and other subjects. Up to the outbreak of war 11 of the medical schools were linked with 16 of the Council's "acute" general hospitals, in which classes and demonstrations were held, conducted by the resident medical staff, the Council's consulting staff, or members of the teaching staff of the students' medical school. Instruction in obstetrics has already been given at 10 of the L.C.C. hospitals to students from 9 of the London medical schools. Emergency courses of instruction in fevers are given at the fever hospitals, and, although the arrangements are not systematized, lecture-demonstrations to undergraduates are given at most of the mental hospitals. Plans are in hand for the teaching of psychological medicine in the Council's mental health services after the war.

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* In these cases the zealous resident must notify (see "Red Book") three or four different consultant advisers and later divide the single patient among three or four different hospital centres. In the interests of logic the E.M.S. should appoint a multiple-injuries specialist and have done with it.

In so far as the Council's resources are used to augment the teaching in voluntary teaching hospitals (apart altogether from the proposal to set up the new school) the report calls for closer integration, particularly from the point of view of continuity of teaching. It is suggested that an advisory board be appointed for each combination of linked hospitals to make recommendations to the hospital authorities concerned for the appointment of teaching staff, the personnel of the board to consist of representatives of voluntary teaching hospitals and of the L.C.C., with whom representatives of London University would be associated. Teaching appointments should be regarded as including university chairs and readerships and the recognition of holders of whole-time posts as teachers of the university, while part-time consultants and specialists would be available for work in either voluntary or municipal hospitals, or both. If it is decided that a student after qualification but before registration should be required to hold a house appointment, the Council would consider a reasonable adjustment of its medical staffing arrangements to enable that to be done.

It is also considered that the service which the L.C.C. performs in the field of public health and social welfare should be brought more closely to the notice of medical students as a means of acquainting them with the wider aspects of social and preventive medicine, and the Council is prepared to offer facilities for organized instruction in the public health services and for the appointment of its staff as lecturers. Finally the report calls for better co-ordination of the facilities for postgraduate medical education in London, and the closer linkage of any new centres of postgraduate instruction with the British Postgraduate Medical School as the nodal point.

APPROVED NAMES FOR DRUGS

THE PHARMACOPOEIA COMMISSION'S POLICY

During the war the General Medical Council has published from time to time, on the recommendation of the British Pharmacopoeia Commission, lists of approved names for substances produced by British manufacturers, in some instances under licence granted by the Comptroller-General of Patents, Designs, and Trade Marks. The intention has been to recognize non-proprietary names which could be used freely by manufacturers, and thus to avoid the difficulties to medical men and pharmacists which result from a multiplicity of names for the ame substance. When any of the substances for which names have been approved have been admitted to the *Pharmacopoeia,* he approved name has been made the official title, but the ecognition of an approved name does not imply that the subtance will necessarily be admitted to the *Pharmacopoeia.*

The Pharmacopoeia Commission has now formed an advisory committee on nomenclature to assist it in the selection of approved names. Suggestions for suitable names will be nvited from the manufacturers interested in the production of a substance for which an approved name is required, and full onsideration will be given to the suggestions received. The Commission hopes that the approved names will be generally dopted, and would deprecate especially the introduction of new names for substances for which approved names have been published.

Principles of Nomenclature

The Commission has adopted the following statement of principles as a guide in the selection of approved names:

1. Names should, preferably, be free from any anatomical, physiological, pathological, or therapeutic suggestion. This pplies only to chemicals. Such suggestion cannot always be xcluded in the naming of biological products.

2. The accurate chemical name should be used if suitable; when it is unsuitable an attempt should first be made to form name by the combination of significant syllables from the cientific chemical name, and to include an indication of the potent element or constituent of a compound.

3. Names should be, in general, preferably of two, three, r at most four syllables.

4. Names should be distinctive in sound and spelling, and should not be liable to confusion with names already in use.

5. Names which are difficult to pronounce or to remember should be avoided.

6. The addition of a terminal capital letter or number should be avoided.

7. Names used in the current *United States Pharmacopoeia,* or adopted for the next revision, should be used either as principal titles or as synonyms.

8. Names used in the *British Pharmaceutical Codex* or in *New and Non-Official Remedies* should receive preferential consideration.

9. The following terminations, which are now well recognized, should be used so far as possible:

-ine (Latin -ina), for alkaloids and organic bases;
-in (Latin -inum), for glycosides and neutral principles;
-ol, for alcohols and phenols (-OH group);
-al, for aldehydes;
-one, for ketones and other substances containing the CO group.
-barbitone or -itone, for drugs of the barbiturate group;
-caine or -aine, for local anaesthetics.

Approved Names already Published

Certain names originally published as approved names have now been made official by the inclusion of monographs in *Addenda* to the *British Pharmacopoeia, 1932.*

Official Names: Third Addendum	*Other Names*
Bromethol	Avertin
Carbachol	Doryl
Hexobarbitone	Evipan
Iodoxyl	Uroselectan-B
Leptazol	Cardiazol
Mepacrine hydrochloride	Atebrin
Mepacrine methanesulphonate	Atebrin musonate
Nikethamide	Coramine
Phemitone	Prominal
Soluble hexobarbitone	Evipan sodium
Stibophen	Fouadin
Official Names: Fourth Addendum	
Pamaquin	Plasmoquin
Suramin	Germanin (Bayer 205)

New official names were given to certain substances included in the *British Pharmacopoeia, 1932,* and the *Addendum* 1936. For those names reference should be made to the relevant publications.

Approved Names	*Other Names*
Amethocaine hydrochloride	Decicaine
Cyclobarbitone	Phanodorm
Dienoestrol	Di-*p*-hydroxyphenylhexadiene
Diodone	Perabrodil
Diphenan	Butolan
Dithranol	Cignolin
Ethisterone	Ethinyltestosterone; lutocyclin, lutogyl; pregneninolone; progestoral; proluton C
Hexazole	Azoman; triazole
Menaphthone	2-methyl-1 : 4-naphthoquinone (Menadione *U.S.P.* XII)
Meprochol	Esmodil
Mesulphen	Mitigal
Pethidine hydrochloride	Dolantin
Pheniodol	Biliselectan
Pholedrine	Veritol
Soluble phenytoin	Epanutin; eptoin; sodium diphenylhydantoinate; solantoin; soluble dilantin
Sulphacetamide	Albucid

AWARDS FOR GALLANTRY

Mr. DENNIS OWEN CLARK, F.R.C.S., medical officer, mobile unit, Weston-super-Mare, has been appointed an M.B.E., and the G.M. and the B.E.M. have been awarded to Mr. HENRY COX and Mr. WILLIAM JAMES TYE, members of a rescue party, respectively. The citation in the *London Gazette* reads:

"During an air raid a house was demolished and five people were buried in the debris. Cox cut a hole in the floorboards and reached a woman, whom he released. He then came to a boy who was buried, lying on his back. Cox removed some debris by hand, freed the boy, and turning on his own back was able to drag him out. Tye then went into the tunnel to try to release a girl whose legs were pinned between boxes which were taking the weight of some tons of debris. This could not be moved without the risk of killing two other trapped persons. Although the whole structure was liable to collapse, Cox and Tye worked in relays, and, with their bodies, shielded the child from falling masonry and rubble, receiving cuts on their heads in so doing. Periodically, Dr. Clark went in the small opening to administer morphine and finally to perform the delicate operation of amputating the girl's leg, but this was found to be unnecessary, and after five hours she was released. Cox and Tye showed great courage and devotion to duty and the calmness and efficient demeanour of Dr. Clark inspired confidence in the victims and rescuers."

Reports of Societies

INFLUENZA EPIDEMICS: SOME CONUNDRUMS

In the Section of Pathology of the Royal Society of Medicine, on October 6, Dr. C. H. ANDREWES, F.R.S., delivered his presidential address, which he had entitled "Thoughts on the Origins of Influenza Epidemics," and propounded certain conundrums, with the broad lines on which the search for a solution might be made.

Of the periodical outbreaks of influenza the major ones were apparently due chiefly to influenza A, the virus isolated in 1933 and previously called "epidemic influenza virus"; others might be due wholly or partly to influenza B, the virus isolated independently by Francis and Magill in America in 1940, resembling the virus recovered earlier in being pathogenic for ferrets and mice but immunologically quite distinct. But along with the lesser influenza A outbreaks there occurred many cases of clinical influenza (called in America "influenza Y") which yielded no laboratory evidence that either of these viruses was concerned. A second conundrum was that influenza A viruses varied from one outbreak to another alike in rapidity of spread in the human population, in the ease with which they were established in ferrets, and in the ease with which the ferret-adapted strains could be got to infect mice. On the whole, the strains most infective and virulent for man had been those which most readily infected laboratory animals, but this relationship was by no means certain. Yet another problem was the whereabouts of influenza virus between epidemics. Influenza was only prevalent in Britain every other year, and when it came it was almost confined to the months January to March. The virus seemed to disappear for about 21 months out of 24, and this two-yearly rhythm roughly coincided with what was occurring on the European Continent and in North America. Swine influenza showed a somewhat similar regularity. It broke out in herds of pigs on the Middle West every winter and the virus disappeared every summer. Shope suggested that the virus had been seeded into the herd well ahead of the epidemic, but produced no disease until some trigger, such as change of weather or exposure to wet, fired off the epidemic. Did influenza virus persist in a masked or occult form, not necessarily, as in the case of the pig, in a worm in the lung? Again, there was the puzzling circumstance that some relationship was shown to exist between the immunity of an individual and the level of neutralizing antibodies in his serum, and yet potent antibodies diminished only to a limited extent his liability to infection.

The Search for a Solution

Dr. Andrewes then passed on to consider the broad lines along which he felt that a search for an answer to these various conundrums might be profitable. He discussed the supposed evolution of a virus on the presumption that the occurrence of influenza in an individual or community depended to some extent—not solely—on the grade of influenza virus; no doubt the specific and non-specific resistance of the individual or community, the weather, and social conditions also played their part. Nor did he suggest that influenza viruses of one outbreak would all belong to one grade; rather would the mean of the virulence grade of prevalent viruses vary from time to time. Two facts, when placed in juxtaposition, made him pause. This country was remarkably free from influenza for some years before 1890, but after the epidemic prevalence of the early 'nineties influenza had never fallen to anywhere near the 1890 level. Evidently an abnormal influenza epoch set in. The other fact was that in 1934, 1936, 1938, 1940, and 1942 influenza A, so far as could be judged from laboratory tests, was practically non-existent in England and Wales, and yet, as compared with the pre-1890 era, these had been years of relatively high prevalence of clinical influenza. Apparently waves of influenza A had been superimposed on an increased prevalence of something which was not influenza A. He was attracted by the hypothesis that the influenza virus had been regularly taking a heavier toll of human lives since 1890 than during the forty years before that, but that only in certain years had circumstances allowed it to attain that grade at which it became recognizable as influenza A.

Believing that the conception of a basic influenza virus suggested new lines of experimental attack, he went on to picture a human community in winter-time. A certain number of people might be carrying avirulent basic influenza virus, which spread by seasonal coughs and colds, and increased its grade of virulence by passage through a series of unduly susceptible persons until it caused symptoms. Three recent descriptions recorded influenza outbreaks in communities following upon epidemics of febrile catarrhs a few weeks earlier which had yielded no virus; the catarrhs might have played a part in the genesis of the influenza outbreaks. But a catarrhal outbreak must not be expected to precede one of influenza in every locality. A moderate view would picture epidemics of influenza as arising not from a single source or from latent infections of ubiquitous distribution, but from a limited number of scattered foci. When virulence had been speeded up locally, further spread by droplet infection could occur in the orthodox way. In such circumstances an increase in grade of virulence and spread through the community would take place or slow down according to the strength of various factors, including probably the average antibody level. Passage through very susceptible persons would heighten the grade of virus, and passage through the relatively immune would induce a fall. This idea of a gradation in properties of influenza viruses from basic virus to pandemic virus afforded a feasible explanation of the conundrums.

Possible Prevention or Control of Epidemics

Could such a picture assist in the prevention or control of influenza epidemics? The sequence of events leading to an epidemic was complex and might be interrupted at several different points. It might be attacked at its beginnings when virus of low grade was finding opportunity to spread widely. Improvement of aerial hygiene by better ventilation and other measures, if it decreased other respiratory infections, might make it difficult for influenza virus to get up its evolutionary momentum. Present methods of vaccination had only a limited value in protecting individuals, but influenza might quickly peter out if introduced into a closed community most or all of whose members had been recently vaccinated and whose antibody level was accordingly high; this was specially likely if the virus had not already attained too high a grade. Burnet in 1937 suggested that intranasal instillation of living attenuated virus might prove an effective immunizing procedure. The idea had theoretical advantages, but it was not yet known how to attain at will a safe and effective attenuated virus. It was rather like the lighting of small controllable fires in advance of a dangerous spreading conflagration, only to be done in the face of grave menace and if one was sure that the fire one had lighted would not get out of hand. Another suggested method of control for which good results had been claimed was local passive immunization of the respiratory mucosa by inhalation of atomized antiserum.

Should pandemic influenza recur Dr. Andrewes believed it would be found to be primarily a virus disease, and that the virus would be rather different from the influenza A virus of these times, though not unrelated to it. At the moment it seemed wise to learn all we could about the influenza which was with us, hoping to be better prepared to deal with the arrival of its fearsome relation. Before the 1918 pandemic there were a number of signs and portents in the form of abnormal prevalences of respiratory infections. He did not know that anyone had detected any grave epidemiological omens recently, but he would be a rash man who indulged in prophecies, hopeful or gloomy.

At the meeting of the Tuberculosis Society of Scotland held in Glasgow on Oct. 23, with Dr. C. Cameron (president) in the chair, Honorary Membership was conferred upon Sir StClair Thomson, who afterwards gave a lecture on "Tuberculosis of the Larynx: Diagnosis and Prognostic Value," illustrated with a lantern demonstration.

Correspondence

Air Disinfection

SIR,—With reference to your annotation entitled "A New Method of Air Disinfection" (Oct. 10, p. 431) may I be permitted to add a few remarks. We are of opinion in these laboratories that fundamentally chemicals exert their lethal action on bacteria by the same mechanism, whether the field of activity is in the test-tube or in the air. In estimating values, however, phenol coefficient and water solubility are pre-eminent in the former field, while vapour pressure and diffusion coefficient are additional factors of importance in the latter. When a bactericide is being tested in the air, rate and duration of action are noted. The two are incompatible in our experience, which, as a matter of fact, fits in with theory.

A germicide with a high vapour pressure has a rapid but evanescent action, while one with a low vapour pressure is relatively sluggish, albeit durable in its action, the test-tube phenol coefficient often coming but little into the picture. Glycols are examples of the former type of substance and hexyl resorcinol of the latter, resorcinol being an intermediate type. We found (*J. Hyg.*, Camb., 1940, **40**, 320) propylene glycol to be about as potent in the air as was carbolic acid, hexyl resorcinol being some 200 times as potent. Robertson found that 1 g. of the glycol in 50,000,000 ml. of air had under optimum conditions an effect (not pronounced), while we have observed a definite effect of hexyl resorcinol in a concentration of mist of 1 g. in 100,000,000,000 ml., and of resorcinol in ten times this concentration. These phenols are thus definitely "somewhat more effective" than glycols, and the contrast between their behaviour in air and in water is apparently again "extreme"—a not "unfamiliar" observation by other workers besides ourselves. At Portslade it is not felt that "no light has yet been obtained on its mechanism," and it may be pointed out that some of the phenols, as used by us, are odourless, non-irritating, and so far as test animals are concerned non-toxic.

It has to be confessed that we have really no knowledge as to the minimum effects sufficing to control cross-infection of respiratory diseases. It is possible that long before an inability to grow on agar plates is evident the bacteria in question have been so damaged that they are unable to cause infection. The arbitrary standard we set ourselves of a 90 to 95% kill within 10 minutes may be valueless or, on the other hand, unnecessarily severe. It is for this reason that the relative merits of different bactericides cannot be assessed until they are subjected to field tests, bearing in mind that they must have, or course, a low host–parasite toxicity ratio and other essential characteristics.

As regards mechanism of action—i.e., whether acting in mist or in vapour form—the probable answer is that bactericides may be lethal in either form. Few who have studied the subject would doubt this. But the size and number of germicide units in the air govern the collision frequency with the bacterium, so that it should theoretically have contacted 25,000 times the amount of germicide molecularly dispersed than when dispersed as a stable mist consisting of 1 μ particles. Hence we see why bactericides of high vapour pressure kill quickly, whether originally dispersed as mists or vapours. A quick kill of necessity calls for the employment of a larger amount of germicide than does a slower kill, and the question arises as to how far durability is to be sacrificed for rapidity of action. For example, 1,000 mg. of resorcinol painted on the floor of a chamber of 1 m.^{3} capacity will sterilize the atmosphere of the test organism in half an hour, and even when there is free access of the air to the outside will continue to do so for weeks. On the other hand, 1 mg. if mechanically atomized or heat volatilized will sterilize in 15 minutes, but will have lost practically all its activity within half an hour. The surface area of evaporation is very large in the latter case, but the reservoir of supply is small. If the paint be used in conjunction with the mist, the rate and durability of kill are influenced in the direction dictated by theory.

Finally, to consider solely resorcinol and propylene glycol: the choice lies between the use of 1 part of the former to kill in 15 minutes and 100 parts of the latter to kill in 5 minutes. Both procedures, including several others, are, in our opinion, "promising," but in these laboratories the glycols were discarded as germicide bases in favour of the phenols 4 years ago, and subsequent studies have strengthened our view of the apparent general superiority of the phenols.

—I am, etc.,

Portslade Research Laboratories C. C. TWORT.

Tuberculosis and Milk

SIR,—It is good to see Dr. C. O. Hawthorne again taking the field for pasteurized milk (Oct. 24, p. 494). Made with his usual graciousness his plea may carry conviction to hundreds of your readers and urge them to fresh efforts among their patients. Let them be wary, however, of a rebuff awaiting them. They may be told, and truly, that this summer pasteurized milk soured as quickly as the raw product. It was my own depressing experience to see a bottle of raw milk being taken to my grandchildren as their (pasteurized) supply "is so bad"! Taken up with the company responsible the fact emerged that the call-up of skilled workers meant inefficient processing of the milk and sterilization of the bottles. It was therefore of special interest to see in the Report on Tuberculosis in Wartime the recommendation that "specially skilled workers in pasteurization depots should be placed on the list of reserved occupations." Man-power is being saved by the new regulations concerning the delivery of milk. Should not equal attention be given to those who handle the milk before it reaches the retail distributors?

If confidence in pasteurization is once lost it will be regained with great difficulty. Dr. Hawthorne's medical missionaries should at least feel they "have their quarrel just" and that Government support is behind them. If the wartime situation does not allow an adequate supply of skilled workers for "processing," should we not ask for a stronger pronouncement from the Government concerning the necessity for home boiling?—I am, etc.,

Moor Park. ESTHER CARLING

Hepatitis

SIR,—I have read with interest Dr. Philip Evans's report (Oct. 17, p. 446) of an epidemic of hepatitis. The condition of infectious jaundice is probably more prevalent in London than is realized but remains unrecognized, while more frequent reports come from country districts because the cases are not divided between many doctors.

I was called early in September of this year to see a girl aged 23 who was working as an assistant in a day nursery in the North of London. She had a temperature of 101° F. and signs of mild sore throat. For four days she was running a temperature between 100° and 101° F., with no other symptoms except nausea and occasional sickness, when she took veganin tablets. On the fourth day I found a slightly enlarged firm spleen; the next day she developed jaundice with biliuria and clay-coloured stools, which were, however, not quite free from bilirubin. Two days later the stool turned normal again; biliuria disappeared, but the urine was still rich in urobilin for the following week; jaundice of the skin grew a little more intense. The temperature dropped to about 99° F. when the jaundice appeared. The liver was considerably enlarged for a couple of weeks, but was never tender to touch. The agglutination test made 10 days after was negative for typhoid and paratyphoid fevers and for the salmonella group

When I questioned the girl, who was quite intelligent, I learnt that a number of the children at the nursery had diarrhoea and in some of them she noticed pale stools, just as she had had. One child had developed jaundice. On further inquiry I was able to trace 3 more cases of jaundice from the nursery, which had been seen at the same period by a doctor. Probably more cases had no medical attendance at all. Another assistant at the day nursery, 18 years old, had to go to a hospital with pneumonia late in September. There she developed jaundice about a month after I had seen the other girl, this being quite a usual incubation period of this disease. She had pale yellow stools; later she developed granulocytopenia. The hospital doctor explained the jaundice as a toxic reaction to sulphapyridine treatment of the pneumonia. I am inclined to think the jaundice was an infectious hepatitis just coinciding with the pneumonia, and that severe leucopenic reaction was caused by the failure of the liver to "detoxicate" the drug. Though infectious jaundice generally takes a mild course it appears highly desirable that these cases should be made notifiable in view of the long convalescence, especially in adults. This outbreak was quite unknown to the medical officer attending the nursery.—I am, etc.,

London, W 9 F. MULLER.

Purpuric Type of Cerebrospinal Fever

SIR,—Dr. E. H. M. Milligan's letter (Oct. 3, p. 405) has called my attention to the earlier reference which he notes (Dr. I. S. Fox, Aug. 22, p. 218). Commenting on the case of fulminating purpura which he had described, Dr. Fox adds: "The illness is so fulminating and death occurs so early that complete investigation is generally not possible." Those who have had to deal with these tragic cases will readily endorse this.

There is one simple measure that I have never seen recorded which is worth doing because it may enable the diagnosis of massive bacteriaemia with meningococci to be made at once. During one of the most severe epidemics of cerebrospinal fever with which I had to deal and which occurred in Kunming, China, during the winter and spring of 1936-7, a child of 3 was brought to the hospital with an 8-hour history of severe fever. There was a moderately extensive purpuric rash, and a diagnosis of cerebrospinal fever of the purpuric type was confidently made. For some reason, in addition to a lumbar puncture, a blood film was taken and stained by the Romanowsky method. To our astonishment the film showed masses of meningococci. They were to be seen in every field clumped together in groups of 6 or 8 to some dozens. A number of other films were taken and all showed the same thing. During the course of the epidemic, although blood films were taken in cases without any purpuric rash, we were not fortunate in obtaining a similar positive result. Later, two further purpuric cases were seen, and in both of them meningococci were present in considerable numbers, though not as many as in the first case and they had to be searched for. All of these cases were fatal within 36 hours, and all were in young children.

At that time the sulphonamide drugs were only becoming known, and in the years 1938 and 1939, when Kunming was grossly overcrowded, scarlet fever and typhoid were the chief epidemics. Cerebrospinal meningitis was only met with sporadically, so that there was no opportunity to try the effect of massive doses of sulphapyridine (I left Kunming in July, 1939). I would suggest, therefore, that in any cases where there is a purpuric rash with high fever, and especially during an epidemic of cerebrospinal meningitis, blood films should be taken at once, stained by the Romanowsky or similar method, and examined for meningococci. In this kind of case every minute is valuable, and the sooner vigorous sulphapyridine treatment is instituted the greater the possibility of saving these desperately ill patients.—I am, etc.,

ALEXANDER J. WATSON, M.D., D.P.H.

Mildmay Mission Hospital, E 2.

Child Health

SIR,—Prof. Charles McNeil's review of 60 years' child health in Holland, Scotland, and England (April 4, p. 429), coupled with your leading article, prompts me to the expression of views that have long struggled for opportunity of outlet.

That "lack of knowledge on the part of doctors and nurses responsible for the welfare of infants before and after birth" is a root cause of our failure in this potentially fruitful field of medicine is undeniably true. Nor can one have anything but approval for Prof. McNeil's suggestions for the reorganization and emphasis on child health and welfare in our medical curricula. I would go further and add the following recommendations.

First, that the B.M.A., Ministry of Health, or some other responsible body with the necessary powers and facilities should appoint a medical committee to collect, collate, and co-ordinate the vast amount of knowledge we already possess on the subject of child health. On the basis of their recommendations the necessary changes required in medical education of medical students, nurses, health visitors, and child welfare workers could be carried out, and, in addition, some standardization of teaching and method could be adopted to counteract the present welter of confusion and contradiction between the advice meted out to the bewildered mother by her family doctor, health visitor, and clinic adviser. Secondly, that the co-operation of the Board of Education be invited and the advisability of including biology, elementary physiology, and hygiene in the teaching in all schools be urged. After all, it is ignorance in parents and grandparents that we ultimately wish to eradicate in addition to our own limitations as a profession. Only too often are our effort and advice frustrated by "grandma who had eleven children" (two of whom died in infancy).

Thirdly, it seems probable (indeed hopeful) that some form of State medicine will be evolved after the war. Surely the welfare of the child (and incidentally of the general practitioner) will best be served by bringing the better trained and educated G.P. into the public health or State-aided service as the child welfare clinic doctor. Even now the G.P. is no more ignorant of child health and infant welfare than the average assistant medical officer of health when he first takes over a baby clinic Indeed, he is often much more capable of giving good practical advice, and if Prof. McNeil's proposals are adopted he will be even more so. The practitioner is thus being brought back in his rightful place as the family physician and first link in the chain of medical supervision. The child is getting that continuity of treatment and observation that is needed for the best results, and the very real conflict between clinic and doctor is avoided. The doctor would have the facilities of the public health service at his command, health visitors, and laboratory aids, and the service of a consultant paediatrician could also be incorporated. Furthermore, each G.P. could see infants of all his own patients without extra cost to the family, and large overcrowded child welfare clinics with their attendant dangers would be avoided.

I am convinced that our present system of child welfare clinics run by the local health authorities is not producing satisfactory results. I myself (in peacetime) frequently had baby clinics of 60, 70, and 80, numbers being only the least of their disadvantages. There is a tendency inherent in all such clinics either to give away or to sell at reduced prices various artificial baby foods, which is, in my opinion, reducing the amount of breast-feeding instead of increasing it. A high proportion of breast-feeding can only be achieved by close observation and help from a well-trusted adviser in the last month of pregnancy and the first month of infancy. This the clinic doctor in the present system does not and cannot give. But small clinics run by family practitioners who have had adequate training would do much to reduce child mortality and morbidity and lay the foundations of a healthier and, I hope, happier people Finally, such a system would tend to offset the increasing absorption of members of the profession in purely or largely administrative work.—I am, etc.,

ERIC TOWNSEND,
Capt. R A M C.

Egypt.

Loneliness in Infancy

SIR,—I was delighted to read Dr. D. W. Winnicott's letter (Oct. 17, p. 465) on loneliness in infancy. It is a matter that has been exercising my mind greatly during the past year or two, during which the exigencies of war have removed me from my psychotherapeutic (analytical) practice and have required me to live in a hotel in a "reception area."

My work as an analyst had convinced me of the enormous significance of emotional distress in very early infancy—distress usually the result of being alone and helpless and without reassurance in times of discomfort or wakefulness in a still alien world. This kind of experience I had uncovered in maladjusted adults and seen as the source of a fundamental sense of insecurity, of the feeling of "the world against me," and of the fear of feeling and impulse, which so often characterize the neurotic personality. At the hotel I saw again and again these foundations being laid, not as the result of a physical separation of mother and infant, but by young mothers themselves (wives of officers), bursting with anxious enthusiasm not to "spoil" their babies, and convinced that the one way to avoid such "spoiling" was to leave them alone and untended from one feed to the next, no matter how desperately they might cry, and to cut down all physical and social contact and play to a minimum.

I maintain that "lethal" is not too strong a word to apply to such treatment, and lethal it has probably literally been in those not so rare cases of the baby found dead in its cot or pram, having, one surmises, cried itself sick and choked on its own vomit. But to keep to the psychological point of view, damage must result from such unnatural treatment. These infants (1) are left to deal alone and without reassurance with mounting rage and fear, which become beyond their power to control; (2) suffer too much deprivation and restriction of normal impulses; (3) are allowed no scope for the development of the first personal relationship with the mother. for which, as the late Dr. Ian Suttie has shown (*Origins of Love and Hate*, 1935), there is an inherent instinct in the infant and which lays the foundation of all future personal relationships.

The consequences of the first and second injuries (too great a demand and too much deprivation) are the development of (*a*) fear of feeling, inhibiting later emotional growth, and (*b*) excessive cravings or (if over-repression has had to be invoked to escape the intolerable situation) inhibition of normal impulses and a turning inwards instead of outwards for sources of satisfaction. The baby with finger or thumb in its mouth and the other hand fingering the hair or an ear is a characteristic result, and to my mind already reveals in these gestures the signs of future neurosis or maladjustment. The result of the third injury is a failure to lay sound foundations for future personal relationships, and the production of either a mother-fixed (excessive craving again) or an isolated personality incapable of deep outgoing affection.

What perplexes me is the anxiety of these young mothers, and the almost sadistic infliction of their maternity-nurse-derived principles on their defenceless babies. Is it that they themselves are the product of similar infant care and, as a result, lack the passionate impulses of love and compassion towards their babies which seem natural to the older generation of mothers? Victorian mothers cuddled their babies and demanded correct behaviour from their older children. Modern mothers are anxiously cold and remote in the handling of their babies and let their older children run amuck. Which method produces the better adult? Is there a connexion between world-wide war and the newer methods of baby culture?—I am, etc.,

Wem LAURA HUTTON.

Breast-feeding

SIR,—Dr. J. Gordon Mathias (Oct. 17, p. 465) says: "If Nature intended women to feed their young successfully, then they should adopt a more reasonable attitude and go on all fours"; and he asks: "Could there be a more awkward position for the suckling babe than the arm of its mother to sit on and a large breast to hold on to?" Hospital practice is to insist on the mother sitting up to suckle her child, and handbooks for mothers also recommend this as the method of choice. It is left for the mother to find out for herself sooner or later that it is much easier and more comfortable to lie at full length, with the infant lying beside her. Apart from the gain in comfort and convenience, this position also ensures regular rest periods, of which the nursing mother is much in need. Greater emphasis to mothers and to their relations on this need for rest might help to tide women over the special danger period for lactation—the few days after they get about again. The food and vitamin supply and the hygienic conditions of lactating women require as much consideration as those of pregnant women both from their doctors and from the general public. Prof. Charles McNeil, in his excellent alphabet of breast-feeding (Sept. 5, p. 271), claims the economy of the national milk supply as a special reason for encouraging breast-feeding. He forgets that at least 2 pints of cow's milk, or their equivalent in calcium, protein, etc., are probably required by the woman for each pint of milk secreted, as is recognized to some extent by the Ministry of Food in allowing 2 pints of milk daily for infants under 1 year and extra supplies of eggs also. Recent work indicates a raised requirement of vitamin B during lactation, which should be remembered as well as the commonly stressed need for vitamins A, D, and C.

Dr. Mathias appears to resent the possibility that mothers and babies may enjoy the process of suckling. Surely the fact that it is enjoyable should be emphasized, and the new-made mother should not be left unaware that to suckle her baby is, as Dr. Violet Russell says (Sept. 26, p. 377), "a pleasure and not an irksome duty."

I should like to emphasize Prof. McNeil's teaching that scanty lactation should be treated by shorter intervals between feeds. Too many mothers, nurses, and doctors regard the 4-hourly interval as sacred. Dr. Violet Russell urges the relaxation of the rules of regular feeding during the establishment of lactation, and the same relaxation is necessary if the milk supply falls off. A baby can be put on to 3-hourly or even 2-hourly feeds for a few days, and will return without any difficulty to 4-hourly feeds as the milk supply rises. I have known babies weaned, on medical advice, at the age of 2 or 3 weeks on the ground of "lack of milk," when suckling had been carried out only at 4-hourly intervals and on only one breast at each feed. Very few women could lactate with this inadequate stimulus. I certainly could not myself, though I have successfully suckled 5 babies up to the age of 10 or 12 months. The failure of mothers to breast-feed their babies is often associated with the doctor's advice to wean the baby. It is to be hoped that Prof. McNeil's alphabet of breast-feeding will help many doctors to give other advice.—I am, etc.,

DOCTOR'S WIFE

Treatment of Malaria

SIR,—I was glad to see that Prof. Warrington Yorke (Aug. 8, p. 167) disagreed with Sir Rickard Christophers's sweeping assertions regarding intramuscular injections of quinine at the meeting of the Royal Society of Tropical Medicine on July 23. At the African Hospital here, with over 300 beds and an average out-patient attendance of 260, between 30 and 50 intramuscular injections of quinine are given daily and we have not seen the terrifying results he mentions. The quinine solution is prepared locally. We have found that it shortens the course of the malarial attack and is a great saving in quinine —6 gr. daily as opposed to 30 gr. in an adult. We always give an injection of atebrin to blackwater fever cases on admission and to patients with malaria who have previously had blackwater fever, and we have never had cause to regret it —I am, etc.,

R. N. HALL,

Nigeria. Medical Officer i/c City Hospital, Kano

Dressing for Thiersch Grafts

SIR,—The following method of dressing Thiersch grafts may be of interest. Over the grafted area a piece of sponge rubber 3/4 in. thick is applied directly and fixed in position by means of parallel 1/2-in. strips of elastoplast spaced at intervals of about an inch so that light even pressure is secured. The sponge rubber is previously cut into a square or rectangle allowing about 1/2 in. overlap, and the corners and sharp edges are trimmed off with scissors. It is sterilized by boiling and the excess water squeezed out. No other dressing is applied and the part is left exposed to the air, if necessary under a cradle to prevent contact with bedclothes. The dressing is not interfered with for about 10 to 14 days unless there is a foul smell or excessive discharge around the edges. On removal complete healing is the rule. Even when mild sepsis occurred, which is difficult to prevent in a small proportion of cases when working under semi-tropical conditions, the grafts "took" well and often completely. While no originality is claimed for the details of this method, I have found it give far more satisfactory results than any of the other methods which were tried. The sponge rubber was obtained in sheets from the Dunlop Rubber Company, Bombay.—I am, etc.,

F. V. STONHAM,
Major, I.M.S

Scabies

SIR,—What is a "standard treatment"? Dr. G. H. Percival,[1] in his interesting article on the cure of scabies, criticizes my colleagues and myself for calling a course of three applications of sulphur ointment the "standard treatment"; he states that the standard treatment is one of six inunctions, and as his authority cites the publication by Walker and Percival.[2] We based our expression "standard treatment" on the advice given in the circulars on scabies officially published by the Ministry of Health and on the directions given in many reliable textbooks of dermatology. I am sure that all those concerned with the treatment of scabies would pay full attention to the carefully considered suggestions of writers of the calibre of Walker and Percival, but for Dr. Percival to state that a treatment becomes a standard one because he has published an article containing the suggestion is an assumption to which few others would aspire. Incidentally it has repeatedly been shown that with proper supervision even untrained personnel will cure very nearly 100% of cases of scabies with three inunctions of sulphur ointment, and even one application has been found by the health department of one of our larger cities to cure 90% of cases. To give six inunctions is a gross waste of medicaments and of man-power.

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[1] Percival, G. H. (1942). *British Medical Journal*, 2, 451.
[2] Walker, Sir N., and Percival, G. H. (1939). *Introduction to Dermatology*, 10th ed., Edinburgh.

The advisability or not of disinfesting clothing, etc., is a question which is apt to become somewhat confused. I think that my experiments have shown that infection from inanimate objects, while occasionally possible, is unlikely to be one of the commoner ways of contracting scabies.[3] This does not directly affect the issue concerning disinfesting the belongings of patients known to be suffering from scabies. After adequate treatment with benzyl benzoate emulsion I have shown that the body is covered for at least twelve hours with an acaricidal film which will serve as an efficient disinfestor. If clothing and blankets do not often infect the normal body they are even less likely to reinfect a properly treated patient, and a painting with benzyl benzoate might be used prophylactically by anyone who is compelled to share a bed with a case of scabies. If Gordon and Seaton[4] had put a little benzyl benzoate on their rats' tails before applying the infested cloths they would have obtained a different result.

Dr. Percival alleges that in 1941 I advocated the omission of disinfestation but had more recently modified my views. Actually in 1941 I suggested that disinfestation might possibly be dispensed with but that further work was needed to clarify the issue. That work has now been done by a multitude of progressive medical officers of health and others. In a number of areas where the standards of diagnosis and treatment are high, disinfestation has been dispensed with without any deterioration in the results. Practical experience has shown that any possible increase in relapse rate (if this exists it is certainly under 1%) is fully offset by the great economy. In areas where contrary results have been obtained the fault has usually been attributable to bad diagnosis, as conditions other than scabies have been given incorrect treatment, with an unsatisfactory so-called relapse rate for "scabies."

Dr. Percival suggests that no technique is likely to be successful in 100% of cases This implies that sarcoptes is more difficult to kill in some patients than in others. With this view I completely disagree. I have found nothing to suggest that these parasites behave differently in different patients, and two, or at most three, applications of either sulphur ointment or benzyl benzoate, if properly used, will kill every parasite in every case of scabies. Even one application of benzyl benzoate emulsion will kill over 99% of the parasites. The lesions produced by scratching and secondary infection will, however, show considerable variation in their reaction to treatment, and their persistence often gives rise to the erroneous view that the scabies is still uncured. Incidentally, even if I found no live parasites after treatment I should not be entirely satisfied with a new method if I could only observe the patients for a fortnight. As with other parasites there is a great "wastage" with sarcoptes, and a month or six weeks may elapse before the mite population regenerates sufficiently to be easily recognizable.—I am, etc.,

Sorby Research Institute, Sheffield — KENNETH MELLANBY.

Prevention of Scabies

SIR,—The fact that the scabies epidemic continues almost unchecked in spite of weekly articles in the *B.M.J.* shows that there is something lacking in our approach. We still think of disease in terms of cure rather than prevention, and when we do consider prevention it is along the stereotyped line of catching cases early and inspecting all contacts. Our prevention does not begin until a family has actually got scabies; but to be effective we must start before that.

Scabies is very much commoner among the poor than the rich. If we could find out what gives the latter their relative immunity we should have gone a long way towards stamping out the disease. I was taught that scabies is not caught by shaking hands with people but by sleeping with them, the implication being that it is aetiologically akin to the venereal diseases. What my teachers failed to realize is that double beds are the rule in working-class homes, so that if one of the boys gets scabies his brother is sure to get it too. Many women dislike sleeping alone, and when their husbands are fire-watching they go to a friend's house, sleep with the wife, and put their children into bed with her children. Richer people do not do that; if they joined forces with another family they would all sleep in separate beds, and if these were not available they would consider their house full and not take in visitors.

Customs vary, and it would hardly be considered proper for the adjutant of a battalion to sleep with the second in command, but that would not have been at all strange in Elizabethan times, and Iago quite casually told Othello that he "lay with Cassio lately." Nor is it at all unusual to-day for working-men to share a bed. Recently I saw two civilians, strangers to each other, compulsorily billeted in Norwich and sharing a bed, both of whom had scabies, caught, as each supposed, from the other. The wealthier classes make a habit of taking off all their underclothes when they undress at night, but manual workers and their families usually put their pyjamas over their vests. That is a custom which can easily be changed, I find people are quite ready to accept the idea once it is put to them. Personal hygiene and social custom are the most important factors in the aetiology of scabies, and it is not good medicine to ignore them.—I am, etc.,

Norwich — FREWEN MOOR.

Treatment of Impetigo

SIR,—The article on wartime dermatology by Surg. Lieut. R. Workman Carslaw (Oct. 10, p. 420) again stresses the importance of discarding ointments wherever possible in order to conserve fats, and quotes Dr. R. T. Brain (Oct. 4, 1941, p. 492) that an ointment in the treatment of impetigo is inadvisable, as a film of grease retains exudates and sweat, which encourage the growth of organisms and irritate the follicles.

Having tried various time-honoured remedies—e.g., removal of scabs with olive oil or fomentations followed by ung. hydrarg. ammon. dil.—for impetigo, especially in children, with indifferent success, I have in the last few months treated a large number of cases by the method advocated by Lieut.-Col. J. H. Smith (Nov. 1, 1941, p. 640)—the application of liq. ferri perchlor. fortis without previous removal of scabs—and the results have been excellent. The spread of the infection has been stopped and the period of infectivity has been shortened very considerably. The action of the solution is that of an antiseptic and powerful astringent, coagulating albuminous fluids. It has no action on the unbroken skin and is non-poisonous to living matter (Hale White, *Materia Medica and Therapeutics*, 1942).

The advantages are simplicity of application—the treatment can be left in the hands of the patient—cheapness, and it avoids the waste in fats. The disadvantage is that the solution is painful on application and rather contraindicated for very young children. For these I have used 2% aqueous gentian violet as recommended by Dr. G. A. Grant Peterkin (Sept. 20, 1941, p. 422), but the treatment is more prolonged and the solution is mainly effective in the dry scaly stage. I have also used the liq. ferri perchlor. fortis solution in intractable cases of infantile eczema with very good results.

At a time when conservation of raw materials is so essential I would urge a wider application of this treatment in impetigo and the abandonment of the ointments so commonly used —I am, etc.,

Newcastle, Staffs — C. SIMPSON SMITH.

Classification of Nerve Injuries

SIR,—Lest he should rejoice too much I must point out that Dr. Walshe was included among the three unnamed complainants mentioned in my reply to Dr. Russell Brain; he was kind enough to write to me at great length when I was trying to make up my mind about these names for nerve injuries. If numbers meant anything I could dilate on the more numerous favourable letters that I have received, chiefly from medical officers in the Services who send patients here. These men, like myself, are more interested in clinical work than in laying waste your valuable space with verbal casuistry, and they discussed the classification and its clinical application rather than the three new words—or neologisms, as Dr. Walshe, oddly enough, prefers to call them. The three types could have been labelled "A," "B," and "C," like the vitamins (and combined lesions would have been represented with engaging implicity by combinations of these letters); but I thought, and still think, that, after the confusion that has prevailed for so ong in the nomenclature of nerve injuries, "neurotmesis," "axonotmesis," and "neurapraxia" were rather better in that hey were descriptive and reasonably accurate. It is to be noted that Dr. Walshe, even though he commands "the illimitable resources of our mother tongue," suggests no alternative names to cover all the conditions we are considering.

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[3] Mellanby, K. (1941). *British Medical Journal*, 2, 405.

[4] Gordon and Seaton (1941). *Ann. trop. Med. Parasit.*, 35, 2.

It is good of him to mention "fibrin suture," for the use of this term shows that one does not use new words just for the fun of the thing, but only when they are needed. "Suture" is a fairly elastic word; anatomists, botanists, and zoologists use it for unions in which stitches play no part, and the significance of stitches in the surgical definition is no more than an indication that until recent times stitches were the only available means of joining sundered tissues. Its use in "fibrin suture" is as plain as a pikestaff; one does with a fibrin clot what is usually done with stitches, so why nvent a new word? As for being a terminological purist—I can make so such claim; for one thing, I never learned Greek. But like those who invented the words "telephone," "microphone," megaphone," and "loud-speaker," I want a name for a thing, and surely it is no offence if the term happens to be etymologically correct.

If Dr. Walshe reads again Weir Mitchell's case records he will find descriptions of all three basic types of nerve injury, But Weir Mitchell was denied the facilities we enjoy for direct examination of damaged nerves and he never essayed an unequivocal classification or gave names to the lesions. However, he did describe a striking clinical phenomenon and, Dr. Walshe not being there to stop him, called it by a Greek name, "causalgia." Weir Mitchell is remembered chiefly for this, and perhaps his work on ordinary nerve injuries would be better known had he made the classification that was almost within his grasp and christened the three types. It might have prevented the lamentable confusion that followed.

It is never too late to mend, and here is a classification which I believe to be fairly accurate and is undoubtedly useful; Dr. Walshe assails it only because the nomenclature is Greek, a language to which he is notoriously allergic. I am quite unrepentant, and am encouraged to be so by his choice of badinage rather than reason as his weapon.—I am, etc.,

Wingfield-Morris Orthopaedic Hospital, Oxford. H. J. SEDDON.

Working for a Salary

SIR,—Dr. H. G. Calwell (Oct. 17, p. 464), in his disagreement with Sir Beckwith Whitehouse's statement, quotes a series of pioneers who have achieved notable progress in spite of working or a fixed salary. A striking similarity in all the examples quoted by Dr. Calwell is that they were working in tropical diseases, presumably in places far from the distractions of civilization as found in our large cities, and that they were mostly no ordinary men, but of a type calculated to "come out strong" in any circumstances, so that I maintain that they provide the exceptions to Sir Beckwith Whitehouse's rule, and do not disprove it, as a series of examples from our public health and municipal hospital services might have done.

In my own experience of municipal hospital work in two big cities I have both felt the onset of mental sloth and stultification of effort indicated by Sir B. Whitehouse, and have seen men of promise enter the service and noted their deterioration into routine workers of mediocre performance and excessive outside interests. Observing this tendency in myself I hastily abandoned the security of a salary of fixed limits, a pension, and a "dead-end" job, and returned to voluntary hospital work, amid the derision of my late colleagues. It required an effort, which has since proved well worth the making, since I have just acquired an appointment in my specialty with facilities for teaching and research which I should not have obtained had I remained in the municipal service. The vast majority of us are all too easily influenced by environment, and should, therefore, seek out that which stimulates our efforts, which in most cases will not be found in the fixed-salary positions.—I am, etc.,

Preston. UNA M. WESTELL.

The Profession and the Services

SIR,—One feature of the "calling-up" of medical men for the Services, which has, as yet, excited little or no comment, is that affecting the voluntary hospitals. Many young surgeons working in these institutions have now been called up. I do not know the actual numbers involved, but in one hospital I know of four out of a staff of five general surgeons are now in the Services, and so far as one can judge their surgical work there is not, to put it mildly, arduous.

It would not appear that such a system is in the best interests of either the surgeons, their future patients, or the general public. As a team surgeon in the last war, I have a very lively recollection of the fine organization in the R.A.M.C. of that time, when mobile surgical teams were formed, each consisting of a surgeon, an anaesthetist, a theatre sister, and two R.A.M.C. orderlies. These teams continued work at their own hospitals and became familiar with each other's methods, etc., and were ready to proceed to any "sector" of the front where and when their services were required.

The advantages of such an organization are so obvious that one wonders why it should not have been applied, in principle at least, to the present situation.—I am, etc.,

GEORGE MCMULLAN.

Medical Planning Now

SIR,—I have just read Mr. H. J. McCurrich's letter (Oct. 24, p. 498). No sensible man has any illusions about politicians, but up to now it would seem that a great many of our profession have not realized and do not realize the urgent need for the doctors to go ahead with their plannings now. They have not realized that there is no choice between the present state of affairs and State medical services: the latter are already here. One has only to see the large number of well-equipped new county hospitals which have sprung up in the last few years, and the large number of county medical officers and clinics. No, the only choice we have is this: are the politicians going to run the medical services or are the medical profession? We should begin now to find men, medically qualified, to be trained in administrative work. Doctors are the only people who can understand doctors' problems, but they should be properly trained. It is no good putting a man into an administrative post merely because he thinks he would like to "have a stab at administrative work" and feels that is his *métier*.

The medical profession seem to have forgotten the lesson they should have learned when National Health Insurance was first brought in. I sincerely hope that there will be a great many more McCurrichs to see where the real question lies and what the real danger is.—I am, etc.,

Ledbury. GEOFFREY G. AIREY.

The Services

The King has made the following awards in recognition of gallant and distinguished services in Burma during the period Dec., 1941, to May, 1942:

C.B.E. (Military Division): Temp. Brigadier T. O. Thompson, late R.A.M.C.

O.B.E. (Military Division): Lieut.-Col. F. Oppenheimer, I.M.S.

D.S.O.: Temp. Col. G. E. MacAlevey, M.C., R.A.M.C., Capt. C. W. Elphick, R.A.M.C.

M.C.: Capt. H. O'Hara, R.A.M.C.

Mentions in Dispatches: Acting Col. J. Taylor, O.B.E., Major (Acting Lieut.-Col.) W. F. Lane, Major S. O. Bramwell, Capt. (Temp. Major) A. J. Martin, Capt. (Acting Major) M. S. Holman, and Capts. O. W. W. Clarke, P. W. Dill-Russell, A. P. Hick, R.A.M.C.; Acting Col. G. M. Moffatt, O.B.E., Majors (Temp. Lieut.-Cols.) C. S. Gamble and H. B. MacEvoy, Majors (Acting Lieut.-Cols.) A. E. Kingston and P. L. O'Neill, Major D. F. Eastcott, Capts. N. Ahmad, N. K. Mitra, and S. M. Basu, and Lieuts. A. Krishaswamy, G. M. Diwan, and R. S. Rao, I.M.S.; Assistant Surgeons F. J. Burby, C. E. Watts, and D. J. R. Snow, I.M.D.; Capt. S. M. Paw and Lieut. M. Nag, Burma Reserve of Officers.

CASUALTIES IN THE MEDICAL SERVICES

Wounded.—Acting Lieut.-Col. A. W. Gardner, R.A.M.C., Capt. N. J. P. Hewlings, R.A.M.C., War Subs. Capt. T. A. Shannon, R.A.M.C.

Prisoners of War.—Major L. Feinhols, I.M.S., Acting Lieut.-Col. M. R. Sinclair, O.B.E., I.M.S.

Missing.—Assistant Surg. A. R. Coshan, I.M.D.

Obituary

We regret to announce the sudden death on Sept. 30 at Dunham Massey, Cheshire, of Mr. **Frank Holt Diggle**, F.R.C.S., surgeon-in-charge of the ear, nose, and throat department of Ancoats Hospital, Manchester, and laryngologist to the Christie Hospital and Holt Radium Institute. Born at Heywood, Lancs, in May, 1886, he was educated at Rossall School and had a successful student career at Manchester, winning two scholarships and the prize in clinical medicine. He graduated M.B., Ch.B. (with honours) of Victoria University in 1909, and after resident posts at the Manchester Royal Infirmary and further surgical study in London obtained the Fellowship of the Royal Colleges of Surgeons of England and of Edinburgh in 1913. During the last war he served with the rank of captain R.A.M.C., and was surgical specialist to two casualty clearing stations. For his war service Holt Diggle was made O.B.E. in 1919. After returning to civil practice he was for a short time on the staff of the Birmingham and Midland Ear and Throat Hospital, and then went back to Manchester as surgeon to the Manchester Ear Hospital and aurist and laryngologist to Ancoats Hospital and the Manchester Union Hospitals. Later he became lecturer in applied physiology at the University. He was also laryngologist to the Royal School of Music in Manchester and to the Duchess of York Hospital for Babies. He joined the British Medical Association in 1921 and was secretary of the Section of Oto-rhino-laryngology at the Manchester Meeting of 1929, and published a number of papers on his specialty in these columns and elsewhere.

Dr. **George Smith** of Donaghadee, Co. Down, died in Ards District Hospital on Sept. 2 after a short illness. The elder son of Mr. E. C. Smith of Islandmagee, chairman of Antrim County Council, he was educated at Sedbergh and had farmed for some years on an extensive scale before entering the Queen's University of Belfast in 1922. He graduated M.B., B.Ch. in 1927 and held resident posts at the Royal Victoria Hospital and several other institutions. He proceeded M.D., B.Sc., D.P.H., and was for some time in the school medical services of Down Regional Committee. Since 1936 Dr. Smith had established an excellent practice in Donaghadee, and in addition was medical officer to the infectious diseases block of Ards District Hospital. In these spheres he was greatly beloved and esteemed by all with whom he came in contact. His untimely death in his 43rd year is deeply regretted, and warm sympathy is extended to his widow and two young children.

Dr. **Henry Willingham Gell**, O.B.E., of Church Aston Manor, Newport, Shropshire, died on Sept. 14 in his 86th year. His father was the Rev. J. P. Gell and his maternal grandfather was Sir John Franklin, the Arctic explorer. After obtaining his degree at Balliol College, Oxford, he entered St. Bartholomew's Hospital and qualified M.R.C.S. in 1885, taking the M.B. a year later. He then embarked on what eventually became a large practice in the West End of London, living in Hyde Park Square. In his earlier years Dr. Gell took a prominent part in the work of the National Health Society, both as lecturer and examiner, and wrote a popular little book, *Aids to the Injured and Sick*. He was for some time vice-chairman of the Paddington Board of Guardians and served for many years on the Metropolitan Asylums Board, presiding over many of its committees, more particularly the Ambulance Committee, where he took an active part in inaugurating the first motor ambulance service for the Metropolis. After his retirement from practice he went to live at Woolhampton Court, Berkshire. During the last war he gave voluntary service to the Reading War Hospital, for which he received the O.B.E.; towards the close of the war he undertook the treasurership of that hospital and set to work to inaugurate one of the earliest of the contributory schemes. Dr. Gell had been a member of the B.M.A. for 57 years.

We regret to announce the death of Dr. **William J. Candlish** of Bulwell on Sept. 18. Born at Birkenhead in 1886 he was educated at Bolton School and studied medicine at Edinburgh University. He had a distinguished career as a student, winning the medals for anatomy and pathology and the Wightman scholarship in clinical medicine. He qualified in 1912. After holding the resident post of casualty officer at Leicester Royal Infirmary and doing an assistantship he went to Bulwell, Nottingham, in March, 1914. During the last war he volunteered three times for the R.A.M.C. He was twice rejected; the third time he was accepted but was deemed indispensable. During this period he was carrying on a three-man practice single-handed and also acting as civilian medical officer to the troops stationed at Bulwell Hall, and latterly to the cadets of the Nottingham University O.T.C. Dr. Candlish was appointed medical officer to Basford Infirmary in 1919, and during a long association with that institution assisted its development into a modern hospital. For many years he served on the Nottingham Panel Committee and was a member of the Medico-Chirurgical Society, of the North of England Obstetrical Society, and of the British Medical Association. He was for many years an examiner to the General Nursing Council and medical officer to the Post Office. In 1939 he was appointed chairman to the Nottingham Medical Recruiting Board, a position he held at the time of his death. Candlish (writes H. J. M.) was one of those men whose capacity for work surprised everyone, and his enthusiasm was an inspiration to all. He ran a large general practice, and for years had allowed himself little time for leisure. Since his appointment as medical officer-in-charge of the Basford County Hospital he watched the development from chronic to more acute work, taking a particular interest in the emergency obstetric side. His interest in this branch of the work led him to take the Edinburgh M.D. at the age of 48, and three years later the Diploma of the Royal College of Obstetricians and Gynaecologists. He was a man appreciated not only for his skill but for his straightforwardness, kindliness, and tact—one had only to walk into the hospital to recognize at once that the right atmosphere was there. In consequence of this atmosphere the staff was with him heart and soul, and one realized that here was the right man in the right job. In his general practice, too, one felt immediately that the welfare of the patients always came first, and it was this will to serve to which he subordinated all else which eventually proved too much and precipitated his final illness. He will be sadly missed by a very large circle of friends.

After 58 years of active medical service Dr. **George Augustus Edward Roberts** died at Twyford, Hants, on Oct. 6, 1942, aged 80. Born on Feb. 2, 1862, at Ashley, Staffs, son of Dr. Thomas Roberts, he qualified at the Middlesex Hospital L.S.A. 1884, M.R.C.S. 1885, and D.P.H. 1897. After serving as house-surgeon to the Royal South Hants and Southampton Hospital he succeeded his father in practice at Twyford in 1887, and became M.O. to Winchester Guardians Committee. He was appointed M.O.H. to the Winchester Rural District Council in 1895 and held this post till Sept. 30, 1942—nearly 48 years. Largely owing to his efforts the Diamond Jubilee Hospital at Winchester, of which he was in charge, was built, and later the small-pox hospital. Dr. Roberts had been a member of the B.M.A. since 1887, and was also a member of the Society of Medical Officers of Health. He acted as honorary secretary of the Hampshire Local Medical and Panel Committees from 1912 to Dec., 1941, and for some years was a member of the Hampshire Insurance Committee. He published two papers in these columns: "Lead Poisoning from Home-made Wines" (1894) and "Lead Poisoning from Electrolysis of Water Pipes" (1906). Of wide experience, great kindliness, and sound judgment, he was always abreast of the times. A pioneer motorist in 1897 he drove till the year of his death. He began to use his own *x*-ray apparatus before the Boer War, and radium in 1909. He was also an early wireless enthusiast and held one of the first transmitting licences. A keen fisherman, none could tie a better fly; an amateur mechanic of no mean ability; all that came his way he took in his stride. When this war broke out in spite of his advancing years, he was M.O. i/c of Casualty Services. He served to the end. He leaves a daughter and two sons, both doctors.

Dr. **Walter Tyrrell Brooks**, who died in retirement at Swanage on Oct. 14, had been for many years a leading practitioner at Oxford, where he was physician to the Radcliffe Infirmary and for some time Litchfield lecturer in medicine. He was born in London on Oct. 25, 1859, and from King's College School went up to Christ Church and graduated M.A.Oxon. He studied medicine at King's College Hospital taking the M.R.C.S. and L.S.A. in 1882, and the M.B.Lond. with honours in medicine after winning scholarships at King's and holding a demonstratorship in physiology and anatomy. During the last war he served as officer-in-charge of the medical division of the 3rd Southern General Hospital with the rank of lieut.-colonel R.A.M.C.(T.F.). Dr. Brooks was for some time medical officer to Radley College, coroner for the University of Oxford, and administrator of the Orthopaedic Hospital at Headington. He was a member of the British Medical Association for many years and chairman of the Oxfordshire Insurance Committee in 1926-8. At the Annual Meeting of the B.M.A. at Bristol in 1894 he was honorary secretary of the Section of Medicine and its president at Oxford ten years later.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation, held on Oct. 15, the following degrees were conferred:

D.M.—*M. W. C. Oldfield.
B.M., B.CH.—M. G. Ellis, W. E. Hunt, D. S. Goldfoot, *L. J. Bussell, *W. H. H. Andrews, *R. E. B. Tagart.

*In absence.

An additional examination in medicine, surgery, and midwifery for the degrees of B.M., B.Ch. will be held at the end of March, 1943.

UNIVERSITY OF LONDON

It was reported at a meeting of the Senate, held on Oct. 28, that Sir Girling Ball had been elected Dean of the Faculty of Medicine for the period 1942-4.

UNIVERSITY OF EDINBURGH

On Oct. 23 Prof. J. H. Gaddum, Sc.D., M.R.C.S., successor to the late Prof. A. J. Clark in the Chair of Materia Medica, gave his inaugural lecture. The Principal of the University, Sir Thomas Holland, welcoming the new professor, remarked that he was the third in succession who had come from the Chair of Pharmacology in London University. Prof. Gaddum's subject was "The Development of Materia Medica in Edinburgh," and he devoted the first part of his lecture to an account of the work of all the holders of the chair from the time when it was separated from the Chair of Botany in 1768. He concluded by stressing the importance of the modern science of pharmacology to the student of medicine, who must understand the language of the laboratories well enough to get full benefit from the discoveries that were coming from them.

UNIVERSITY OF GLASGOW

At a graduation ceremony on Oct. 24 the following medical degrees were conferred:

M.B., CH.B.—*Douglas Jamieson, †N. R. Grist, †Zoë McF. Mackie, †L. H. Holroyd, †Edith E. Little, †Mary S. W. McCallum, †Jean A. Gibson, Jane E. Allan, W. M. Allan, A. Anderson, F. A. Ayles, J. T. Baird, Agnes D. Barr, J. Beattie, G. A. Bell, J. C. Beveridge, W. H. Black, T. A. S. Boyd, D. Brash, Annie C. Brown, J. K. Brown, W. McK. Brown, A. S. Browne, Anne H. Bruce, J. T. S. Buchan, R. A. Burnett, A. A. Clark, D. Clark, G. L. Clark, J. Colquhoun, W. M. Connell, A. H. Cook, N. R. Cowan, R. Dickie, Mary C. Fee, Margaret S. Ferguson, R. S. Ferguson, W. G. Ferguson, O. A. Finn, C. R. Forrest, A. Foster, C. C. Fowler, A. Fraser, C. Freed, T. Graham, T. E. Graham, Anne C. V. Greig, A. Grierson, J. McI. Hendry, R. K. Hinshalwood, Jean T. Holland, A. Hughes, T. Jack, J. R. Kenyon, Mary M. Kirkland, R. Lamb, Joan B. Landsman, Lilian Links, S. K. Livingston, D. F. McAlpine, Sarah Macaskill, A. K. McAusland, J. B. McBean, J. D. McCardel, H. R. F. Macdonald, J. A. Macfarlane, G. McHugh, A. B. MacLean, C. D. T. MacLean, H. I. MacLean, J. S. McLintock, J. McMillan, Violet C. I. Macnab, I. MacPhail, J. McSevich, W. S. Magowan, R. G. Main, W. G. Manderson, Margaret H. E. Martyn, Marjory B. Miller, J. G. Muir, W. J. Murphy, C. Naysmith, A. S. Nicolson, C. B. Noble, Ellen O'Hagan, F. O'Reilly, T. M. Paterson, Helen B. Phillips, Marie H. I. Reid, A. McQ. Robertson, E. McO. Robertson, J. A. M. Robertson, Constance A. C. Ross, J. S. Scobbie, J. K. Scott, G. B. Shaw, N. Shieff, R. W. Simpson, J. Smith, A. McG. Stevenson, G. T. Stewart, M. L. Thomson, R. M. Thomson, A. Tomney, E. W. N. Trounson, Barbara C. Tulloch, A. K. Turnbull, R. R. Waddell, Alison C. Wallace, J. M. Wallace, W. S. Wallace, R. G. Whitelaw, M. Mc Whittet, A. H. L. Wilson, I. R. Wilson, W. S. Wilson, A. P. Wright, H. B. Young, I. S. Young, S. Young.

*With honours. †With commendation.

D. Jamieson gained (*a*) the Brunton Memorial Prize as the most distinguished graduate in medicine of 1942; (*b*) the West of Scotland R.A.M.C. Memorial Prize for the highest aggregate marks in surgery, medicine, and midwifery in the Final M.B., Ch.B. examinations in 1942; (*c*) the Macewen Medal in Surgery for the highest aggregate marks in surgery in the Final examinations in 1942; and (*d*) the Stockman Medal for the highest aggregate marks in the professional examinations in materia medica and therapeutics and in medicine, excluding paediatrics, of 1942.

The Struthers Medal and Prize were awarded to Eldred W. Walls for the best original research or the best dissections or preparations relating to any part of anatomy.

W. G. Manderson gained the John W. Weir Prize for the highest aggregate marks in midwifery and diseases of women in the final degree examinations in medicine held during 1942.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At the annual meeting of the College, held on Oct. 21, the following officers were elected for the ensuing year: *President*, Mr. J. W. Struthers. *Vice-President*, Dr. H. M. Traquair. *Secretary and Treasurer*, Mr. K. Paterson Brown. *Representative on General Medical Council*, Mr. Alex Miles. *Convener of Museum Committee*, Mr. W. Quarry Wood. *Librarian*, Dr. Douglas Guthrie.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.Glas.:

R. W. Adam, J. F. Allan, H. A. Anderson, A. G. Annan, S. W. Bowden, W. H. N. Calwell, W. Candib, Y. N. Carayannopoulos, T. A. Christie, J. F. Couch, G. L. K. Crampton, D. V. Curran, G. H. Curtain, D. B. Donaldson, M. A. A. El Gayer, D. M. Forsyth, I. Gitlitz, I. G. Graber, Y. H. Karara, A. Klar, Kathleen M. McCusker, M. Macintyre, A. F. McInnes, Amy Mooney, A. S. Neilson, O. M. Neshamkin, D. J. M. D. Roper, A. R. C. Salem, W. J. H. Sayers, A. H. M. Shouman, J. A. Sinclair, B. M. Singh, A. W. Smith, B. Solomon, W. J. Stevenson, G. H. Vawda, R. Williams.

Medical Notes in Parliament

Pension Appeal Tribunals

Major MILNER asked the Minister of Health whether he could, if required, provide or make available a maximum of 50 medical men for the staffing of pensions appeal tribunals, either permanently or on the understanding that they could be released on short notice if urgently required for other purposes. Miss HORSBRUGH said that the pressure on the services of medical men was so severe that it would be difficult to supply those suitably qualified for this work in the numbers indicated. Any new obligation imposed upon the medical profession in war conditions would prejudicially affect other services. Major MILNER: May we take it that though it is difficult it is not impossible? Sir FRANCIS FREMANTLE: Is proper attention being given to the possibility of employing men who are discharged from high positions in different Services, who are men of great experience and could be used for this kind of work? Miss HORSBRUGH: Yes.

Dr. HADEN GUEST asked if it was not the case that a certain number of medical men in the Services were retired on account of age or of having held high rank for a certain period, and if there were not enough of these people fully to fill all the requirements of pension appeal tribunal purposes. He knew positively and could give Miss Horsbrugh a list of these people who would fill all these places. Miss HORSBRUGH said she hoped Dr. Guest would send her that list as soon as possible.

Discharge of Doctors from the Service

Asked the approximate number of medical men who on whatever grounds, had left the Army during the present war, Sir JAMES GRIGG stated that about 800 qualified medical men had left the Army during the present war. Major MILNER asked if it was not the fact that many of these medical men were quite suitable for utilization in other capacities in the Army, and that they were all qualified medical men who had been removed from the Army or had received their discharge, or something of that sort. Sir JAMES GRIGG said that a great many of them—more than half, in fact—had been invalided out.

Non-medical Commissions in the R.A.M.C.

On Oct. 20, in reply to Mr. H. N. Linstead, Sir JAMES GRIGG, Secretary for War, stated that pharmacists trained in zoology and physiology serving in the R.A.M.C. or newly recruited would be eligible for consideration for appointment to non-medical commissions in the R.A.M.C. They would normally be commissioned as second lieutenants, but would be eligible for promotion to war substantive lieutenant after 6 months. Selected officers would be eligible for promotion to captain as and when vacancies arose.

Progress in Rehabilitation

Mr. R. J. TAYLOR opened on Oct. 22 a debate on rehabilitation in industry. He said that between 1928 and 1938 accidents in mines and quarries numbered 1,600,000 and in all other industries 1,600,000. From 10% to 15% of the persons affected would be cases for rehabilitation. He praised the work done at Mansfield Rehabilitation Centre and said treatment there so helped spinal cases that the men were able to go back to their own work.

Mr. BERNARD TAYLOR spoke of the close co-operation between the safety and welfare officers appointed by two colliery companies in Nottinghamshire and the surgeon in charge of the Mansfield centre. The work was carried on even after a man re-entered the industry. Of 400 consecutive fracture cases among employees of the Bolsover Colliery Company, 389 of the patients returned to productive work and 378 to their pre-accident work. Those who could not return to the mining industry were turned over to the Ministry of Labour, which had facilities for training.

Mr. TOMLINSON, for the Ministry of Labour, said the process of restoring lost muscle tone and the full functions of the limbs and of maintaining general health and strength should begin as soon as the patient's condition permitted, and should be a continuous process. When restoration in the medical sense had been achieved, social and industrial experts, in consultation with the medical experts, should decide whether the patient could return to his former occupation or to what occupation. In the Emergency Hospitals Scheme many orthopaedic centres had been established with a full range of facilities. Other hospitals had been noted for fracture cases. At least a skeleton service was available. The people responsible for the work at Roehampton had been pioneers in a vital cause. Twelve months' experience had been gained of the scheme introduced by Mr. Bevin in Oct., 1941, for training and resettlement of disabled people. A greater scheme might emerge from this. The psychological effect of interviews in hospital which brought home to the individual the possibility of returning to work was great. The scheme had been extended to all types of industry, and up to the end of August 41,000 people had been interviewed. Of this total about 29,000 had been placed in or found employment. Of 600 blind persons interviewed, 200 had been placed in employment other than that previously deemed suited for the blind. Many blind persons were to-day doing jobs in engineering shops. Treatment and training centres at Exeter and Leatherhead had been taken over by the Ministry of Labour.

Venereal Disease

Mr. BARSTOW on Oct. 22 asked whether the Minister of Health proposed to take steps to enforce compulsory notification of venereal disease, having regard to the increase in these diseases throughout the country. Mr. BROWN replied that he was considering what action could most appropriately be taken to check the spread of venereal disease. At present he doubted whether compulsory notification was best calculated to secure this object. He further told Colonel Heneage that he was aware of the difficulties of dealing with carriers of venereal disease. He had under urgent consideration the most effective methods of dealing with them.

Service Discharge for Tuberculosis

Sir WALTER WOMERSLEY said on Oct. 22 that of the total number of men invalided out of the Forces from the outbreak of war until the end of Sept. last 5.8% were discharged on account of tuberculosis. Of the claims made in respect of this disability rather more than 70% had been allowed.

Small-pox

The Secretary of State for Scotland was asked whether he was aware that there were errors in regard to the vaccinal condition of 5 out of the 33 cases of small-pox which occurred in Glasgow, and whether he would insist that the Department of Health for Scotland ascertained all facts more accurately in future. Mr. JOHNSTON said he was aware that subsequent investigation elicited further information about the vaccination history of certain small-pox patients. The original statements of the patients and their friends were checked by further inquiries as pressure of work more essential to the control and eradication of the disease permitted. At any given date, the Department of Health for Scotland could only ascertain from the local authority concerned the position according to the evidence then in the authority's possession. Asked whether, in view of the serious risks likely to result from the failure of ship doctors to notify cases of small-pox on vessels arriving in this country from oversea ports, as happened at Glasgow on May 29 last, he would consider the desirability of issuing a special memorandum to such doctors on the diagnosis of that disease, Mr. Johnston said that this suggestion would be considered in current discussions between the Health Departments and the Ministry of War Transport regarding measures of protection against seaborne infection.

Notifiable Diseases

Mr. BROWN has furnished the following statistics of the incidence in Great Britain during the past 5 years of diphtheria, cerebrospinal fever, measles, pneumonia, and whooping-cough. Mr. Brown remarked that only certain forms of pneumonia were notifiable, and compulsory notification of measles and whooping-cough was not introduced till late in 1939.

Year	Diphtheria	Cerebro-spinal Fever	Measles	Pneumonia (Primary or Influenzal)	Whooping-cough
1937	61,341	1,140	—	55,896	—
1938	65,008	1,288	—	45,160	—
1939	47,349	1,506	—	42,307	—
1940	46,260	12,767	409,593	47,877	53,630
1941	50,935	11,073	409,531	50,921	173,319
1942 (First six mths	20,340	4,252	100,762	27,528	36,861

Admission to Medical Schools

Sir E. GRAHAM-LITTLE asked on what the Minister of Health based his allocation of quotas of admission of students to individual medical schools. Mr. BROWN said that by arrangement with the Minister of Labour quotas for male medical students at each medical school were based normally on the average yearly admissions over the three years 1936 to 1939. In certain cases a variation to suit local conditions was allowed on the advice of the Chief Medical Officer of his Department after considering the representations of the school authorities. Quotas for women students were similarly fixed on the basis of the average admissions for the three years 1937 to 1940. Where the number of male applicants fell short of the quota for men, no objection was raised to the admission of women to make up the deficiency if the school so desired. He had no authority to make a quota conditional on acceptance by the school concerned of a certain proportion of women students. That issue was under consideration by the Committee on Medical Schools.

Incidence of Industrial Dermatitis.—On Oct. 20 Mr. BEVIN told Mr. Pritt that cases of industrial dermatitis notified to the Ministry of Labour in 1941 and 1940 numbered 7,291 and 4,744 respectively. A total for this year was not available. Posters were widely exhibited in factories where there was a special dermatitis risk, and preventive measures were also promoted through medical and welfare supervision, supervision of washing arrangements, and in other ways.

Rural Doctors' Petrol.—On Oct. 20 Mr. SCOTT asked the Minister of Fuel and Power if he was aware of the inconvenience suffered by doctors in country districts by the present petrol restrictions and the consequent danger to public health, and if he would consider depositing extra petrol coupons with the local police, to be issued to doctors and ambulance drivers in cases of emergency when their own supply was exhausted. Mr. LLOYD: In consultation with the British Medical Association arrangements have been made to secure that no doctor shall be hampered by lack of petrol for his essential professional journeys. I am not aware of any failure of these arrangements, but I shall be happy to consider any case of which Mr. Scott will give me particulars.

Notes in Brief

The number of persons in Great Britain insured under the National Health Insurance Acts at the end of 1940 (the latest date for which the information is available) was approximately 22,300,000.

Mr. Bevin is advised that it is not necessary to make industrial dermatitis a notifiable disease.

A scheme has been framed for financial assistance on demobilization to men and women who were pursuing courses of study at universities before being embodied in the Forces.

According to sample statistics taken earlier this year about 1% of recruits examined under the National Service Acts are rejected on account of pulmonary tuberculosis.

Medical News

At a meeting of the Committee of Management of the Medical Insurance Agency on Oct. 28, the Chairman, Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D., resigned this post, which he has held since 1924 continuously. A resolution expressing high appreciation of his long and valuable service was passed by the Board and ordered to be entered in the minutes. Sir Robert Hutchison, Bt., M.D., was appointed as his successor.

The Pharmaceutical Society of Great Britain has arranged a lecture on "Nutrition," to be given by Prof. J. C. Drummond, scientific adviser to the Ministry of Food, at Friends House, Euston Road, N.W., on Thursday, Nov. 12, at 2 30 p.m

From Nov. 8 to 22 inclusive a National Exhibition of Soviet Life in War and Peace will be held at the Wallace Collection, Hertford House, London, W. During the fortnight a comprehensive programme of events has been arranged. Among them is an address on Nov. 12, at 1 p.m., by Dr. Joan McMichael, who will speak on the medical services in the Soviet Union. Films will be shown on various aspects of Soviet life throughout the fortnight at 4 p.m. every day.

A sessional meeting of the Royal Sanitary Institute will be held at the Royal Beach Hotel, Southsea, on Saturday, Nov. 14, at 10.45 a.m., when papers will be read by Dr. A. G. Shand on "Diphtheria Immunization, with Special Reference to the Work of a Mobile Clinic," and by Dr. J. W. Thornton on "Wartime Disinfestation."

A lantern lecture on "The Future of Health and Hospitals from an Architect's Point of View" will be given by Mr. Charles E. Elcock, F.R.I.B.A., in the Physics Lecture Theatre, Royal Fort, University of Bristol, on Friday, Nov. 27, at 2.30 p.m., under the auspices of the Bristol and District Divisional Hospitals Council.

Among its other activities the Free German Institute of Science and Learning arranges courses of lectures on scientific and medical subjects. The programme for the period ending Dec. 15 can be had from the Secretary, 16, Buckland Crescent, N.W.3.

Dr. W. R. Wooldridge, president of the National Veterinary Medical Association, has announced the formation of a Veterinary Educational Trust to raise and administer funds for providing better facilities for the education of veterinary surgeons.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was a rise of 25%, 1,146 cases, in the incidence of measles. The other large variations were increases in the notifications of scarlet fever, 90, and acute pneumonia, 67; and decreases in the incidence of whooping-cough, 65, and diphtheria, 20. The first case of typhus reported in the country for thirteen years occurred in Bournemouth C.B.; the last case was in Sunderland C.B. during 1929.

The rise in measles was general throughout the country, but was most pronounced in the adjacent counties of Yorks West Riding, Lancashire, and Cheshire; the notifications in these counties were 523, 170, and 120, respectively, higher than the totals of the preceding week.

Scarlet fever has been on the upgrade for eight consecutive weeks, the number of weekly notifications being larger than at any time since the autumn of 1937. The only variation of note in the incidence during the week reviewed was an increase of 33 cases in Essex.

Exceptions to the general decline in diphtheria were the rises in Staffordshire, 25, and Durham, 22. The largest fall was that of Lancashire, where there were 41 fewer cases.

The trend of whooping-cough, although decreasing for the whole country, fluctuated within the counties. The largest of these variations in the incidence was a drop of 46 in London.

The number of cases of dysentery has fallen by one-third during the past month, but the incidence is still at a high level. During the week there was a fresh outbreak in Hertfordshire, 28 cases (Bishop's Stortford U.D. 22, Hertford M.B. 4, Hertford R.D. 2). An increase of 9 was recorded in the totals for Norfolk, 27 cases, and Northumberland, 14. In Yorks North Riding notifications fell from 30 to 11, and in Wales from 46 to 15.

In *Scotland* there were substantial rises in the notifications of measles, scarlet fever, and dysentery. The rising trend of each of these diseases was due mainly to the experience of only one town: Edinburgh experienced a rise from 63 to 113 in the number of cases of scarlet fever; in Paisley measles went up from 68 to 120 cases; Dundee with 36 cases of dysentery had almost half of the total notifications.

In *Eire* an increase was reported in the notifications of measles, diphtheria, scarlet fever, and whooping-cough. Whooping-cough was confined to two areas: Dublin 41, and Co. Clare (Kilrush R.D.) 17. Almost half the recent cases of measles have been recorded in Co. Mayo (Castlebar R.D.). The outbreak of poliomyelitis persists, and the hope that with the onset of the colder weather the incidence would drop sharply has not been realized. Since July there have been 137 cases, with 34 deaths.

Diphtheria Immunization

Out of the 1,440 local authorities in England and Wales, 685 have reported to the Ministry of Health that up to the end of June 50% or more of the children aged between 5 and 15 had been immunized in their areas.

Small-pox

There have been no fresh cases in the Methilhill outbreak, Fife, but a suspected case, a contact from Methilhill, has been reported in the Larkhall district of Lanark. The movement of contacts has caused concern and, according to the Press, almost led to a strike at the local colliery because contacts were allowed to return to work. According to statements in the Press on Nov. 3, 2 cases of small-pox have been reported in Edinburgh and 1 in Belfast.

Returns for the Week Ending October 24

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,619, whooping-cough 984, diphtheria 971, measles 6,803, acute pneumonia 659, cerebrospinal fever 66, acute poliomyelitis 25, dysentery 177, paratyphoid 7, typhoid 12.

From a study of 706 State nurses in 6 different municipal hospitals, D. R. Hastings and D. G. Behn (*Amer. Rev. Tuberc.*, 1941, 44, 681) conclude that the extent of tuberculosis and of tuberculin-positive reactors is no higher among girls about to enter training than for any similar group of young women. The infection rate, as measured by a change from a negative to a positive tuberculin reaction, is about 11.6% higher for those nurses who spend a certain portion of their training period on tuberculosis service. At the beginning of training 96.3% of the girls had completely negative *x*-ray films. At the end of three years of training the figures were 93.3% for nurses on tuberculosis service and 94.8% for those on general nursing. Tuberculin-positive nurses, the authors point out, are much less likely to develop tuberculosis during training than are tuberculin-negative nurses.

No. 41

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 17.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	59	6	20	2	—	110	4	31	—	5
Deaths		—	—				1	1		
Diphtheria	971	53	218	85	25	1,034	41	300	34	36
Deaths	15	1	4	2	1	34	—	5	1	
Dysentery	165	18	78	—	—	207	11	100	—	
Deaths		—	—	—	—		—	—	—	
Encephalitis lethargica, acute	2	—	1		—	2	—	—		
Deaths		1	—				—	—		
Erysipelas		—	61	4	—		—	63	2	5
Deaths		1	—				—	—		
Infective enteritis or diarrhoea under 2 years				98						
Deaths	55	7	11	16	4	42	3	17	34	15
Measles	5,796	291	353	45	18	787	41	18	54	2
Deaths	2	—	1	—	—	3	—	—	—	—
Ophthalmia neonatorum	92	3	17	—	—	89	6	13	—	—
Deaths										
Paratyphoid fever	6	1	—	—		64	4	12	—	
Deaths	—	—	—		—	—	—	—	—	
Pneumonia, influenzal*	608	32	2	1	1	705	25	3	2	7
Deaths (from influenza)	17	1	1	1	—	11	18	4	—	7
Pneumonia, primary			139	21				184	9	
Deaths		—		9	4		—		2	7
Polio-encephalitis, acute	1	—				4	—			
Deaths		—					—			
Poliomyelitis, acute	24	3	2	22	—	38	3	9	6	
Deaths		—	—				—	—		
Puerperal fever	—	2	17	4	—	1	1	5	3	1
Deaths		—					—			
Puerperal pyrexia	133	5	18		2	144	14	16		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,703	175	430	81	35	1,336	35	258	48	29
Deaths	3	—	—	1	—	—	—	—	—	—
Small-pox	—	—	21		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever†	6	1	1	12	1	23	2	1	12	1
Deaths	1	—	—	—	—	1	—	1	—	—
Typhus fever	1	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	907	50	34	61	8	1,970	227	68	23	8
Deaths	5	—	—	2	—	9	3	1	—	—
Deaths (0–1 year)	359	31	69	49	23	289	28	53	42	25
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,880	535	542	201	113	3,690	476	509	166	110
Annual death rate (per 1,000 persons living)			12·2	13·4	‡			11·1	11·0	‡
Live births	6,033	727	945	377	252	5,153	460	892	304	210
Annual rate per 1,000 persons living			19·5	25·2	‡			18·1	20·2	‡
Stillbirths	202	18	44			207	11	36		
Rate per 1,000 total births (including stillborn)			44					39		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh

QUERIES AND ANSWERS

Anaemia in Young Adults—Dietetic?

Dr. G. D. SUMMERS (Lincoln) writes: I was interested to read Mr A. J. Hobson's letter (Oct. 17, p. 467). I can report a dietetic anaemia of similar symptoms locally among women and girls between ages 11 and 31. I first noticed it 6 months ago, and increase in numbers is progressive. A patient aged 40 with a similar anaemia had given a pint of blood 7 weeks previously. I suggest as causes: (1) Mother feeds up the men and boys at the expense of the girls and herself. (2) The great lack of eggs locally since they were collected for the larger towns, nothing coming back to the countryside to replace them. Parsley is said to be good for one. Can any of your readers tell me whether it contains iron or any vitamin, please?

Infra-red Radiation for Migraine

Dr OLIVER SPRINGER (Glasgow) writes: In reply to Dr. E. V. Claydon (Oct. 17, p. 472) I do not think that the case mentioned was a true migraine, as any such patients who have been under my care, and who have been complaining about the usual sensory phenomena, have never reacted to infra-red radiation. I have, however, obtained excellent results, in cases of recurrent headaches, by treating the fibrositis at the back of the neck with heat and massage. I have never had any ill effects from the application of infra-red radiation to my head or that of any of my patients.

Aspirin for Asthma

Dr. H. THISTLETHWAITE (Sedbergh) writes: Dr. W. Lees Templeton (Oct. 24, p. 503) appeals to logic to justify homoeopathic doses (of aspirin). I have had some training in logic, but can construct no valid syllogism from the premises given. The argument appears to stand thus: 10A causes X in B; 2A relieves X in C; ∴ 2A will relieve X in D, E, F, and G, not to say in B also. As I once unintentionally practised this argument upon an A-sensitive patient with a proprietary mixture containing 1¼ gr. of sodium salicylate per dose I am in a position to state that the only possible conclusion in my logic is that even 1¼ A causes X in B. I hope I make myself clear.

Income Tax

Pension under Superannuation Act

"D.P.H." is in receipt of a pension granted by a local authority under the Superannuation Act and has claimed exemption from tax on it on the ground that his retirement, and therefore the grant of the pension, was occasioned by permanent impairment of health attributable to work in connexion with civil defence and supervision of military accommodation. The inspector of taxes has refused his claim.

⁂ We cannot advise "D.P.H." to appeal against the inspector's decision. Such a pension does not fall within the various classes of disability pensions specified in Sec. 16 of the Finance Act, 1919, nor is it paid by the Ministry of Pensions in respect of war injury. The war has accelerated the grant of the pension, but its nature and source are unaffected.

Pension for Military Service

"Ex-R.A.M.C." has been discharged owing to chronic illness contracted while on active service. He is at present being paid an allowance by the Ministry of Pensions at the rate of £195 per annum. Is this allowance subject to United Kingdom income tax?

⁂ The question is governed by section 1B of the Finance Act, 1919, which provides that "(*h*) retired pay of disabled officers granted on account of medical unfitness attributable to or aggravated by naval, military, or air force service . . . shall be exempt from income tax." The section provides further that "where the amount of any retired pay or pension to which the section applies is not solely attributable to disablement or disability the relief [i.e., the exemption] shall extend only to such part as is certified by the Ministry of Pensions . . . to be attributable to disablement or disability." Presumably "Ex-R.A.M.C." will be entitled to the exemption.

LETTERS, NOTES, ETC.

A Light Trailer Ambulance

Dr. T. J. T. WILMOT (Louth, Lincs) writes: Dr. K. Vernon Bailey's letter (Sept. 5, p. 296) raises a question that is of great importance throughout the country. Ambulances of many types have been improvised everywhere, but a means of dealing with stretcher cases before ambulances are available is likely to be a major problem. Ambulances will not always be able to get very near their cases, and also may not be allowed to discharge these in the immediate proximity of a hospital. Therefore, as Dr Bailey has pointed out, some means of doing away with, or at least easing, stretcher-bearing is essential. In this large area of scattered small villages we are trying to solve the problem by having small carriers made by local handymen, each for one stretcher, that can be moved by one person. These are made from old cycle wheels and front forks braced together and fixed at the top to the outside of a wooden frame on which a stretcher can be placed. The weight of a patient keeps this fairly well in position, but four projecting pieces of wood at the corners improve the stability. A leg is also necessary to allow of the carrier being rested. One on a hinge was first tried, but as this was found difficult to work by one person while also supporting the stretcher, a fixed leg has now been found better, even though it has to be somewhat short and does not give a quite level position on standing These carriers are very rough and inexpensive, but will, I believe, do the job for which they are designed. A cycle manufacturing firm has been approached and is considering the possibility of making carriers somewhat on the above lines

R.A.M.C. Training: Some Hints

H. D. McC. writes: May I make a few suggestions which may be helpful to medical men, especially the older ones, who may be called up and go to No. 1 Depot R.A.M.C. for training: (1) Be vaccinated and have your T.A.B. inoculation at your leisure before you go. (2) A bicycle is very useful as the Mess is 1¼ miles from the camp. (3) Break in a pair of boots. (4) A pillow is a great comfort, as the Army ones are hard. The adoption of these suggestions will increase the comfort and render the course not only interesting but pleasant.

MEDICINE 100 YEARS AGO

Extracts from a leading article in the *Provincial Medical Journal* of November 5, 1842:

"A case was tried last week at Barnstaple which requires notice, as it involves a point of law materially affecting the interests of the medical profession. Mr. Joce, a respectable general practitioner, residing at Barnstaple, brought an action against a lieutenant in the navy, named Shapland, for medical attendance. The defendant pleaded the statute of limitations with respect to a large portion of the debt; the remainder, £2 19s. 9d., he admitted on the record.

"It is unnecessary for us to notice the opening speech of Mr Joce's counsel, as it referred to matters unconnected with the point to which we are desirous of directing attention. This point is the alleged necessity of proving the seal of the Apothecaries' Company, in cases where an action for debt is brought by a member of the company. On the part of the plaintiff, Mr. Joce, an attempt was made to prove the seal by the evidence of several medical men, who had formerly received licences from Apothecaries' Hall, and who testified to the similarity between the seal attached to Mr. Joce's license and their own. Mr. Praed, the Recorder of Barnstaple, before whom the case was tried, decided that such evidence was insufficient. . . . Mr. Joce's counsel was not prepared to bring forward any evidence of the kind required by the court, and Mr Joce was accordingly non-suited . . .

"The point of law upon which Mr. Joce was defeated is by no means a new one; it has been debated over and over again in courts of justice. It is agreed upon all hands that the certificate must be proved, and the only question which remains is, what is considered sufficient proof in a court of law. The Recorder of Barnstaple seems to think that it is necessary to prove the seal of the court, but herein we believe him to be in error. Several of the judges have decided that it is merely necessary to produce the original certificate granted to the plaintiff, and to give reasonable evidence of its being a genuine document. This may be done by proving the signature of one or more of the persons whose names are attached to the certificate as examiners, and showing that such persons acted as examiners at the time of signing the document."

BRITISH MEDICAL JOURNAL

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THE HEALTH OF THE DOCTOR*

BY

A. HOPE GOSSE, M.D., F.R.C.P.

Physician to St. Mary's Hospital and the Brompton Hospital

I chose for this address the subject of mortality and morbidity among medical men because I believe I have had unique experience of this subject, and have access to innumerable records in connexion with it. I shall unfold to you the causes of death, as well as the amount of ill-health and its various causes, among medical men who start with good average health, after medical examination, at the average age of 30 and are followed up until 60 or 65 years old. I shall then deal with the claim that coronary thrombosis is the "doctor's disease." The family history of those who develop coronary thrombosis and pulmonary tuberculosis will be contrasted with that of the healthiest members of the profession who are still in active practice at the age of 65.

It is important to remember that this experience applies to those who enjoy good health at the average age of 30 and have a good prognosis for health and life. As it would have been an insuperable task for me, even if it were worth while, to analyse the records of all the years, 1938 was chosen for a detailed analysis as it was the last pre-war year and there was no epidemic.

In that year there were under observation 8,884 medical men drawn from all branches of the profession, including dental surgeons. Their ages ranged from 25 to 65 in the following age groups: 25 to 35, 2,411 ; 35 to 45, 3,604 ; 45 to 55, 1,799 ; 55 to 65, 1,070. The average age at which the men came under observation was just over 30 years, and they were not followed after 65 years of age. The ill-health of the doctor will be divided into those diseases which cause death, and those which cause disablement from following any part of his professional work for a period of at least 7 days, such disability being certified by a registered medical practitioner. Illness causing inability to work for any period shorter than 7 days was not observed, and is not included in this analysis. The source of my material is such that the investigation can be regarded as based on complete and reliable records. I have been unable to find any comparable figures (for total numbers, accuracy of records, and the number of years followed up) either for the medical or for any other profession or grade of worker.

Mortality Rate

I shall now deal with the mortality of doctors during their most strenuous working years from the ages of 25 to 65, based on the deaths in 1938 among the 8,884. Deaths occurred in all decades and in the following numbers:

Ages	Nos Observed	Deaths	% Deaths
25–35	2,411	8	0 33
35–45	3,604	9	0 24
45–55	1,799	8	0 44
55–65	1,070	16	1 5

In 1938, however, the death rate of ages 25 to 35 was noted to be high, with 8 deaths, so the same decade for 1939 was analysed. It showed only 3 deaths out of approximately the same numbers of doctors, a percentage of 0.12—a fairer figure for the annual experience of that decade. With this corrected figure it will be noted that the annual death rate increases in each decade, as we would expect, but in the following ratio—0.12:0.24:0.44:1.5, or as 1:2:4:13. As, however, each man is exposed to the annual death rate for his decade for 10 years before he passes into the next decade his risk for each *decade* must be 10 times the annual risk, and these figures amount to 25 ; in other words, 1 in 4 doctors die before the age of 65, or it may be more happily stated that 3 out of 4 doctors survive till 65 years of age.

It is true that 41 deaths a year among 8,884 men for 40 years gives a death rate of only 18.4% ; but this method of calculating does not take into account that the average age of the 8,884 in 1938 was 41½ years. This average age of 41½ is lower by 3½ years than the mean between 25 and 65 years of age, and the lower years have been shown to have a lower mortality.

What are the causes of early death among doctors? In addition to the year 1938, when there were 41 deaths, I took the year 1939 and up to May, 1940, so as to get 100 consecutive deaths among these 8,884 doctors, omitting those from enemy action. The causes of 89 deaths were obtained ; the causes of 11 could not be determined, so I took the next 11 deaths to get a consecutive 100 in which death certificates were available.

Causes of 100 *Consecutive Certified Deaths in* 8,884 *Doctors*		*J Amer. med. Ass.* 100 *Consecutive Death Notices at all Ages*
Cardiovascular degeneration	17	15 8 cardiac 7 arteriosclerosis
Malignancy	15	5
Pneumonia (pleurisy)	12	1
Coronary thrombosis	10	9
Hemiplegia	9	–
Suicide and misadventure	7	–
Accidents	5	2
Pulm. tuberculosis	4	3
Rt. heart disease	3	–
Congen. aneurysm	2	–
Aortic aneurysm	1	–
Infections		
Brain	2	–
Septicaemia	2	–
Enteric fever	2	–
Peritonitis	2	3
Bact. endocarditis	2	–
Ulcerative colitis	1	–
Prostate	1	–
Enemy action	1	–
Blood diseases	1	–
Perf. duod. ulcer	1	–
Cirrhosis of liver	–	1
Acute gastritis	–	1
Chr. nephritis	–	1
Bronchiectasis	–	1
Unstated	–	58
	100	100

Causes of Illness among Doctors

What are the causes of morbidity among doctors? Let me first repeat that no account is taken of illnesses of less than 7 days, but all illnesses in which the doctor was unable to do his work for 7 days or over are included. In the year 1938, 1,620 of the 8,884 doctors were ill for over a week, in many instances for many weeks. Some of them had been ill for months or years; on the other hand, some were only beginning long illnesses. These 1,620 were certified by registered medical practitioners as suffering from the following disabilities:

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* The Presidential address to the Medical Society of London.

Respiratory infections	351	Insanity ..	11
Influenza . .	276	Colitis ..	11
Accidents ..	100	Malignancy . .	11
I.C.T. skin	68	Pleurisy .	10
Anxiety state .	60	Auricular fibrillation .	9
Fibrositis . .	55	Measles .	9
Appendicitis	54	Scarlet fever .. .	7
Infections of hand	51	Diphtheria ..	7
Special senses .	49	Prostate	7
Peptic ulcer	45	Chicken-pox .	6
C.N.S.	33	Ischio-rectal abscess	5
Degen. cardiovasc dis .	29	Angina pectoris	5
Pyelitis and cystitis .	27	Glandular fever	5
Pneumonia .	21	Erysipelas .	3
Pulm. tuberculosis ..	18	Gout ..	3
Renal disease . ..	17	Whooping-cough	3
Gall-bladder .	15	Diabetes	2
Jaundice . ..	13	Hyperthyroidism . .	2
Mumps	12	V.D.H.	2
Asthma	12	Undulant fever .	2
Coronary thrombosis .	12	Thyroid disease	2
Rh. and osteo-arthritis	12	Typhoid	1
Acute rheumatism .. .	11	Unclassified causes .. .	156

These 1,620 doctors were totally incapacitated for 7,040 weeks in the first six months of their illness and 3,942 weeks in the second six months, a total of 10,982 weeks. In other words, 1,620 doctors out of 8,884 were ill and unfit for work for 10,982 weeks in 1938, an average illness rate of 47 days each, while 7,264 doctors did not have a week's illness; the average sickness for the 8,884 was therefore 8.6 days a year. To generalize, every doctor must expect to have an average of 8.6 days of illness every year from the age of 25 to 65.

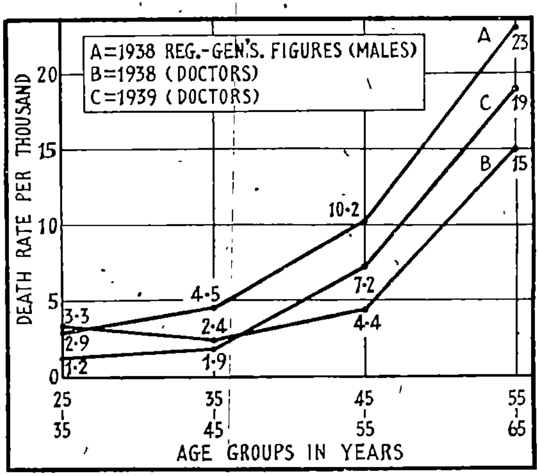
As a check on these figures and the conclusions drawn I investigated the amount of sickness in 100 consecutive doctors who reached the age of 65. They had been under observation for an average of 30½ years, and had suffered 3,314 weeks' illness—that is, an average of 7.5 days every year from the age of 35 to 65. Those who reach the age of 65 might be acclaimed as slightly tougher than the whole group, which includes those who fall by the wayside and die on the journey, perhaps after a long illness. Seven out of the 100 doctors did not have a week's continuous illness during their working lives.

Coronary Thrombosis

The title of "the doctor's disease" has been given to coronary thrombosis. The reason for this may lie in the last published Decennial Report of the Registrar-General relating to the deaths in England and Wales for 1930, 1931, and 1932. The causes of death were tabulated under 86 groups of occupations, and the report shows that the deaths from angina pectoris or coronary disease among 25,000 physicians and surgeons amounted to 70. This was no less than 368% of the average of all occupations, and was commented on as follows: "Their angina pectoris ratio of 368 was much the highest amongst the 86 occupations, being 64% in excess of the ratio for the remaining occupations in Social Class I and 11½ times as great as that for agricultural labourers."

It must be assumed that deaths from coronary thrombosis were then usually certified as angina pectoris. It was at that time that a new conception of coronary thrombosis had been demonstrated to us by our colleagues in America, and this new and accepted conception was applied to the deaths of doctors before it permeated the certificates of all other social classes. It is to be expected that the Registrar-General's next Decennial Supplement will show a further increase for doctors and a far greater increase in all other classes of workers as this cause of death is substituted for myocardial degeneration. The Registrar-General on page 57 referred to "the still more rapid increase in certification of deaths due to angina pectoris." A fairer comparison may be to take the total of deaths due to "heart diseases," which shows that physicians and surgeons had a mortality 138% of the average of the community. This figure is still high, but it does not bear the enormous significance of over three and a half times the death rate from angina pectoris of the general population. The Registrar-General seems to have taken the same view, for on page 60 the following much-less-quoted statement is found: "It would appear that degenerative disease in the heart affects all classes of males to much the same extent, but whereas amongst men whose social conditions are most favourable it tends to express itself in forms diagnosed as angina pectoris or coronary disease, at the other end of the scale it tends to take forms described on death certificates as myocardial degeneration."

In the *Proceedings of the Staff Meetings of the Mayo Clinic* for Nov. 5, 1941, p. 714, is an article by F. A. Willius entitled "A Talk on Cardiac Disease among Physicians." He opens his paper thus: "Why do so many physicians die from heart disease?" and goes on, "The cardiac death rate among physicians to-day is appalling. Anyone doubting the authenticity of this statement need only peruse the obituary list of any current number of the *Journal of the American Medical Association* to find death ascribed to heart disease in 30 to 60% of cases in which the cause of death is stated. In the majority of instances coronary disease is the cause of death, and coronary thrombosis is the ranking killer." A fallacy is avoided by the words "in which the cause of death is stated." It is quite possible that when only 42 out of 100 death notices mention the cause of death these may include all the coronary thrombosis deaths. It would appear from my list that 27 out of 100 deaths among doctors before the age of 65 are due to cardiovascular degenerative causes and 9 to cerebral vascular degenerative causes. Even then their death rate is lower than for the male population of England for the same year.



Where is the evidence that any other profession or trade has a lower rate than 27 cardiovascular deaths in 100 deaths before age 65? I cannot find it. I do not think it exists. I do not believe coronary thrombosis is "the doctor's disease." The true position in Great Britain is that 1 doctor in 4 dies before he reaches the age of 65, and 1/10 of 1 in 4, or 1 in 40, dies from coronary thrombosis, and less than 1 in 10 up to 65 years of age dies from all cardiovascular and cerebrovascular degenerations, including coronary thrombosis.

It then appeared to me of interest to analyse the family histories, as known at the age at which a man comes under observation, in those who suffered from coronary thrombosis or pulmonary tuberculosis, and as a control those who reached the age of 65 and were in work at that age. They are set out in the accompanying table.

Family Histories

	Of 37 who died of or developed Coronary Thrombosis	Control Group of 37 at Work at 65	Of 37 who suffered from Pulmonary Tuberculosis
Parent died of vascular hemiplegia	6	7	3
,, ,, ,, heart disease .	5	5	5
,, ,, ,, angina	2	1	1
,, ,, ,, pulm. tuberculosis	1	0	1
Brother or sister ,, ,, ,, ,, ..	4	3	3
Relative ,, ,, ,, ,, ..	2	0	0
Mean blood pressures: Systolic ..	133	130	130
Diastolic ..	80	86	81
Average weight	12 st. 12 lb	11 st. 5 lb.	11 st. 10 lb.

From these small figures it might be misleading to be at all dogmatic; but in general it may be said that there is no evidence at all here that men who develop coronary thrombosis have had a parentage with a bad family history of early cardiovascular disease. The healthiest doctors at the age of 65 have had a similar family history of cardiovascular disease, and much the same may be said of those who develop pulmonary tuberculosis; my inference is that the same experience would be found in the same number of doctors suffering from other diseases. Also, it can be generally stated that the medical men who develop pulmonary tuberculosis between the ages of 30 and 65 have no worse tuberculous family history than the healthiest doctors, nor indeed than those who develop coronary thrombosis. I believe the converse is true: that a family history of tuberculosis is negligible after the age of 30, and even before that age.

Onset of Coronary Thrombosis.—The records were then searched to find at what ages coronary thrombosis occurred, how many died of this illness, how many survived and were unfit to work again, and how long those worked who completed their convalescence.

Ages at Onset			Deaths	Unfit for Work	Returned to Work
35–45	45–55	55–65			
7	19	11	11	8 years, 1 5 ,, 3 4 ,, 1 1 ,, 3	18* Working : 4 years, 2 3 ,, 6 2 ,, 2 1 ,, 4 <1 ,, 2 Reached 65 2
Approx. No. of Living in Each Group in 100s :					
36	18	11			

* Average duration of unfitness for any work was 18 weeks.

From this it can be said that out of 37 who develop coronary thrombosis 11, or approximately 1/3, die, 8 become ambulatory but unfit for work, whereas 18, or half of them, are working after a year or for a few years. Liability to coronary thrombosis steadily rises with successive years, as one would expect, but only to the age of 45, when a plateau is reached which remains flat to the age of 65.

Onset of Tuberculosis.—At what ages do the 37 who suffered from tuberculosis develop their disease?

Ages at Onset				Deaths	Unfit for Work	Returned to Work
25–35	35–45	45–55	55–65			
16	12	8	1	6	10 (up to 9 years)	21* Working : 23 years, 1 12 ,, 1 7 ,, 1 5 ,, 3 4 ,, 5 3 ,, 5 2 ,, 2 <2 ,, 3
Approx. No. of Living in Each Group in 100s :						
14	36	19	11			

* Average duration of unfitness for any work was 65 weeks.

Summary

1. The causes of death among doctors before the age of 65 have been stated.

2. The causes and incidence of ill-health among doctors have been tabulated.

3. The title of "the doctor's disease," given to coronary disease, is challenged.

4. It was found that the parental history as regards cardiovascular degeneration was the same for 37 doctors who developed coronary thrombosis as for a control group of 37 doctors who were still working at the age of 65, both these groups having been passed fit at the age of 30.

5. It was also found that the parental history as regards pulmonary tuberculosis was the same for 37 doctors who developed pulmonary tuberculosis as for the control group of 37 doctors who were still working at the age of 65, both these groups having been passed fit at the age of 30.

During the Balkan campaign according to German experience (Weller: *Dtsch. Militärztz.*, 1941, 11) the principal diseases occurring were dysentery and influenza. Acute influenza was often difficult to distinguish from typhoid. The percentage of cases of bronchopneumonia (41) was high. Half of the cases were treated with sulphonamides and the other half with "novalgin" and quinine. The results were the same in both groups. The author believes that the best results were obtained by intravenous injection of quinine-calcium.

THE CLINICAL SIGNIFICANCE OF THE Rh FACTOR

BY

K. E. BOORMAN B. E. DODD, B.Sc.

AND

P. L. MOLLISON, M.B., M.R.C.P.

(*Concluded from p.* 538)

Haemolytic Transfusion Reactions Due to Rh Antibodies

As first pointed out by Wiener and Peters, the repeated transfusion of Rh-positive blood to an Rh-negative individual may be followed by a haemolytic reaction due to the production of Rh antibodies as a response to the first or subsequent transfusions. The following case is probably of the mildest type of this reaction.

A Mild Type of Reaction

Case 1.—A man aged 25 had had symptoms of ulcerative colitis for 8 years. In November, 1940, he had a relapse and received two transfusions totalling 2,500 c.cm. of citrated stored blood of group O. These transfusions were followed by clinical improvement, and the patient remained well for many months. He was readmitted to hospital in April, 1942, with a return of symptoms, however, and in view of the success of the previous treatment it was decided to give him a further transfusion. He was found to belong to group O Rh-negative. His serum was tested against a series of group O bloods and found to give no reactions at all at 37° C. or at any other temperature. It was therefore considered safe to proceed with the transfusion of blood from two of these donors. For purposes of record these bloods were also tested with anti-Rh sera and found to be Rh-positive.

1,000 c.cm. of citrated blood from these two donors was given slowly over a period of 5 hours. Following the transfusion the patient had a slight headache and a rise of temperature to 100° F. but no other symptoms, and when seen on the next day expressed himself as feeling better for the transfusion. A venous sample was obtained 48 hours after the transfusion for comparison with the pre-transfusion sample. It was found that only insignificant changes in haematocrit and haemoglobin values had occurred; at the same time it was noted that the serum of the later sample was distinctly yellow, in contrast with that of the pre-transfusion sample, which was pale. A test was made to see whether the Rh-positive blood was surviving in the recipient's circulation by testing a suspension of blood taken from him with a potent anti-Rh serum. Many moderate-sized clumps were found in the suspension, thus indicating the survival of a substantial part of the transfused blood, since a control test with the recipient's blood before transfusion showed no trace of agglutination.

A further sample was obtained upon the fifth day, and it was noted that the serum was even more icteric; a quantitative van den Bergh test showed that it contained 1.5 mg. per 100 c.cm. Examination of the serum with a series of group O bloods revealed the presence of an Rh antibody. A survival test showed that only a small amount of Rh-positive blood was now present in the circulation. On the seventh day after transfusion there was no trace of the donor blood in the recipient's circulation, and the Rh antibody had risen further in titre.

Throughout the period of observation the patient continued to improve slowly, and he left hospital on the eighth day. Blood urea estimations were carried out upon the fifth and seventh days after transfusion; strictly normal values were found.

Reactions in Recently Delivered Women

The frequency with which intra-group haemolytic transfusion reactions occur in women whose infants are affected with erythroblastosis foetalis has been stressed by Levine, Katzin, and Burnham, and corroborated by Wiener. In the present series of investigations 4 such cases have been encountered. Two illustrative cases are here quoted to demonstrate the variation in severity of the reactions.

Case 2.—A woman aged 25: two previous pregnancies. The first was normal throughout, resulting in the birth of a normal baby. The second resulted in a baby which developed jaundice during the first week of life, but subsequently improved without relevant treatment. After delivery the mother was found to have high blood pressure, oedema, and albuminuria. During the third pregnancy she remained well until about the eighth month, when swelling of the ankles, albuminuria, and hypertension developed. At this time the uterus became suddenly more bulky and hydramnios was diagnosed. On June 9, 1942, she was delivered of twins, the first of whom died after 2 to 3 hours and the second after 8 hours. Both infants had gross ascites and all the other features of hydrops foetalis. On the fifth day after delivery it was decided to give the mother a transfusion because of her anaemia. It was found that the patient's group was O Rh-negative, and that her serum contained an Rh antibody. (The twins were group A Rh-positive.)

Two group O and supposedly Rh-negative donors were selected by tests made with the patient's serum and with another human serum containing only moderately-active Rh antibodies. A concentrated cell suspension was prepared from the blood of these two donors and transfusion was begun at a drip rate By the end of an hour approximately 250 c.cm. had been given without any untoward reaction. Shortly afterwards, however, the patient started to complain of violent lumbar pain, difficulty in breathing, and generalized discomfort. The transfusion was stopped, approximately 300 c.cm. having been given, but she started to shiver and had a violent rigor followed by a rise in temperature. A venous sample was obtained 3 hours after the beginning of the transfusion, and it was found that the serum had become intensely icteric. Examination of the recipient's blood confirmed that her cells were group O Rh-negative, type MN, and that her serum contained an Rh antibody. The blood of both the donors was now retested with a sample of human serum containing very potent Rh antibodies. and it was discovered that one of the donors was Rh-positive (and the other Rh-negative). Both belonged to type N. By means of the differential agglutination technique it was possible to show that by the day after the transfusion the recipient's blood stream contained only half the expected number of type N cells (the calculation being made from the known amount and known red cell count of the blood transfused) Moreover, there was no trace of reaction with the potent Rh antiserum. It thus was clear that the blood of the Rh-positive donor had been eliminated, whereas that of the Rh-negative donor had survived. The fate of the latter cells was investigated by tests made during the following few weeks; it was found that they were only slowly eliminated.

Since the post-transfusion sample contained no free haemoglobin in the serum it was not surprising that the patient's urine was free from this pigment. The subsequent course of the case was entirely favourable.

Case 3.—A woman aged 36: four previous pregnancies. The first was terminated by craniotomy of the foetus because of disproportion. The second child was born prematurely after induction of labour a week or so before term. The child was very jaundiced, and died on the second day. The third pregnancy terminated in the birth of a stillborn child at 8 months. The fourth pregnancy resulted in the birth of a macerated foetus at 7 months. The fifth pregnancy was terminated by Caesarean section on Aug. 26, 1942. A living female child was delivered, but slight jaundice was apparent. At the end of 24 hours it was more jaundiced, and on the 28th a blood count showed R.B.C. 1.89 millions per c.mm., Hb 52%, and normoblasts approximately 16,000 per cmm. The infant died on Aug. 29.

Following the Caesarean section the mother became rather collapsed, and 20 oz. of citrated blood of group O were given. An hour after the end of transfusion she had a rigor, and 6 hours later complained of severe abdominal pain and backache and the respirations rose to 56 a minute. On the day after transfusion she was slightly jaundiced, and 29 oz. of dark brown urine were obtained by catheter. During the next 4 days only 12 oz. of urine altogether were passed. and the patient died suddenly on Aug. 31. Microscopical examination of the kidneys showed the typical features of necrosis of the tubules and the presence of masses of pigment in the tubular spaces.

Investigations carried out on Aug. 30 showed that the patient belonged to group A and was Rh-negative; her serum contained an Rh antibody. Her husband's group was O Rh-positive. A test was made by the "inagglutinable count" technique to see whether any of the group O blood given 4 days previously was surviving. It was found that this blood had been completely eliminated from the recipient's circulation. It was thus clear that the blood had been incompatible, and on examination it was found, as expected, that the donor was group O Rh-positive.

Transfusion of the Affected Infant

Levine, Burnham, Katzin, and Vogel have already reported that after the transfusion of Rh-negative blood the infant maintains higher values of R.B.C. count and Hb concentration than after the transfusion of Rh-positive blood. Nevertheless, from observations of changes in R.B.C. counts and Hb concentration it is difficult to reach decisive conclusions unless considerable and consistent differences are found. A more reliable method of demonstrating the different survival of Rh-negative and Rh-positive blood in the circulation of infants affected with erythroblastosis is to use the method of differential agglutination. By an elaboration of this method it is possible after transfusing a mixture of Rh-negative and Rh-positive bloods to estimate the survival of the two types separately. The result of these experiments will be reported later (Mollison), but the following preliminary conclusions are set out, since they appear to be important from the point of view of treatment.

The rate of destruction of Rh-positive blood in the circulation of affected infants varies enormously from one case to the next. In some cases only slight differences have been found between the survival of Rh-positive and Rh-negative blood More often, however, very great differences have been observed The fact that there is a group in which the period of survival of Rh-positive blood is so much shorter than that of Rh-negative blood makes it very desirable to use Rh-negative donors as a routine for transfusion in cases of erythroblastosis foetalis.

Discussion

Iso-immunization in Pregnancy

Dienst (1905) first noted that when the mother's serum contained an agglutinin that was incompatible with the infant's erythrocytes the potency of her iso-agglutinins increased considerably during the fourth to eighth days after delivery. Jonsson (1936) made a study of the sera of women 2 to 3 months after delivery and found evidence of specific stimulation in some cases of "hetero-specific pregnancy": that is to say, when the mother belonged to group O and the infant to group A, for example, the mother's anti-A agglutinins were found to be stimulated. Jonsson did not titrate the sera, but simply used the presence of iso-haemolysins as evidence of an immune response. For this reason probably, he found evidence of specific stimulation in only a certain proportion of cases As mentioned above, Levine and Stetson first suggested that the presence of atypical agglutinins in the serum of a recently delivered woman might be the result of immunization to an antigen in the foetus; and Levine *et al.* soon afterwards described many cases in which the atypical agglutinin had been found to be anti-Rh, and thus developed their theory of the aetiology of erythroblastosis foetalis, as outlined above. Naturally some explanation is needed for the fact that the presence of immune anti-A agglutinins in the serum of a mother carrying a baby of group A usually leads to no obvious abnormality in the baby, whereas the presence of immune anti-Rh agglutinins is so often associated with erythroblastosis of the (Rh-positive) infant. Wiener has suggested that this is because the Rh factor is found only in the erythrocytes, whereas the A and B substances are present in all the body tissues and secretions (in the majority of individuals whose erythrocytes contain the A or B factor), and thus protect the erythrocytes from damage. Levine *et al.* have suggested that in those individuals of group A, B, or AB whose body fluids do not contain the group-specific substances (the non-secretors of Schiff) the presence of immune anti-A or anti-B agglutinins in the mother's serum may lead to erythroblastosis. It may be pointed out that in any case in which the immunizing factor, be it Rh or A or B, is present only in erythrocytes, it is necessary to postulate the actual entry of foetal erythrocytes into the maternal circulation for immunization to occur.

Wiener (1942) has suggested that other atypical agglutinins besides anti-Rh may occasionally be the cause of erythroblastosis. The presence of atypical agglutinins, different from anti-Rh, in the serum of a recently delivered woman has been reported by Levine and Polayes (1941), among others.

In the series of cases described here, in which the infant had definite erythroblastosis, an immune agglutinin incompatible with the infant's erythrocytes was found in the mother's serum in every case In 44 out of 48 cases this agglutinin was anti-Rh, although in some of them immune anti-A or anti-B agglutinins were also found. In the remaining 4 only immune anti-A or anti-B agglutinins were observed. Moreover, in these 4 the presence of other atypical agglutinins was unlikely, because the mother's serum did not agglutinate any of a series of 10 to 20 group O bloods when tested at different temperatures. This observation supports the idea that anti-A or anti-B agglutinins may occasionally cause the destruction of foetal erythrocytes of group A or B and thus be the chief aetiological factor in some cases of erythroblastosis foetalis.

The failure to demonstrate Rh agglutinins in the infant's serum in the majority of cases is not surprising, since these antibodies are not usually present in high titre in the mother's serum and since they will be expected to be absorbed on to the infant's (Rh-positive) cells. Nevertheless, as we have said, they could be readily demonstrated in one case in which the sera of identical twins who lived for only a few hours after birth were examined post mortem.

It will be noted that in the present series Rh antibodies have been found far more often than in the series described by Levine and his co-workers. The technique used by the latter authors consisted in incubation of the mixture of cells and serum (30 to 60 minutes at 37° C.), followed by centrifugation at low speed (500 r.p.m.) for one minute and by gentle shaking to resuspend the sediment. The tubes were then examined macroscopically for evidence of agglutination, and apparent negatives were examined microscopically. We have found that this technique is not so sensitive as that of simply allowing the mixtures to stand in the incubator for 2 hours, followed by examination of the pattern of the sediment and by a withdrawal of a portion of the sediment for microscopical examination, the latter operation being carried out with delicacy. Even the gentle shaking of the tubes advised by Levine *et al.* may, in our experience, completely abolish a weak reaction. It is of course necessary to carry out control tests with Rh-negative cells if weak reactions are to be accepted as evidence of the presence of an Rh antibody.

Selection of Blood Donors for those who have become Immunized to the Rh Factor

In the 3 cases described in which haemolytic reactions followed the transfusion of Rh-positive blood to an Rh-negative individual who had previously been immunized to the Rh factor, it will be noted that the essential feature is a rapid elimination of the donor blood from the recipient's circulation. This finding is in striking contrast to the survival time of compatible blood, which has been shown to be consistently 80 to 120 days (Wiener, 1934; Mollison and Young, 1942). From the 3 cases quoted above the impression may be gained that serious sequelae are the exception and not the rule following the transfusion of Rh-positive blood to a person whose serum contains an Rh antibody. However, it should be mentioned that in the 2 cases of which details have not been quoted the transfusion was followed by oliguria with a steadily rising blood urea. In these cases the patient, after being critically ill, at the end of 7 to 10 days after transfusion gradually started passing normal quantities of urine again, and recovered. Even in Case 1, in which there were apparently no untoward consequences at all, it is clear that the transfusion was of no benefit to the patient.

In Case 2 it was demonstrated that Rh-negative blood survived normally in the recipient's circulation after transfusion, and Wiener (1941) has published many such cases in which he has been able to demonstrate that Rh-negative blood survives normally.

For the transfusion of any recently delivered woman, and particularly in any case in which there is a suspicion that the individual has become immunized to the Rh factor, it is clearly very desirable to have available a panel of Rh-negative donors. At present large stocks of potent Rh test sera are not available, but if the recipient's serum is found to be incompatible with the donor's cells it should be possible to test the serum against a number of other individuals and to find a compatible donor.

It is probable that a modified compatibility test, as described above, will serve to detect the majority of cases in which Rh agglutinins are present. Clearly it will be of further help to know whether the prospective recipient is Rh-negative or not. It is strongly recommended that this modified compatibility test be used as a routine before the transfusion of recently delivered women is undertaken. Where there are no facilities for carrying out this test two compromise procedures are available:

(*a*) In any case in which there is reason to suspect that the infant has erythroblastosis, or if there is a suspicion that any previous infant has had erythroblastosis, transfusion of the mother should be avoided if possible. Obstetric shock, post-partum haemorrhage, etc., should be treated by serum or plasma transfusion. Cases in which erythroblastosis is suspected should include all cases in which the infant is stillborn without obvious cause, and all cases in which the infant is born with oedema, jaundice, or obvious anaemia. (*b*) Rh-negative donors should be used as a routine either for the group mentioned in procedure *a* above or, better still, for the transfusion of all recently delivered women. This latter procedure has already been adopted by Levine *et al.* (1941) and Wiener (1941), but it must be pointed out that its immediate application on a large scale would present very great difficulties.

In discussing the choice of a donor for the affected infant the question of the suitability of the mother or father naturally arises, since they may be the only donors readily available. In this, as in all transfusions, the most important factor is the compatibility of the donor's erythrocytes with the recipient's serum. Compatibility in this case, however, has to be defined as "enjoying normal survival in the recipient's circulation," because it is not usually possible to demonstrate Rh agglutinins in the infant's serum, even in cases in which rapid elimination of Rh-positive blood is observed. From the point of view of the donor's erythrocytes the mother is suitable and the father unsuitable.

There is another factor to take into account, however—the compatibility of the donor's serum with the recipient's erythrocytes. This factor is ignored by some clinicians who regularly use, for instance, individuals of group O for transfusion to individuals of any group. Nevertheless, as demonstrated recently by Aubert, Boorman, Dodd, and Loutit (1942), the transfusion of serum containing potent incompatible agglutinins can result in the destruction of some of the recipient's erythrocytes. In infants who have developed a haemolytic anaemia as the result of the passage of Rh agglutinins through the placenta it is obviously undesirable to transfuse further amounts, and for this reason the transfusion of blood from the mother is to be deprecated.

Clearly, the ideal donor is an Rh-negative individual whose serum does not contain an Rh antibody and whose blood is also of the same group as the infant. However, when the infant is of group A and the mother is group O Rh-positive, and the destruction of the infant's erythrocytes is due to the mother's anti-A agglutinin, as we have supposed above, the most suitable blood for transfusion will be group O the serum of which contains low-titre agglutinins, since, by analogy, group A blood will probably be destroyed more quickly than group O blood in the infant's circulation.

To sum up, the most suitable donors for the majority of erythroblastotic infants requiring transfusion are group O Rh-negative persons whose serum contains only low-titre agglutinins. Since they will also be the most suitable donors for transfusion for the majority of recently delivered women, it seems very desirable for every donor organization to collect a group of such individuals.

Incidence of Affected Infants in Different Families

When a case of erythroblastosis has occurred in a family some help may be given in the prognosis regarding future children by testing the blood of father, mother, and any available siblings. If, for instance, the mother is Rh-negative and the father Rh-positive and any of the children are Rh-negative, it is clear that the father's genotype is Rhrh, and therefore there is an even chance that future children will be Rh-negative and presumably not affected with erythroblastosis. If, on the other hand, all the children are Rh-positive, it will be more likely that future children will be affected.

Summary and Conclusions

In every case of erythroblastosis examined the serum of the mother has been found to contain an immune agglutinin which is incompatible with the infant's erythrocytes. In 44 out of 48 cases the agglutinin was anti-Rh. In the remaining 4 cases it was either anti-A or anti-B. Because of this latter finding it is considered that the anti-A and the anti-B agglutinins are capable of causing destruction of the infant's erythrocytes in a certain number of cases and thus, in some instances, of being the main causative factor of the erythroblastosis. The finding of weak Rh antibodies in the sera of the mothers of some babies with "physiological jaundice" supports the idea that there is no clear-cut distinction, from the clinical point of view, between mild and severe jaundice of the newborn.

At the present time, if serological tests are used as an aid in the diagnosis of doubtful cases of erythroblastosis, compatibility of the mother's serum with the infant's erythrocytes may be regarded as a strong point against the diagnosis, provided that the mother's serum is examined by a sensitive technique between 7 and 21 days after delivery. On the other hand, if the mother's erythrocytes are shown to be Rh-negative and her serum is found to contain anti-Rh agglutinins, the diagnosis is strongly supported.

A change in the method of selection of blood donors in certain cases is urgently needed. This applies particularly in the case of transfusion of recently delivered women and, above all, whenever there is any suspicion that the present infant is affected with erythroblastosis or when there is any previous history of the birth of jaundiced babies or of stillbirths without obvious cause.

At the same time, a modification of the present method of testing for compatibility between the bloods of donor and recipient must be made. Methods for carrying out these tests are described, and compromise procedures are discussed for cases in which there are no facilities for making these tests.

It is recommended that every blood bank takes steps to establish a panel of group O Rh-negative donors whose blood will be available, first, for the transfusion of the cases referred to above, and, secondly, for use as a routine in the transfusion of infants affected with erythroblastosis (when transfusion is required).

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The Queen has expressed her great interest in a plan launched by the Central Council for the Care of Cripples to open a new residential home and school for severely crippled boys, and has sent a donation of £1,000 which had been placed at her disposal by members of the "Bundles for Britain" branches in America to be used for the children of this country. The council has been deeply impressed with the great need for more homes in the reception areas for severely crippled children, who cannot easily move about and whose parents are often unable, under war conditions, to care for them adequately. The Shaftesbury Society, one of the council's affiliated members, which has had wide experience in running homes, has agreed to open this new home provided the necessary capital of £10,000 can be raised. About half the sum has now been promised.

OPTIMAL PROPORTIONS OF ANTIGEN AND ANTIBODY IN TESTS FOR Rh ANTIBODIES

BY

G. L. TAYLOR,* M.D., Ph.D., M.R.C.P.
R. R. RACE,* M.R.C.S., L.R.C.P.
AILEEN M. PRIOR,* M.Sc.
AND
ELIZABETH W. IKIN,* B.Sc.

(From the Galton Laboratory, Department of Pathology, Cambridge)

That the extent of the reaction resulting from mixing homologous antigen and antibody in a test-tube depends very largely on the proportions of the two reagents in the mixture has long been known. The proportions optimal for reaction can be determined (Dean and Webb, 1926, Duncan, 1932), but, while a particular antigen and its antibody will in suitable proportions produce a very well marked reaction, it may be possible, by varying the relative amounts of the same reagents, to get a mixture in which no reaction can be seen. Goldsworthy (1928) found that a specific antibody in the serum of a patient suffering from hydatid cyst of the lung could easily be missed unless the serum and the antigenic fluid, obtained from echinococcal cysts in the livers of cattle, were mixed in proportions suitable for producing flocculation. Workers with precipitins and bacterial agglutinins are familiar with zone phenomena due to the varying proportions of antigen and antibody in the different mixtures of titrations. Some human sera containing iso-agglutinins of the A–B–O system of blood groups show zoning: in titration with homologous red cells the best reaction does not take place in the mixture in which the iso-agglutinin is strongest, but in one in which it is more dilute, so that in a titration there is a pro-zone of one or more tubes in the series before those in which reactions are greatest. Although on very rare occasions a serum may be encountered which will show no agglutination with appropriate cells unless it is suitably diluted, zone phenomena give little trouble in testing for the A–B–O groups

We have recently examined a sample of human serum containing antibodies for the Rh blood-group factor of Landsteiner and Wiener (1941). Used undiluted, this serum agglutinated the red cells of strongly positive reactors to anti-Rh, but failed to agglutinate cells from more weakly positive reactors. When, however, the serum was suitably diluted, definite and clear-cut agglutination was obtained with these weaker cells. Landsteiner and Wiener found marked differences in intensity in the reactions given by the red cells of different Rh-positive persons Wiener (1942) mentions that with some human anti-Rh sera, used undiluted, reactions were inhibited until the sera had been heated at 56° C. for 10 to 20 minutes; the behaviour of the serum we describe was unaffected by heating. We obtained the serum in the middle of July, 1942, from a mother (B.)—of group O—who on Nov. 6, 1941, gave birth to a female child (her second), which died of erythroblastic anaemia on Nov. 16, 1941. B. is Rh-negative; a daughter born 2½ years ago is group O Rh-positive.

The Rh Factor

Red cells containing Rh react with immune sera prepared by injecting rabbits or guinea-pigs with the blood of rhesus monkeys. The factor is inherited as a simple Mendelian dominant and is present in about 85% of American whites Boorman, Dodd, and Mollison (1942) have found a similar distribution in England. The examination of a small series of negro bloods suggested there might be racial differences in distribution, and very recently Landsteiner, Wiener, and Matson (1942) found only one Rh-negative person among 120 full-blooded American Indians, whilst among 155 Indians of mixed ancestry the distribution of the Rh factor was intermediate between that for whites and pure Indians, according to expectation. Antibodies for Rh do not normally occur in human plasma, but when Rh blood is given to some of the persons lacking the antigen the body recognizes it as foreign and eliminates it. At a first transfusion the haemolysis may be so gradual as to be unsuspected, but Rh antibodies may then be produced, and Rh-positive blood given at a later transfusion may cause the most serious reactions. Immune antibodies to Rh may be responsible for reactions in women, transfused for the first time, who have recently given birth to a child or had a miscarriage or stillbirth, the antibodies having been formed in response to Rh antigen present in the foetus and inherited from the father but absent in the mother. Such antibodies produced in a mother against an antigen present in her foetus but lacking in herself may be passed through the placenta and may react with and damage the red cells of the foetus, and it seems certain that erythroblastosis foetalis, a familial haemolytic disease of the newborn, is caused in this way and that the antigen most commonly involved is Rh. As most donors are Rh-positive it is of the greatest importance that anti-Rh in the serum of any recipient shall be detected. Human sera containing anti-Rh in sufficient strength are probably the most convenient reagents for detecting Rh.

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* Working on behalf of the Medical Research Council

Technique

The serum of B. was tested, by a technique similar to that used by Landsteiner and Wiener, against the red cells of a panel of known positive and negative Rh reactors of group O. Equal volumes—about 0.05 c.cm.—of the undiluted serum and of red cell suspension consisting of 4 to 5% of whole blood, as judged by eye, were mixed in 2 in. by 1/4 in. precipitin tubes, on which glass caps were placed to prevent evaporation during storage. The tests were made in duplicate, and one set was stored for 2 hours and read at room temperature, while the other was stored in a room at about 37° C. and read there after the same time. The reactions were read by disturbing the sedimented cells in the tubes as gently as possible, and looking for macroscopic agglutination by holding the tube to the light. Some of the contents of any tube that did not show agglutinates visible to the naked eye were transferred to a microscope slide and spread by means of the stem of a Pasteur pipette, using only just enough pressure to ensure that the cell suspension was plainly visible under a low power of the microscope.

The sediment in the tubes was examined, before it was disturbed, by inspecting the base of the tube. Landsteiner and Wiener stated: "Negatively reacting bloods then show a circular deposit with a smooth edge, while positive bloods have a wrinkled sediment with a serrated border or show a granular deposit. From these readings, as a rule, the diagnosis can readily be made." We are sure that what Landsteiner and Wiener say about reading the sediments is quite correct, but we are not yet expert enough to rely as much on this type of reading as on seeing agglutinates themselves either by the naked eye or under the microscope.

Titration Tests

When it was found that the undiluted serum failed to react with some cells known to be Rh-positive these anomalous cells were examined by a titration method. Series of falling dilutions —undiluted, 1 in 2, 1 in 4, etc.—of the serum in equal volumes of normal saline solution were prepared, and equal volumes of cell suspension were added to each tube of a series. When the titrations were read it was seen that the serum produced a well-marked zone, with the earlier tubes showing little or no reaction, but with quite definite reactions in later tubes of the series.

In the Table are shown the results of the titrations with the red cells of four group O Rh-positive persons. There are marked differences in intensity in the reactions given by these persons, and without titration Nos. 3 and 4 would have been aken as negative. Of 14 lots of group O Rh-positive cells in an experiment of which the four examples in the Table are part, five were like Nos. 3 and 4 and would have been diagnosed as negative; they all showed clear-cut reactions in the later tubes of the titration. Duplicate titrations were stored and read at room temperature (21.9° C.): the reactions were much less marked, and No. 4 of the Table and another set, positive at 37° C., gave no reaction even on titration. Levine and Katzin (1940) found a human serum containing anti-Rh which had a greater degree of activity at 37° C. than at lower temperatures, and Mollison and Taylor (1942) have reported that the human anti-Rh sera they have examined react better at 37° C. than at room temperature.

As Landsteiner and Wiener indicated, the reactions given by some sera and some Rh-positive cells are very uncertain, and the intensity of the reactions between the same reagents varies somewhat on different occasions. Sometimes B.'s serum, undiluted, has given a slight reaction, "w," with some of the cells with which on other occasions it reacted only when diluted.

Table showing Titration of B.'s Serum with Cells of Different Rh-positive Persons (Tests Stored for 2 Hours and Read in Room at approximately 37° C.)

Tube No.	Serum Dilution	Cells			
		I	II	III	IV
1	1/1	V	w	—	—
2	1/2	V	++	w	—
3	1/4	C	V	(+)	(+)
4	1/8	C	V	+	w
5	1/16	C	V	++	++
6	1/32	V	V	w	w
7	1/64	++	V	w	w
8	1/128	V	+	(+)	—
9	1/256	w	—	—	—
10	1/512	w	—	—	—

Order of strength of reaction: C>V>++>+>(+)>w

No reaction is scored as negative without a microscopical examination; reactions weaker than V were determined with a microscope.

C=Clumps of cells in clear surrounding fluid visible to naked eye.
V=Somewhat weaker reaction, with clumps distinctly visible to naked eye, although surrounding fluid is not clear.
++=Very big clumps under microscope, + = not quite such big clumps, (+) = less than +.
w=Definite weak reaction in which there is a uniform distribution of very small clumps of about 6 to 8 cells.

Identification of the Antibody in B.'s Serum

The Rh groups of the panel of donors mentioned above had been determined with sera which had been shown to contain Rh antibodies by comparing their behaviour with that of an anti-Rh serum very kindly sent to the Medical Research Council by the Rockefeller Foundation of New York. All of a panel of 18 group O donors—15 Rh-positive, 3 Rh-negative —have been correctly diagnosed by B.'s serum. Paterson, Race, and Taylor (1942) stated that "when the reactions given by a known and an unknown antibody and the same panel of red cells are identical the odds in favour of the two antibodies being the same can easily be calculated. The probability that the apparent identity of the two antibodies is due entirely to chance is given by the formula $\frac{a!\,b!}{n!}$, where n is the number in the panel and a and b the numbers of positive and negative reactors." Applying the present figures, we get $\frac{15!\,3!}{18!}$,* or $\frac{1}{816}$, as the probability that the identity of the results is due merely to chance; in other words, the odds in favour of the antibody in B.'s serum being anti-Rh are 815 to 1. Members of groups other than O have also been properly diagnosed for Rh by B.'s serum, suitably absorbed to remove anti-A and anti-B.

Titration Advisable

Since discovering the necessity for titrating B.'s serum we have, when testing for the presence of Rh antibodies, never been satisfied they were absent until examination by the titration method—6 or 7 tubes—had been made. If B. had needed a transfusion a direct test between her serum and the cells of, say, No. 3 or 4 in the Table would not, without titration, have disclosed the incompatibility. It appears advisable to use a titration method in direct tests between the serum of a recipient and the cells of potential donors if the Rh factor may be involved; and it may be that in some cases titration will prove to be the only method of disclosing incompatibility due to other blood-group factors.

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* $3! =$ "factorial three" $= 3\times2\times1 = 6$.

Summary and Conclusions

The anti-Rh-containing serum of the mother of a baby which died of erythroblastic anaemia caused, when used undiluted, the agglutination of red blood cells of strongly positive reactors to anti-Rh, but failed, undiluted, to agglutinate more weakly reacting cells. When these weakly reacting cells were added to serial dilutions of the serum well-marked agglutination occurred if the serum was suitably diluted. These findings suggest the advisability of using a titration method before deciding that anti-Rh is not present in a serum, and in direct tests between the serum of a recipient and the red cells of potential blood-transfusion donors.

We are grateful to Dr. T. H. Boon, regional transfusion officer, Newcastle-upon-Tyne, and to Dr S. G. M. Mackay of the Newcastle General Hospital for the trouble they have taken in getting B.'s serum and details of her case.

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PHYSICAL TREATMENT OF ACUTE WAR NEUROSES

SOME CLINICAL OBSERVATIONS

BY

WILLIAM SARGANT, M.B., M.R.C.P., D.P.M.

Deputy Clinical Director of an E.M.S. Neurological Unit

During this war there have been few reports on the actual value of the various physical treatments of acute war neuroses. The methods adopted have had not only to be tested in the last three years but also modified from those employed in peacetime. As things have turned out, they have proved a very valuable part of any comprehensive clinical scheme of treatment and rehabilitation for such patients. The scope of psychotherapy and environmental adjustment for acutely ill patients is somewhat limited: there is little time to-day for intensive psychotherapy, and with the country now organized for total war and subject to random bombing it is not always possible to find an environment where the individual is not exposed to stress and can also be usefully employed in the war effort. The aim of physical treatment is to bolster up the constitution so that unavoidable stresses are better tolerated by the individual. Should active fighting on a second front develop or a renewal of severe air raids occur, the sphere of usefulness of such treatments will be greatly enhanced, and a knowledge of their possibilities is consequently of importance to everybody.

In this unit we have had unparalleled opportunities of testing and developing such methods. After the Flanders retreat we admitted convoys direct from the Dunkirk beaches. Subsequently, months or weeks later, during which time their condition had often gravely deteriorated, acute cases were admitted from other sources. During the Battle of Britain we received casualties from coastal areas and bombed aerodromes, and during the long winter aerial bombardment of London we had to deal with patients suffering from acute neuroses who had broken down after weeks or months of useful service as members of the Civil Defence Services. On several occasions bombs were dropped either on the hospital or in the grounds, and at these times and throughout the raids we obtained very valuable experience at first hand on how to use these methods with a unit of neurotic patients presenting a wide variety of panic reactions.

Since over 3,000 Service cases alone, both acute and chronic, have had to pass through our limited bed accommodation, there has been a pressing need to seek means of accelerating processes of normal recovery, of preventing aggravation of existing symptoms, and of getting patients well enough to return either to readjusted duties in the Services or to some useful civilian occupation. Our aim has been to avoid, if possible, a recovery that is long-drawn-out.

Our most important finding has been the supreme need for immediate first-aid treatment of the acute neurosis occurring in a good previous personality. This is best done by physical methods. Application of treatment should be considered in terms of hours rather than of days or weeks. In this way conditioned fears can be to a certain extent prevented from becoming ingrained in the personality, and neurotic behaviour patterns that were primarily released under severe stress from recurring whenever the individual is again exposed to the slightest danger. We have also learnt that the response to treatment depends not only on the speed with which treatment is given but also on innate qualities of personality. No treatment will endow a patient with qualities of stamina that he never previously possessed. A fundamental constitutional stability under ordinary stresses has been found of overwhelming importance to a good prognosis. Previous general instability offers a very poor one.

First-aid Treatment

For the acute panic state, the advantages of heavy sedation given at the earliest possible moment have been amply demonstrated. As a rule too little rather than too much is given. At the first sign of impending breakdown in a good previous personality very heavy sedation, immediately applied to produce unconsciousness for some hours, may stop the development of a neurosis requiring treatment in hospital. The individual's natural stamina is thereby allowed some hours to re-establish itself at a time when his will-power and morale are showing signs of initial failure to cope any longer with the stresses encountered, and he is temporarily open to the acquirement of a wide variety of conditioned fears.

In an emergency alcohol can be used as a means of rapid first-aid sedation, but other chemical methods are preferable. Two to four drachms of paraldehyde, for instance, are very useful, because the drug acts so fast. Six to nine grains of sodium amytal may also be given, or 10 to 20 grains of medinal. But these drugs have the disadvantage of not taking effect for from one-quarter to half an hour. During even this short period the seeds of a future conditioned phobia may be implanted. In the hyperacute condition, especially when the patient is disturbing those around him and destroying their morale, the best method of treatment is the production of immediate unconsciousness by intravenous barbiturates. Whether such first-aid measures will have to be followed by further treatment depends to a certain extent on the physical state of the patient. If he has already lost 1 to 3 st. before he starts breaking down, he probably needs further treatment and rehabilitation, and should be sent back to hospital after these initial first-aid measures. Psychological improvement is rarely permanent if the patient's physique has much deteriorated. However, if the stress has been short-lived though very severe, and if the personality is sound, then deep sleep for some hours may be quite sufficient to enable the patient to carry on his work, especially if initial heavy sedation is supplemented for a day or two by milder sedation.

Breakdown can also be prevented by the judicious use of prophylactic sedation. Courage and will-power have physical components and are certainly not directly dependent on the psyche. Both these attributes of the mind readily weaken if the person is fatigued. Loss of weight, loss of sleep, or even a poor quality of sleep may bring latent weaknesses in the power of resistance to the surface in neurotically predisposed individuals. During a period of temporary crisis the individual's final breakdown can often be averted by the judicious use of sedatives given deliberately to extend to the maximum his limited reserves of nervous energy. Battles are won by hanging on even a few hours longer than the enemy. It was interesting to find soldiers who had been able to go through the stress of Dunkirk fortified by brandy obtained during the retreat but who made a hopeless showing when faced with a minimal stress in England. If such prophylactic sedation is used occasionally in a crisis, addiction need not be feared in any except severely psychopathic cases. Methods of treatment that are useful for the many should not be rejected because of the weakness of a few. As well as the need for sedatives, there is often an alternative one for temporary stimulants to tide over a few hours of fatigue and stress. Here benzedrine may be found exceedingly useful, and again, in normal persons, there need be no fear of addiction. There has been no real evidence of addiction in non-psychopathic types, despite the current popular phobia; even the neurotic individual does not crave for prolonged sleeplessness, which this drug produces.

Numerous publications during the war have emphasized the value of intravenous injections of barbiturates as an aid to restoring the memory of events for which there has been a hysterical amnesia or to investigating a patient's illness from a psychopathological angle. In addition, however, these drugs are extremely useful as a means of dealing with other acute hysterical conversion symptoms, such as the sudden loss of use of an arm or a leg, immediately they occur. The drug is injected, anxiety is rapidly relieved, being replaced by a sense of well-being, and the patient is susceptible to suggestion and the restoration of function in the part affected. This treatment should preferably be given by the medical officer at the casualty clearing station as soon as the symptoms occur. If they are taken early there may be no need for the patient's transfer to a neurosis centre, unless other symptoms need attention. If acute hysterical conversion symptoms are left untreated for more than a few hours the abnormal behaviour pattern becomes more ingrained and obvious escape mechanisms grow more fixed by the patient's removal to a safe area.

Continuous Sleep Treatment

If severe anxiety or hysterical symptoms have continued for even a week or longer, other treatment is necessary which cannot be done except in hospital, though not necessarily very far from the scene of fighting or bombing. By this time physical changes will have become more pronounced and conditioned fears will have taken a firmer hold. A much longer period of sleep treatment is necessary to destroy these. Any sedative drug can be used. Paraldehyde can be given, orally or rectally, in doses of 2 to 4 drachms every four hours; alternatives are 3 to 6 gr. of sodium amytal at four-hourly intervals, hyoscine and luminal as advocated by Mira, or mixtures of these drugs combined, if necessary, with 2 c.cm. of somnifaine twice a day. The aims of treatment are to avoid undue toxicity, to procure 20 hours of sleep out of the 24, to adjust the dose so that sleep is neither too light nor too deep and patients are roused to take their meals, and to see that during the 7 to 10 days the treatment is being continued the patient receives 3 to 4 full meals a day and is given enough fluid to restore his physique and avoid the dangerous toxic effects of the drugs. At the end of the treatment sedation is slowly reduced. Other measures, which were useless while the acute anxiety and physical deterioration dominated the picture, may then be effective. It is wise to clear up outstanding hysterical conversion symptoms, if they are present, by intravenous injections of barbiturates and suggestion before the treatment is started.

Modified Insulin Treatment

Another interesting group of patients admitted to a neurosis centre comprises the good previous personalities who break down only gradually over a long period of stress and have kept on fighting against their increasing symptoms. After weeks or months of intense strain they may find that they are starting to have anxiety and hysterical responses to stimuli that previously left them almost unmoved. By this time they will probably have lost from 1 to 3 st. in weight and they show a peculiar mixture of anxiety, hysterical, and reactive depressive symptoms in proportions depending on their constitutional make-up. They can be superficially responsive to encouragement and psychotherapy: psychotherapy may, in fact, seem the treatment of choice because the patients are reasonably co-operative, but they quickly relapse under any fresh strain, despite a superficial improvement. If, for instance, they are rapidly cured in this state of a conversion symptom and returned to duty, they are shortly readmitted, more discouraged than before. They are often dubbed malingerers because of the insidious onset of the condition, but the doctor's suspicions as to the true nature of the illness should be roused by the fact that their past record is good. They generally retain insight into their deterioration and are ashamed of it. They cannot control their increasing somatic responses to fear stimuli, however hard they try. This type of patient was most often seen among good A.F.S. personnel who had done excellent work during three months or so of the London air raids before breaking down, and among those who tried to carry on for some considerable time after return from Dunkirk despite an increasing nervous disability. They resemble descriptions of the good type of patient who broke down on the western front in the last war after months of hard fighting and good morale. They should be distinguished from the individuals suffering from hyperacute anxiety state or the purer forms of endogenous depression, so far as physical treatment is concerned. They are best treated by a modified form of insulin therapy, which should be carried out in a base hospital, free from conditions of acute stress. The technical details of this treatment have been described elsewhere (Sargant and Craske, *Lancet*, 1941, 2, 212). It has been found most useful for fairly rapid restoration of physique and of some degree of working capacity, though the patients are rarely able to return to the full stresses that precipitated their illness. Of the 300 or more patients that we have treated by modified insulin therapy in this unit, these patients and those suffering from mild reactive depression have done best. Often they will gain a stone or more in a few weeks, and the vicious circle of anxiety and loss of weight and increasing incapacity is broken. The fact that they are being given a definite treatment is not without its psychological effect. On recovery these patients should be sent to modified duties or a somewhat less exacting environment, as they remain conditioned to their past experiences and have a horror of being reduced to a similar state again. In some patients the illness has been started initially by a head injury or by blast effects.

Convulsion Therapy

Among the other good personalities that may break down, especially after three years of war, there are many patients who get sent either to neurosis centres or to mental hospitals. Included among them are the over-conscientious non-commissioned officer with many years' service and the valued industrial worker who are particularly prone to break down into a depressive state because of their previous conscientious obsessional personality. Such patients carry on till they are sleepless, retarded, have ideas of guilt, or blame themselves for failing in their excessively high standard of duty or for letting down their comrades or superiors. These patients do not respond well to modified insulin therapy; despite a large intake of food they do not put on weight. Metabolic changes have occurred which are difficult to reverse and are reflected not only in a depressed attitude of mind but also in a general slowness of bodily movement, easy fatigability, and retardation of thought, speech, and even facial expression. Sometimes this distressing condition can be broken up by a long course of continuous sleep treatment lasting up to three weeks, but this will occur in only a relatively small proportion of the patients treated. One may have to wait months, a year, or even longer for spontaneous recovery to occur, even if the patients are immediately discharged from the Army or removed from stress. They are inaccessible to psychotherapy or reassurance. Convulsion therapy, however, should produce a rapid improvement in up to 75% of those patients with a good previous personality and genuine severe depression. Such treatment carries with it a slight risk of fractures, but has not the far from negligible mortality of a long course of continuous narcosis in inexperienced hands. Fractures can now generally be avoided with clinical skill and correct positioning of the limbs and body. If fractures should occur they will rarely cause a period of disability longer than that of the untreated illness. Therefore, if the illness appears likely to be long, this treatment should be considered. The advantages should be weighed against the risks.

Conclusion

It will be seen, therefore, that methods of physical treatment are now available as an aid to shortening the period of total disability in many acute psychiatric conditions. In good previous personalities acute panic states, acute anxiety states, anxiety hysteria, and states of depression now all have their appropriate treatments along such lines. These treatments must, of course, be used in conjunction with other established methods, both psychotherapeutic and environmental, to bring about recovery, restore the individual's self-respect, and diminish liability to further breakdown. Clinical experience greatly enhances their possibilities, just as poor judgment in the selection of cases may rob them of all effectiveness.

NIGHT VISION IN THE ARMY

BY

B. W. RYCROFT, M.D., F.R.C.S., Major, R.A.M.C.
Command Specialist in Ophthalmology

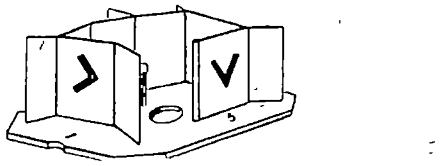
Much has been written on the subject of night vision, which in peacetime has interests of academic value; in wartime, however, the interest must be essentially practical and a contribution to the efficiency of the fighting Services. It follows, therefore, that any investigation of night vision among troops must endeavour to obtain information which will be of value to unit commanders in their conduct of operations.

Briefly such information will consist of: (1) The general state of night vision in the unit as a whole and also in comparison with other similar units. (2) The names of personnel whose night vision is above average and who are especially fitted for night patrols, night leadership, night "spotters," etc. (3) Picked drivers whose night vision is above average and who may safely be trusted to lead a column of vehicles at night in total darkness without lights. (4) Drivers who are night-vision-defective and dangerous in their present military occupations. (5) Contact with the unit as a whole enables an opinion on the general ophthalmic state to be given—e.g., what percentage should be sent for routine examination.

To obtain this information the military specialist in ophthalmology requires portable test apparatus, simple to work and robust in construction, which can be employed throughout the Army to give uniform and standard results. The co-operation of the unit commander is also essential, and, in our experience, is always willingly given in spite of disturbance to training programmes caused by our visits. Thanks to the initiative of the Consulting Ophthalmic Surgeon to the Army, Brigadier Sir Stewart Duke-Elder, the Army now possesses such apparatus, and our experience in 10,000 cases has proved that it fulfils the required criteria stated above.

The Army Night-vision Test

So far as is possible, in any night-vision test, the object is to stimulate the parafoveal and peripheral areas of the fundus. The test object, therefore, in the Army test is a large V mounted in five different positions on a translucent screen behind which is a small bulb run from a dry battery and controlled by a rheostat and voltmeter. The lamp is at varying distances from each of the five screens, which are arranged as an irregular pentagon. The whole apparatus can be rotated so as to bring one screen at a time in front of the patient.



The apparatus. (Drawing supplied by Theodore Hamblin, Ltd.)

Before examination the soldier is asked the following questions: (1) What is your age? (2) Have you any eye trouble and do you wear glasses? (3) How is your sight in the dark? (4) Do you live in the town or in the country? (5) What is your job in civilian life? (6) What is your job in the Army?

The subject sits at one metre from the apparatus and is rendered fully dark-adapted by wearing dark goggles for 30 minutes; at the end of this period these are cleared of moisture—a most essential procedure—and he then writes down the position of the five V's in turn; his night vision is accordingly assessed. If he sees all five V's his night vision is excellent; if he misses all five it is very bad. Thus, night vision 5/5 is excellent; 4/5, 3/5, 2/5, and 1/5 are average; 0/5 is poor.

All that is required for mass examination at the unit location is a dark Nissen hut divided in two by a curtain. On one side the test is conducted; on the other the men wait in their goggles, and clerical work is carried on with shaded lights.

Full dark adaptation is important: after examination the night vision is recorded in the soldier's personal documents, and a record of the entire unit is made, incorporating the previous questions. It is possible to examine 200 men daily with this test, tabulating results as follows:

TABLE I

No.	Rank	Name	Age	Civil Occupation	Army Occupation	Man's own Remarks	Score	T/C	G.
1234	Cpl.	?	29	Clerk	Driver	Fair	3/5	T	—

T/C=Town or country; G= whether or not the man wears glasses

Analysis

When the unit has been examined the results are carefully analysed, and classification into three main groups is made thus:

(A) Men whose night vision is above average—i.e., 5/5
(B) „ „ „ „ „ average—i.e., 4/5, 3/5, 2/5, 1/5
(C) „ „ „ „ „ below average—i.e., 0/5

The night-vision defectives are further analysed to indicate to the unit commander why these men have failed in the test; they are grouped according to four factors which have influenced their result—namely:

1. *Age.*—Experience has shown that most men over 30 years of age are both slow in the rate of dark adaptation and defective in night vision. This is a general statement for practical purposes and does not hold good in every case: it is adversely affected if the soldier has an error of refraction, and it is improved if he is well educated. After 30 years of age deterioration in night vision becomes marked with the passage of every year.

2. *Defective day vision* influences night vision by errors of refraction especially in myopia, corneal nebulae, familial defects, and other ocular diseases. For convenience and simplicity, all cases whose night-vision defect is thought to be due to any of these factors are placed in this group.

3. *Intelligence* plays a part: it is noticed that officers, headquarters companies, and the more intelligent types of men do well, whereas the man of the labourer class often fails because he does not grasp the significance of the test. The result, however, is not vitiated, as this is not the type of man one would choose for night operations demanding initiative. Careful investigation has shown that environment plays little part: it does not seem to matter whether a man is town-born or country-born, but the opinion was formed that miners were rather better than most of their class.

4. *"No explanation"* has sometimes to be noted when a man persistently fails and when none of the previous factors are in evidence. It may be due to steamy goggles or malingering.

When the unit report is complete it is sent to the commanding officer, and a star is placed against the names of men who are dangerous in their present military occupation—e.g., carrier drivers. An example of such a report is as follows:

Subject: Analysis of Night-vision Tests

To: Officer Commanding,
The Blankshire Regt.

I have the honour to forward the analysis of night-vision tests of your command, carried out on ....

Number tested	656	(622)
Number with excellent night vision—above average..	373	(298)
Number with poor night vision—below average ..	70	(80)

(Figures in parenthesis are those of another unit for comparison)

Assessment

(*a*) 5/5 is excellent, and indicates particular suitability for night operations.

(*b*) 0/5 is bad. Such cases are underlined in red, with a probable explanation written in red ink alongside.

(*c*) A star indicates that the soldier is dangerous in his present military occupation, which should be changed. (Very careful consideration is given to these cases.)

Remarks

The following factors influence the result of night-vision tests:

(1) *Age.*—Poor results are normal over the age of 30 years, especially if combined with day-vision defects.

(2) *Intelligence.*—Sometimes a soldier does not co-operate, although every encouragement is given. Poor results are always repeated.

(3) *Defective Vision.*—Soldiers wearing spectacles, etc., are always night-vision defective.

(4) *" No Explanation."*—Indicates a possible technical defect, such as steamy goggles, undue fatigue, etc.

Analysis of Night-vision Defectives

Number defective due to age	18 (37)
" " " " intelligence	14 (19)
" " " " vision	30 (22)
Number of men in whom no cause was obvious ..	9 (2)
Number who are dangerous in their present military occupation	1 (5)

It is interesting to note that in one unit two starred drivers had previously had minor accidents at night, a fact which emerged after their night-vision examination.

Results

The results of night-vision examination must always be viewed in their proper perspective, with a due sense of appreciation of a man's general training and efficiency. Failures must be repeatedly tested before being condemned, and change of occupation recommended only when the soldier himself, having a lack of confidence at night, has failed on the test and holds a responsible position. It is not difficult as a rule to detect the malingerer: the test is completely new and unfamiliar to him. Table II shows results of mass examinations, conducted by various surgeons:

TABLE II.—*Infantry Brigade. Percentage Analysis of Night-vision Tests*

Unit	Total	Over Average	Under Average
Regiment A	100%	31%	7%
" B	100%	29%	11%
" C	100%	32%	11%
" D	100%	33%	14%

Here it is seen that the over-average percentage is strikingly constant for each regiment—namely, about 31%—whereas the figures for night-vision defectives vary somewhat.

TABLE III.—*Percentage Analysis of Night-vision Defectives*

Unit	Total	Defective Vision	Age	Intelligence	No Explanation
Regiment A ..	100%	18%	19%	22%	19%
" B ..	100%	39%	21%	26%	14%
" C ..	100%	33%	19%	25%	25%
" D ..	100%	31%	44%	14%	12%

From Table III it will be noticed that Regiment A has a lower proportion of men who are defective on account of day-vision defects than has Regiment D; these regiments also show parallel figures where the night-vision defect is due to age. In point of fact, Regiment D was a regiment composed of older men and of lower grade than Regiment A, which was a battalion of young men. Regiments B and C may be taken as examples of an average unit.

In this command no treatment has been undertaken for night-vision defects; and apart from the remedy of day-vision defects it is difficult to see how the above figures could be altered. Up to date about 10,000 cases have been examined, and results of analysis comply with those figures obtained for a brigade.

Summary

An analytical and statistical report of night-vision tests in the Army is presented.

The method used, in this command, of making practical recommendations to unit commanders with a view to increased efficiency of night operations is described.

My thanks are due to brother officers who have done so much of this tedious work, Majors C. Heath and S. Smith, and Capt. I. Aubrey, *M.C.*; also to Brigadier Sir Stewart Duke-Elder for his encouragement and advice.

BAGASSOSIS

FURTHER NOTES OF FOUR CASES

BY

J. A. GILLISON, M.B., Ch.B.

AND

F. TAYLOR, M.B., B.S.

Drs. Castleden and Hamilton-Paterson described in the *Journal* of Oct. 24 (p. 478) "an industrial lung disease" which they called "bagassosis." Four men, all from the same factory and suffering from this condition, have been seen by us; two of them were the same as Cases III and IV discussed by the above contributors. Our interest was aroused, first, when one of the men related a series of symptoms which did not fit into any well-known clinical picture, and, secondly, when he remarked that several other men who had worked on his machine—a "bagasse-shredder"—had shown identical symptoms. We therefore asked to see these others.

Characteristic Symptoms

In reviewing our cases—their histories, symptoms, and clinical findings—we were struck by the close similarity existing between them, and by certain outstanding features which appeared to characterize this condition, hitherto unknown to us. These typical details seem worthy of additional emphasis, and are set out as follows:

(1) Each man showed an "incubation period" of approximately the same length, as the time of exposure to bagasse dust before the onset of acute symptoms was from two to four months in all cases.

(2) The acute phase of the illness was of sudden onset—e.g., one was riding home on his bicycle feeling quite well, when, 20 yards from his door, he suddenly felt "winded" and started coughing violently, reaching home with difficulty. Another, at work, "suddenly felt a tightening feeling across the front of the chest, and a severe hacking cough came on."

(3) The cough was particularly violent and continuous for several days.

(4) The sputum was described by the four men in the following colourful phrases: "Dark, and looked and tasted like rotted bagasse" "Green, blue, and dirty, with a foul smell." "Dark and yellow, with a burning taste." "Like manure."

(5) Three men described severe retrosternal pain coincident with the onset of cough and dyspnoea. This was aggravated by movement, and in one case was so severe as to stop his turning over in bed.

(6) All complained of great weakness, which continued for months: one, when "walking to the bus, had to keep stopping for support, was as weak as a kitten, and wished he were dead." Another "wanted to lie down, was hardly able to work at all, and thought he would collapse." Still another, after returning to work, was unable to go up the incline to the station platform.

(7) Less specific, but equally marked in each case, were mental depression and loss of weight and appetite.

Our physical examinations revealed nothing different from the findings of Drs. Castleden and Hamilton-Paterson. It was brought out, however, that exercise tolerance still remained decidedly poor in three of the men, long after the acute phase had passed. (One patient, Case III of previous paper, was noticed to have a central scotoma on the right, due to retinal atrophy—? incidental.)

Results of Investigation

Our investigations, less numerous than those made by Drs. Castleden and Hamilton-Paterson, consisted of *x* rays, bronchoscopy, and bacteriological examination of sputum and bagasse. These were kindly carried out at the London Chest Hospital by Drs. F. G. Wood, H. V. Morlock, and S. R. Gloyne respectively. All our cases were seen and investigated only in the later stages—1 to 1½ years after the acute onset.

In one case only was there decided x-ray evidence of disease. This was in the same man described by Dr. Castleden as his Case IV, whose x-ray film was reproduced as Fig. 8. Our film, taken three weeks after Dr. Castleden's, was identical. Dr. Castleden's interpretation is that this case "may be going to resolve or might progress to the fibrotic type of lesion seen in Case II." As the man had worked as a coal-miner for 20 years, is it not more likely that these persisting appearances are those to be expected? The radiologist reports: "General increase in striations in both lungs, the appearances being suggestive of silicosis in the reticular stage." The difficulty in interpreting radiological findings is emphasized by the fact that still another of our cases had been a coal-miner for 13 years.

Bronchoscopic examination showed: (i) Abnormal congestion of the trachea and bronchi; (ii) excessive white frothy mucus; (iii) glazing of mucosae more marked than normal. Examination of bronchoscopic swabs showed no moulds, but in one case "unidentified Gram-positive and Gram-negative bacilli"; in another, "Gram-positive bacilli only"; while a third was sterile—all organisms thought to be contaminations and not pathogenic. The crude fibre showed neither bacilli nor moulds.

An important aspect, other than the purely pathological, is the legal one. In all our cases the men had had a severe and prolonged illness, almost certainly as a result of inhaling the sugar-cane dust, and had lost many working hours. No payment under the Workmen's Compensation Act could apparently be claimed, as the disease is not a scheduled one.

It would seem that we have not sufficient knowledge of this new disease to lay down criteria by which compensation may be assessed. If Dr. Castleden's view is correct—namely, that some patients may develop a permanent lung fibrosis—the importance to the workman of scheduling the disease is clear.

Summary

Some characteristic symptoms following inhalation of bagasse dust are described; difficulties of radiological interpretation and the importance of scheduling the disease are mentioned.

Medical Memoranda

Unusual Skin Sensitivity

The following recent case of abnormal skin sensitivity may prove of interest.

Mrs. A., aged 35, saw me first in Dec., 1940, at my infirmary skin clinic. At that time she was suffering from a reactive eczema which she had had periodically since the age of 7. On going into her history I found that the eruption was much worse 7 days before a period, and began to clear when the period started. With this information I put her on to stilboestrol through her doctor, and I did not see her again until June 23, 1942. She then told me that for the past 18 months she had done very well, and eventually had ceased taking the stilboestrol, but now had a recurrence of her original eczema. I considered merely putting her back on to stilboestrol, but thought that oestroform might be used, as I have known a number of cases respond well to it. She was then ordered 20,000 units of oestroform twice weekly in the 7 days preceding a period. She had these, and a week later the eczema erupted violently, and there were swellings of the hands and feet and other parts, which alarmed her greatly. This reaction, however, lasted only a few days and then resolved, with vast improvement in the eczematous lesions.

I saw her on Sept. 10, when she gave me this remarkable history: While the previously mentioned reaction was taking place she felt her right leg above the knee on the inner side to be extremely hot, and when in bed she pressed the fingers of her left hand against it to relieve the condition. In the morning she was astonished to find that the outlines of all her fingers were visible on this area in the shape of a vesicular eruption. The thumb area was not so well marked, as pressure was not applied with the whole length of this, but all the other fingers were clearly outlined; in addition to this, it was a point of great interest to me to notice that where the wedding-ring had been pressed against the leg the skin was perfectly normal and appeared as an ordinary white band. The marks were clearly visible to me a fortnight later.

This, then, must be a case of sensitivity to her own skin with negative sensitivity to the gold of her wedding-ring, and, I am afraid, merely serves to add to the confusion in the problem of skin sensitivity.

ALLAN BIGHAM, M.D.,
Hon. Dermatologist, Bradford Royal Infirmary.

Reviews

DISEASES OF METABOLISM

Diseases of Metabolism. Detailed Methods of Diagnosis and Treatment A Text for the Practitioner. Edited by Garfield G. Duncan, M D (Pp 985; illustrated $12.00 or 60s.) Philadelphia and London: W. B. Saunders Company. 1942.

A generation ago medical textbooks contained a section entitled "Diseases of Unknown Causation," and a little later some of the items under that heading were separated off as "Diseases of Metabolism," adopting a word introduced into physiology by Michael Foster. That this sturdy infant has now reached adult stature is demonstrated by the book before us, which contains over 900 pages. A quotation from Leonardo da Vinci, "The body of everything that takes nourishment dies and is constantly reborn," strikes the keynote. Controversial matters are for the most part omitted, and certain limitations have been adopted as necessary. Thus endocrine disturbances have been included only when directly related to generally recognized metabolic diseases. On the other hand the subjects of nutrition and deficiency diseases find a place as being definitely linked with the subject of metabolism. An account of recent work on the lesser-known vitamins is included.

Of recent years increased attention has been given to mineral metabolism and water balance, and these two topics receive full consideration. The discussion of mercury as a diuretic may be taken as a sample of the style of the book. It is pointed out that although mercury is a general protoplasmic poison the obvious lesions are usually restricted to the gastro-intestinal tract and the kidney, where it causes epithelial necrosis. Diluted to an innocuous concentration in the blood stream, it passes into the glomerular filtrate of the kidney. As water is drawn from this filtrate by the tubules the concentration increases enough to coagulate the epithelial protein and thus checks reabsorption. The alimentary lesions are probably due to a similar process. These lesions are quite superficial and do not involve the basement membrane, so that they are reparable even when quite extensive. This is a useful reminder, however, that when we use mercurial diuretics we are invoking the aid of a pathological process. An interesting statement is made concerning diabetes in childhood, to the effect that in 90% puberty occurs at, or slightly earlier than, the normal time. This certainly would not have been true fifteen years ago. In the early days of insulin therapy, when a diet very restricted in carbohydrate content was the rule, these children were almost always wizened and late in developing. The change to a more ample diet covered by sufficient insulin dosage has certainly worked a great improvement in this respect.

The book is not crowded, as some are, with irrelevant illustrations, and the bibliography is confined within reasonable limits. It will prove a valuable book of reference, and a comparison of it with Von Noorden's great work in three volumes which appeared early in the century will show how completely the outlook on disorders of metabolism has changed in less than forty years. The editor tells us of the encouragement given by Sir Frederick Banting to his undertaking of this task, and the foreword was written by Sir Frederick only a few days before his untimely death.

PICTORIAL AIDS TO ANATOMY

Illustrations of Regional Anatomy. By E. B Jamieson, M.D. Fourth edition. Section I. Central Nervous System (50 plates. 8s 6d., plus 5d postage.) Section II Head and Neck. (64 plates 15s., plus 6d postage.) Section III. Abdomen. (43 plates. 7s 6d, plus 4d postage.) Section IV Pelvis (43 plates. 5s, plus 4d postage) Section V Thorax (33 plates. 5s., plus 4d. postage.) Section VI. Upper Limb Third edition. (42 plates. 8s 6d, plus 5d postage.) Section VII Lower Limb (52 plates 10s 6d, plus 6d postage) Bound volume 60s., plus 9d. postage. Edinburgh: E and S. Livingstone. 1942.

Notwithstanding a "disaster" which befell the production of the fourth edition of Sections I to V, and the third edition of Sections VI and VII, the printers succeeded in reprinting a new issue of E. B. Jamieson's well-known *Illustrations of Regional Anatomy* before the opening of the new winter session. These have been beautifully executed; 242 colour-blocks have been added, and some of the finer details of dissections have been reproduced on an enlarged scale. The colour in most of the illustrations is a great help in distinguishing the different parts, and with the very closely printed labels it materially helps in accomplishing the desired result—namely, "anatomy made easy." There is little to criticize in a work so carefully and accurately carried out. Attention may, however, be drawn to Section III, Plate 25, in which the coeliac and superior mesenteric arteries appear to be given off from the unopened abdominal aorta, whereas the "right" renal artery is depicted at its origin from the interior of the aorta; the right half of the aorta is shown below as it would be seen in a sagittal section, but no indication is given of the change from the sectioned to the unsectioned parts. A similar vagueness is present also in Section III, Plate 5, in which the arrow pointing to the blank space which represents the anterior wall of the femoral canal reminds one of the old query whether the term "canal" denotes the watercourse on which the ships sail or the earth-channel which confines the water. In Section VI some of the figures err in being too schematic, and are thus unreal. The general impression, however, which is given by the work is of reliability and an accurate knowledge of what the student needs in order to understand the relations of the dissected parts and obtain a visual knowledge of the general structure of the human body.

DENTAL SURGERY AND PATHOLOGY

Dental Surgery and Pathology By Sir J. F. Colyer, K.B.E., LL.D., F.R.C.S., L.D.S., and Evelyn Sprawson, *M.C.*, D.Sc., M.R.C.S., L.D.S. Eighth edition. (Pp. 1,067; illustrated. 45s.) London, New York, Toronto. Longmans, Green and Co. 1942.

The task of revising the original work of Sir Frank Colyer was undertaken by Mr. Evelyn Sprawson. It was a notable and important achievement, because since its first publication this has always been the textbook on dental surgery most used by the student. The new (8th) edition has incorporated recent researches and advances both in the theory and in the practice of dentistry, so that the vade-mecum of the student becomes the reference book of the practitioner. In this respect the comprehensive index at the end is most helpful. The early chapters are almost entirely devoted to the various anatomical abnormalities of the teeth and jaws—a dull subject, but one which must be digested by the student to appreciate the principles of orthodontics. These are clearly and simply illustrated, emphasizing the methods of treatment by extraction rather than by the appliances of some teachers. The latter two-thirds of the book has been almost completely rewritten since the reviewer was a student some twenty years ago, and leaves him impressed and even amazed at the painstaking analysis of recent research and published articles. The aetiology and pathology of dental disease are described in detail, and although space has restricted the discussion of treatment in some instances to general principles, there has been no omission of any recent therapeutic measure that has proved useful in practice.

The volume now runs into over a thousand pages and is heavy and uncomfortable to hold. The authors might well consider dividing the work into two volumes in a later edition.

WAR NURSERIES

Young Children in Wartime: A Year's Work in a Residential War Nursery By Dorothy Burlingham and Anna Freud. (Pp. 81. 1s. 6d.) London: George Allen and Unwin, Ltd. 1942.

To the harassed medical officer bewildered by the multiform difficulties arising out of nursery homes this report will come as a blessing. Not only does it describe the wholly admirable administration of a group of three nurseries (two residential and one for day children), but it includes—with an endearing lack of technical terms—an account of child development and psychopathology so simple and yet so profound that the unlearned in psychology and the experienced psychiatrist alike may read it with enjoyment and profit. The four sections deal respectively with statistics, nutrition, medical report, and a survey of psychological reactions. In the last of these sections, which occupies two-thirds of the whole booklet, the behaviour on which deductions are based is demonstrated with the clarity of a microbiological film. It is clear also, in spite of the restraint shown by the authors, that these nurseries are run with an efficiency, devotion, and human understanding that should serve as a model for others, whether in time of peace or of war.

Notes on Books

TASSMAN'S *Eye Manifestations of Internal Diseases* (Henry Kimpton; 48s.) deals with ocular disease not from the point of view of the physician but from that of the ophthalmologist seeking for a general factor in eye disturbance. The text is encyclopaedic in intention but not in execution. A large number of conditions are listed, but the description both of the conditions and of their correlations is sketchy. The book is essentially an elementary textbook of ophthalmology from which the surgical aspects have been omitted. Its chief value lies in the fact that it stresses, rather more than the standard textbooks, the general basis of ophthalmology.

The Board of Education and the Ministry of Health have issued an attractively illustrated booklet, entitled *Not Yet Five*, on the subject of children over 2 in wartime nurseries. The Departments hope that this will serve to enlighten the public generally on the work of the nurseries, and especially to create an interest in it among girls and women of 16 and upwards who are free to take up nursery work. The pamphlet can be obtained from H.M. Stationery Office through any bookseller, price 3d.

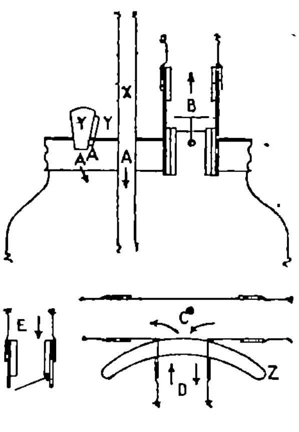
Preparations and Appliances

THE SERVICE ETHER VAPOUR APPARATUS

Capt. J. C. H. BROWN and Capt. W. E. COUNIHAN, R.A.M.C., send the following description:

This apparatus, originally called by its designer (J. C. H. B.) the "anaesthetist eliminator," was, as its name suggests, designed to be available for the single-handed medical officer when he had to administer the anaesthetic and then do the necessary surgical procedure. It has not been used as such by me (W. E. C.) in a military hospital, but I find uses for this apparatus, particularly in rush periods. A patient can be left with a degree of safety, and anaesthesia still continues. The sketch I hope will spare a deal of explanation, but the main points are as follows:

Ether container, a 2 lb. jar with a metal screw top. This lid has three inlet (air) perforations (A); one carries a metal tube (X), which can be adjusted to the level of the ether (liquid), the other two being controlled by corks (Y). The vapour is carried to, and away from, the patient by a 3/4 in. bore rubber tubing, which holds in its length a T-shaped metal angle (C), attached to which is an ordinary airway (D). The latter is guarded by a dental-wax mouth-cover (Z), to which head harness may be attached.



The valves are constructed in metal tubes, the inspiratory valve (tube B) being fixed to the metal screw top, the expiratory valve (tube E) fitting into the rubber tubing. The inspiratory valve is a light metal disk lying on a hub in its tube, and being kept in position by a metal pin and shot weight; the former is carried through a metal bar which extends across the lumen. The expiratory valve is a rubber disk screwed to a hub in its metal tube.

The apparatus can be assembled anywhere by a tinsmith, the necessary metal parts and valves being soldered in position. These valves are such that the apparatus is self-administering on inspiration, giving an intermittent flow of vapour with practically no rebreathing. The inspiratory valve unit is an original pattern so far as I can discover, and it will not easily corrode.

The designer (J. C. H. B.), of the Cunard White Star Line, induced patients with open ether, brought them to the stage of surgical anaesthesia, connected the apparatus, and controlled it thenceforth with a sterile forceps, and found it satisfactory. The apparatus has been used by me (W. E. C.) for induction by open ether, or pentothal and open ether, anaesthesia being continued by the patient and the depth controlled by the air entries. When anaesthesia is established the next case can be dealt with confidently without continuous personal attention.

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THE Rh FACTOR AND ISO-IMMUNIZATION

The discovery that iso-immunization—the immunization of one member of a species by an antigen lacking in himself but present naturally in another member of the species—may cause a haemolytic reaction in the recipient of transfused blood compatible according to the original A–B–O system of groups was bound to be of great importance at a time when so many blood transfusions are being given. But when the story is as exciting as is that of the Rh factor—the red-cell antigen most commonly involved in iso-immunization—and of the establishment of iso-immunization as the cause of erythroblastosis foetalis, the widespread interest shown in Rh by the medical profession and press is only to be expected. It provides one of the most fascinating chapters in the history of laboratory achievement, and began by the finding of Landsteiner and Wiener that the serum of a rabbit injected with the red blood cells of a rhesus monkey agglutinated the red cells of most, but not all, human beings. The positive and negative reactors are called Rh-positive and Rh-negative. Before long, antibodies in the serum of certain recipients who had reactions after blood transfusion were identified as anti-Rh. These recipients were all Rh-negative and either had received previous transfusions or were women who had recently been pregnant. They had been immunized by an earlier transfusion of Rh-positive blood, or, in parous women, by Rh antigen present in the foetus, so that transfusion with Rh-positive blood—and 85% of donors are Rh-positive—was almost certain to lead to trouble. When these reactions were observed in the mothers of babies suffering from erythroblastosis foetalis the connexion of iso-immunization with this condition was quickly established. It results from the iso-immunization of the mother by a red-cell antigen—in most cases Rh—lacking in the mother but present in the foetus and inherited from the father, and the subsequent passage through the placenta of the antibody formed by the mother to act on the susceptible blood of the foetus. These most important discoveries were all made in the U.S.A., and investigations described in this and last week's *Journal* by Boorman, Dodd, and Mollison, and by Taylor, Race, Prior, and Ikin, confirm the American work. Fortunately iso-immunization occurs in only a small proportion of the cases in which the groups of recipient and donor or of mother and foetus make iso-immunization possible; why this is so is not yet understood. Obviously the detection of Rh antibodies and the diagnosis of the Rh factor in red cells are of the highest importance in connexion with transfusions of whole blood where incompatibility due to Rh may occur, and in these cases it is desirable to give only Rh-negative blood. If the position is not certain it may be better to avoid whole blood and use plasma or serum. For transfusing an infant suffering from erythroblastosis, Rh-negative is better than Rh-positive blood; Rh-negative blood has been shown to survive longer. As the mother's blood contains the harmful antibody it should not be given. The ideal donor for such a baby would be Rh-negative, would never have had a transfusion, and would never have been pregnant. Anti-Rh has been found in the sera of women years after their last pregnancy.

Diagnosing the presence of Rh antigen and Rh antibody is a tricky business, and considerable experience is needed for success. Slide and tile techniques used by most people for blood-group reactions are very unsatisfactory in Rh work, and test-tubes are necessary. Incompatibility due to Rh will almost certainly be missed unless the direct matching of the recipient's serum and intended donor's cells has been performed in tubes; and it is advisable to seek Rh antibodies both at room and at body temperatures. With at least one serum containing Rh antibody, incompatibility with some Rh-positive donors would have been undetected if the tests had been made with undiluted serum; that reactions were seen only when the serum was suitably diluted suggests the advisability of performing the tests in the form of a titration.

The Rh factor is of great importance, and no doubt it will be shown to be the cause of many transfusion reactions otherwise unexplainable. But incompatibility due to Rh is far from being the only cause of transfusion reactions, and the antigens and antibodies of the A–B–O system of groups are potentially far more dangerous and will lead to far more reactions unless everything possible is done to avoid incompatibility. The need for careful and complete A–B–O grouping and adequate direct matching is as great as ever; enthusiasm for the new and intriguing Rh factor must not be allowed to lessen the appreciation of this need, and, actually, it ought to lead to revision of the methods used for direct matching.

PLANNING AND THE M.O.H.

When the Medical Planning Commission reassembles next week it will know what the organized groups which make up our profession think of the draft interim report which was laid before it by its various committees. Not the least important of these critical reports will be that of the Society of Medical Officers of Health, coming as it does from men and women of wide experience in administrative and preventive medicine, who are almost entirely whole-time salaried officers. There have now been published[1] not the final conclusions of the society but the recommendations which its own Medical Planning Committee has made to the branches and groups of the Society.

In certain fundamentals the proposals in this report are in line with those set out in the draft interim report of the Commission. It is recognized that the health and medical functions of the various Departments of Government should be brought within one central Government Department—a "real" Health Department. It is agreed that local departments should cover areas wider than those of many existing local authorities. Central and local unification form the administrative basis of the new order. But one finds no signs in this report of any wish to modify the existing "set-up" of local government, except by the creation of local medical advisory committees. Medical representation on local authorities or committees thereof is *not* one of the proposals. There is approval for the conception of the health centre as the focus of local personal health services. The family should be regarded as the health unit, and each general practitioner should have the care in health as well as in disease of a suitable number of persons. The family doctor would "participate" in maternity and child welfare and school medical work for the families under his charge. The number of practitioners working at a health centre would vary according to the type of area, with special arrangements in rural areas. Incidentally the authors of this report recommend that consultants should attend at regular times at health centres—a view which is not generally acceptable to the consultants themselves.

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[1] *Publ. Hlth.*, Sept., 1942.

The principle of unification of local services under a local authority being accepted, it follows that hospital services should be regarded as an integral part of local health services, and not administratively severed from them. Thus the duty of providing hospital services would be the function of the new local authorities in co-operation with the voluntary hospitals and, if necessary, with one another. The suggestion to create *ad hoc* hospital authorities for the administration of all local hospital services is rejected as something which would cause fresh confusion in a field where integration is essential. But it is recommended that all hospitals, voluntary and local authority, should be available for all members of the community on similar terms and conditions. As later proposals show, this in effect means that both types of hospital should be open to all sections of the community.

When we come to the question of staffing, the report diverges sharply from the majority view of the Planning Commission. Naturally, the approach to this question is that of the administrator. Administrative efficiency requires, it is argued, the elimination of private enterprise, as it is called, and the conduct of such services on a whole-time salaried basis. "Hitherto the doctor has been mainly interested in the illness of his patient, but it is of the first importance that his attention should be directed to the maintenance of health." In short the report recommends a national medical and health service on a whole-time salaried basis. Complete free choice, it appears, is not regarded as essential, though the maximum free choice, it is urged, should be given to patients in the selection of their doctors within the organization provided. The words "within the organization provided" will hardly satisfy those who believe that free choice cannot flourish within the confines of a whole-time salaried service. Ample opportunities for study and research would be afforded, especially in the direction of the maintenance and improvement of health, which, it is stated, "hardly thrive in an atmosphere of private competition." There is no direct comment on the arguments advanced by the majority of those responsible for the Commission's draft report that the "cold hand of bureaucratic control," with the doctor acting under the orders of the superior officers, would be inimical to the wise and humane administration of a personal health service. Presumably that and similar arguments are rejected. But in view of the condemnation of what is called private enterprise in medicine, it would be helpful to know whether medical officers of health regard competition for the favour of superior officers or committees as involving dangers as great as those of competition to attract patients. It is clear that they are not satisfied with the existing methods of making appointments, for they go on to recommend the creation of appointments boards to advise authorities in making appointments.

The report recognizes that it is one thing to elaborate a new service and another to create a new attitude of mind. Clearly the medical profession will need a new kind of education before really effective progress can be made. Indeed, there are some who think that if the efforts of planners were concentrated on the recasting of medical education the greatest good would be achieved, even without changes of a legislative or administrative character. The difficulties of the immediate future are recognized. For example, it is suggested that during the period of transition local authorities should be empowered, after consultation with the local medical profession, to determine which method or methods of staffing they consider most appropriate for the hospitals or health centres, or domiciliary practice, in the whole or parts of their area. This proposal has its dangers. A common standard of medical service would not be achieved by creating different standards among medical practitioners. The terms and conditions of any future medical service should be determined, not between individual local authorities and local units of the profession; but at the centre between the Government and the representative body of the profession. They should be determined at the beginning and not at the end.

At the conclusion of this war a large number of young medical men without experience of civilian practice will be seeking careers at home. We must plan for their re-absorption into the country's medical services. That means we must plan now. But it should not mean, and it must not be allowed to mean, that advantage should be taken of this situation to absorb these young men into a form of medical service which, though immediately attractive to the demobilized and maybe temporarily unemployed soldier, is not the best which the Government and the doctors can work out in free negotiation.

POPULATION PROBLEMS

To notice in the same article a report on a new housing estate[1] and a criticism of the Registrar-General[2] may seem bizarre; the connexion is, however, intimate. The report of the Birmingham Social Survey Committee on a sample of families in the Kingstanding Estate in 1939 reaches conclusions not fundamentally different from those drawn by other investigators, notably Mr. Rowntree. The scale of the investigation is small (269 families), but observations relate to a period of steady employment under the shadow of imminent war, and some sensible improvements of technique have been made. Once more the hardships of families with many children under the age of 14 are made manifest. More than 50% of families with 4 or more children under 14 are living on means below the sufficiency level when an absolutely Spartan standard of necessities is used (no holidays, no amusements, no tobacco, indestructible furniture). The percentage soars above 80 when a more realistic measure is used. Of all the children under 14 years of age, 31% were in families on or below the borderline by the first and 60% below sufficiency by the second measure. In other words, large families suffer great privations—a fact which members of the families knew without statistical investigations. Hence the popularity of birth control. A recent apparently well-informed article in the *Times* suggests that neither national enthusiasm nor dictatorial brutality has really had much effect on the effective fertility of the Reich. A brutally efficient Government with spies in every house can do a good deal to check abortions and something to encourage early marriages, but little else.

Dr. Kuczynski's pamphlet is largely a criticism of the memorandum on trends of population issued as a White Paper and the subject of recent controversy in the *Times*. One of the numerous evils of war is that official publications inevitably tend to be propagandist in tone. A broad distinction between enemy and Allied statistical propaganda is that the former makes equal use of the positive untruth and of the *suppressio veri*, while the latter eschews direct lying but is certainly not innocent of suppression. The objection to the memorandum was not that any important statement in it was inaccurate but that, to a general reader, the impression conveyed by it was misleading. Whether the retort—that the document was intended not for general readers but for statisticians—was adequate is a delicate question. There is much to be said for Dr. Percy Stocks's opinion (expressed in this *Journal* on March 21, 1942) that this is not the time to ventilate grounds for remoter fears, when immediate dangers are so pressing. But Dr. Kuczynski's memoir is much too arithmetical to find many readers in omnibuses, and should be read by publicists who are daunted by mathematics. It ought to deter them from that facile optimism they are so ready to denounce in others.

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[1] *Nutrition and Size of Family*. Report prepared for the Birmingham Social Survey Committee. (George Allen and Unwin. 2s. 6d.)

[2] *The New Population Statistics*. By R. R. Kuczynski (Cambridge University Press. 1s. 6d.)

It is obvious—to use a word which so often means "I cannot prove"—that population will decline unless the conditions mentioned in the first part of this article are remedied, and it is by no means obvious that if they were remedied the decline would be arrested. It is also, if not obvious, at least not very difficult to see, that short views are useless. It is preposterous to point to the fact that total population is not decreasing. The fundamental index —as many vital statisticians have pointed out, not least energetically Dr. Kuczynski—is whether the numbers physiologically capable of bearing children in this generation are replaced by equal numbers in the next generation. If they are not, there must ultimately be a decline which is only masked by the survivorship of those who can contribute nothing to the next generation. When Hamlet dies the play is over; Fortinbras marching across the stage with an army of supers does not affect the issue. It is arguable that, in planning a new world when the black-out curtains have been drawn for the last time, as much patient thinking ought to be devoted to the organization of life on the hypothesis that fertility will not increase, that the population will in fact decrease to a stable figure, as on ways and means of increasing fertility.

HOW MUCH VITAMIN D?

Earlier this year[1] we discussed in a leading article the important question of how much vitamin D should be given to children daily, and in particular doubted whether the official dose of cod-liver oil compound advised by the Ministry of Health was sufficient. "So far as can be made out from the label describing 'cod-liver oil compound,'" we stated, "the daily dose for children from 2 to 6 months old would supply a maximum of 180 units of vitamin D; for older children the maximum amount would be twice this." In estimating how much vitamin D an infant of 12 months would receive from various sources, we concluded that this would come to less than 500 units a day. In the 1936 *Addendum* to the pharmacopoeia the maximum prophylactic dose of vitamin D (calciferol) was given as 1,000 units a day for an infant. The concern that we expressed is now echoed by a special subcommittee of the British Paediatric Association, which has drawn up an informative memorandum on the subject. The subcommittee points out that the minimum requirement for infants and children is not known. According to the Technical Commission on Nutrition of the League of Nations (1938), infants need 400 to 500 international units (i.u.) daily, and therefore, according to this, the Government's prescription would appear to be an adequate supplement to what vitamin D is obtained from other sources. But, in view of rationing and of the wide fluctuations in the amounts of vitamin D in milk throughout the year, the cod-liver oil compound should contain the full daily requirement. The Committee on Food and Nutrition of the National Research Council of the U.S.A., and the Committee on Vitamins of the American Academy of Paediatrics, put the requirements of children from birth up to 15 years of age at from 400 to 800 i.u. daily. Eliot and Park,[2] however, recommend 800 to 1,000 i.u. daily for full-term infants. During the last ten years the prophylactic dose of vitamin D given at St. Bartholomew's Hospital has been 600 i.u. The subcommittee points out that the Government cod-liver oil compound would provide 200 i.u. daily for infants under 6 months, and 400 i.u. daily for older infants, taking the maximum dosage for the former as half a teaspoonful daily, and for the latter as one teaspoonful. It goes on to state, "It would be hard to find any authority with clinical experience to support so small a dose; moreover, it will be noted that infants under 6 months are allowed a smaller dose than older babies, which does not accord with their actual needs." It considers that a daily allowance of 700 i.u. of vitamin D would give a wider margin of safety, and suggests that a vitaminized oil should be reinforced with irradiated ergosterol—by which we presume calciferol is meant. Premature infants from birth to two years should receive a daily allowance of 1,400 i.u. The subcommittee makes the excellent recommendation that printed directions should be issued to the mother with the ration of vitamin D. This should tell her to start the oil gradually, beginning with a few drops daily when the infant is a month old, the full dose of one teaspoonful (700 i.u. daily) to be reached at the end of a fortnight. She should be told that a premature infant (i.e., one whose birth weight is below 5½ lb.) is particularly susceptible to rickets, and that the vitamin D supplement must therefore be doubled, to be given in four equal doses daily. Such a supplement should be given throughout both summer and winter. For infants weighing over 5½ lb at birth the mother should be told that the cod-liver oil need not be given on summer (presumably also sunny) days so long as the infant is out of doors morning and afternoon. A further practical common-sense and obvious recommendation is that the composition and vitamin content per dose of cod-liver oil compound should be given on the label for the information of doctors.

We need only add one comment, and that is that if the daily requirement of vitamin D for infants and children is not known exactly it would seem to be dangerous to recommend a minimum dose, and sound medicine should aim at a dose which, on the evidence available, provides a margin of safety.

JUVENILE DELINQUENCY TO-DAY

The appearance of a report on young offenders[3] was foreshadowed by a circular issued by the Home Office to magistrates sitting in juvenile courts. At the beginning of 1938 the Home Secretary decided to institute an investigation into the problem of juvenile crime, under the director of the London School of Economics, Prof. Carr-Saunders, assisted by two of its staff. A large mass of data from London and many provincial cities was collected and closely analysed, and this report gives an account of the conclusions. After a survey of the most valuable of previous investigations, which forms a useful bibliography for the research student, Dr. Mannheim discusses trends in the incidence of juvenile delinquency and the serious increase from 1933, the year in which the Children and Young Persons Act was passed, to 1938, the last year for which the statistics were reviewed. He summarizes Dr. Rhodes's earlier inquiry into the geographical aspect of the problem, and into the proportion of juvenile to adult crime. Dr. Rhodes himself deals with the present investigation under its various heads—the home, the boy himself and his age, the crime, and many other factors which enter into each case. In their conclusions the investigators lay stress on the influence of abnormal conditions in the home, especially broken families and step-parents. They find that the chance of a delinquent coming from a home with an abnormal atmosphere is three or four times as great as from a home with a normal atmosphere, if the structure of the family in both cases is normal. Where both atmosphere and structure are normal they find some association between delinquency and the condition of the home, overcrowding, and irregularity of the parents' employment. The children in the control group (a notable feature of this inquiry) had better records of school conduct and attainment and of attendance at church and Sunday school and were generally a "livelier lot" than the delinquents, who usually seem to be somewhat inferior or subnormal. The authors have not, however, found that any one factor is uniformly associated with delinquency and dissociated from innocence. They draw an interesting comparison between immunity to disease and the apparent immunity to delinquency which they found in some children living under conditions which often produced it. They indicate some lines along which a great deal of further inquiry is necessary. The psychological study which they had planned but could not carry out because of the war is long overdue. Statistical research should, they say, be regular and systematic, and the methods of treating juvenile delinquents should be continually and quantitatively investigated.

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[1] *British Medical Journal*, 1942, 1, 47.

[2] *Practice of Paediatrics*, edited by J. Brennemann and W F Prior, 1942.

[3] *Young Offenders: An Inquiry into Juvenile Delinquency* By A. M. Carr-Saunders, Hermann Mannheim, and E. C. Rhodes Cambridge University Press. (7s. 6d.)

SYNTHESIS OF ASCORBIC ACID BY ANIMAL TISSUES

All the animals which have been studied, except guinea-pigs, man and the other primates, and apparently all the higher plants, can synthesize vitamin C, but there is no certain evidence as to the nature of the substance or substances from which the vitamin is formed. The structure of ascorbic acid points to a carbohydrate precursor, and it has been reported by Ray[1] and various other workers that sprouting seeds produced additional ascorbic acid when glucose, fructose, or mannose was added to the medium in which they were growing. Hopkins and others[2] found that the average ascorbic acid contents of the intestinal wall and of the liver of rats receiving a normal mixed diet were the same. When carbohydrate was the only food the ascorbic acid content of the liver immediately became higher than that of the intestinal wall. When carbohydrates were absent from the diet the concentration in the liver fell and that in the intestines rose. No satisfactory explanation of this seemed to be available. Masulin and his co-workers[3] [4] found that vacuum-distillable fractions from the unsaponifiable matter of halibut-liver oil, oat oil, grass-leaf oil, and alfalfa-leaf oil given to rats caused a high excretion of ascorbic acid. Sterols, proteins, and sugars did not do this. The substances which caused the increase were so varied in structure (many terpene-like cyclic ketones and various aliphatic compounds) that it was concluded that they were not precursors of the ascorbic acid excreted, but that they stimulated the formation of ascorbic acid from intermediary metabolites. Smythe and King[5] found that tissue slices of liver, kidney, and brain, and muscle extracts or homogenized muscle, from rats which had been given chloretone for at least two weeks, showed evidence of ascorbic acid production *in vitro*, while those from normal rats gave less or no evidence of synthesis. Liver and kidney tissue were more active than brain or muscle. Maximum synthesis was obtained with a substrate consisting of a mixture of pyruvate, glyceric aldehyde, and hexose diphosphate. Mannose, glucose, and *l*-keto gulonic acid were ineffective. The quantities of ascorbic acid synthesized by tissues *in vitro* were enough to account for a large part of the ascorbic acid excreted by chloretone-fed animals, which was often as much as twenty times the amount normally excreted.

NIGHT VISION

It is now recognized that dark adaptation and the determination of threshold values give but a partial analysis of what Air Commodore P. C. Livingstone[6] terms "night visual capacity." The appreciation of form in low illumination is of considerable significance, and is to a great extent a psychological act, some people guessing or construing the form fairly readily, while others do not become aware of the form unless they have much more data at their disposal. These are points of obvious importance in the selection of men in the flying Services. Rigid testing by apparatus for some particular function rather than for the sum total of night visual capacity has therefore proved insufficient. Livingstone describes an apparatus in use by the R.A.F. which is constructed so as to give an approximation to natural conditions rather than to test isolated functions. Perfect muscle balance, at one time regarded as an absolute requirement, has in actual practice proved to be less necessary than it was previously held to be. The experience of one-eyed pilots is in itself sufficient criticism of the older conception, and Livingstone, discussing the components of the physiological consequences of binocular muscle balance, draws a distinction between stereoscopic appreciation, depth perception, and parallax. Here, too, apparatus designed to test these functions in conditions of night landing had to be designed, and Livingstone stresses the fact that, whilst acquired heterophoria is a definite cause of inconsistency in landing aircraft, the inherent type exercises an adverse effect only when the condition is pronounced. Views on the physiology of night vision appear to parallel those on colour vision. When the problems of colour vision as applied to the exigencies of navigation and railroads were first formulated, serious mistakes were made in transferring laboratory findings to the complex situations actually present in life. Further experience made it necessary to evolve tests more conforming to natural conditions, with the result that standards of rejection became more stringent in some directions and less stringent in others As Major B. W. Rycroft observes in our present issue. "The results of night-vision examination must always be viewed in their proper perspective, with a due sense of appreciation of a man's general training and efficiency." In his analysis of failures Rycroft refers, under the heading of "No Explanation," to "steamy goggles or malingering." That one of the causes of such failures is a psychological disorder was shown in the elaborate study undertaken by Wittkower and his colleagues, the results of which were published in this *Journal*[7] just a year ago.

We much regret to announce the death of Sir Norman Walker, late President of the General Medical Council.

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[1] *Biochem. J.*, 1934, **28**, 996.
[2] Ibid., 1935, **29**, 2803.
[3] *J. biol. Chem.*, 1939, **129**, 437.
[4] Ibid., p. 445.
[5] Ibid., 1942, **142**, 529.
[6] *Irish J. med. Sci.*, 1942, **198**, 177.
[7] *British Medical Journal*, 1941, **2**, 571, 607.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

FOOD POISONING

BY

Sir WILLIAM SAVAGE, M.D., B.Sc.

When we talk about food poisoning we mean acute poisoning. In a technical sense typhoid fever, if the infection is carried in food, is food poisoning, but by usage we mean by food poisoning an illness of comparatively sudden onset following the ingestion of some infected type of food.

Classification of Causative Factors

As regards causation the first is the inherent group—i.e., foods which are inherently poisonous. This applies to many fish found in Continental waters. Ergot could be included, and the best example is, of course, the mushroom, certain types of which are inherently poisonous. The second group consists of comparatively simple chemical poisoning, such as by lead and zinc. I have had to do with an outbreak of poisoning which was due to zinc containers used for cooking apples. A number of cases of antimony poisoning have occurred owing to lemonade and other soft drinks being made in enamelled vessels in which antimony has been used. Lead poisoning among cider drinkers used to be common in certain parts of England, and was, indeed, called Devonshire colic. I have come across cases of poisoning caused by the accidental inclusion of belladonna among the sage with which a hare had been stuffed. Those are all examples of chemical food poisoning. You can recognize them, by the special symptoms of the particular chemical—lead, antimony, or zinc, as the case may be—which is involved, and, as a rule, by the short incubation period.

The third group is the large class of bacterial poisons. I have not space to say more about the first two groups, but will deal here with the bacterial group. We can divide the bacteria into four types. The commonest are the various members of the Salmonella genus; then comes a small second group caused by allied organisms, such as those of dysentery. Mr. Bruce White and I first showed that two or three outbreaks were caused by dysentery organisms, and a few years ago a food-poisoning outbreak due to ice-cream which I investigated was found to be due to the Sonne dysentery bacillus. The third group includes certain organisms, now becoming rather important, which act by producing toxins which cause food poisoning. The commonest of these are certain staphylococci—not all staphylococci, but some of them. A few streptococci are also known to have produced this peculiar toxin, and it is fairly certain that there are other organisms with this property. There is an inclination to ascribe many outbreaks of food poisoning to *B. proteus*. Whenever you get decomposing food you invariably find this organism, and the natural tendency is to suppose that it is the cause of the poisoning; but in the very rare instances when it is the cause this is only because the particular strain involved produces such a special toxin, and I believe this very rarely occurs. The fourth group is *Clostridium botulinum* (botulism).

I want to say a word about the things which do not cause food poisoning, and particularly to emphasize that putrefactive organisms do not cause such poisoning. In the lay press, and sometimes, rather disgracefully, in textbooks, we still hear of ptomaine poisoning. There is no such thing as ptomaine poisoning. The concept arose in this way. It was found that when meat putrefied badly crystalline alkaloidal bodies were formed which, when injected into laboratory animals, brought about death with extreme rapidity, and it was assumed that these ptomaines were the cause of food poisoning. This is incorrect. They are late degradation products of food putrefaction, and no one would care to eat meat when it had reached that stage. Further, these effects were produced by *injecting* animals, whereas if the ptomaines were fed to the animals *by mouth*, which is the way poisoning develops, nothing in particular occurred. Putrefaction as such is not a cause of food poisoning. Food poisoning is always due to specific causes—e.g., specific bacteria.

Staphylococcus Food Poisoning

Within the last few years it has been recognized that certain staphylococci can produce food poisoning. They may be contained in any vehicle, but the records show that more than half of these outbreaks arose from cream cakes, éclairs, and things of that kind. The first described outbreak was in the Philippines and was due to infected milk. Cream or custard fillings have been responsible for well over half the number of these outbreaks.

The interesting point about staphylococcus poisoning is that no particular type of staphylococcus is responsible. One cannot say, for example, that the haemolytic staphylococcus acts in that way more than any other type. It is not a specific type. We all know that staphylococci produce a number of different toxins such as haemolysin. These particular strains—and there are comparatively few of them—produce another kind of toxin which we call enterotoxin. Why some staphylococci produce enterotoxin and others do not, nobody knows. They do not constitute a particular group which one can type out and say that these are food-poisoning staphylococci. We know that the presence of starch enhances the virulence of the toxin, and we can take an organism of very low potency and increase its potency by growing it in a starch medium. We know that it produces these effects because we can demonstrate them in sterile filtrates. We do not find this type of food poisoning with merely the presence of a few staphylococci, but usually only when the organisms are present in considerable numbers.

In the early days this association was doubted, and it was only possible to prove it by the fact that volunteers came forward to drink a cultured broth filtrate. Drinking, perhaps, 15 to 20 c.cm. of this filtrate, a considerable proportion of them developed the symptoms of staphylococcus food poisoning. These are, generally mildish—nausea, vomiting, and diarrhoea. Having proved it in that way, it was found that if rhesus monkeys were fed on this filtrate they also developed vomiting, but they are not quite so susceptible as man. Lately (this is of practical importance if one is dealing with an epidemic) a reliable test is to make an intraperitoneal injection of the filtrate into young kittens, which show characteristic symptoms. There are bouts of vomiting, general distress, and usually death within a few days. Volunteers, or a monkey, may not always be forthcoming, but we may be able to get a kitten and inject a fair dose of the filtrate intraperitoneally.

The same facts apply to other organisms which produce this type of outbreak. *B. proteus* and streptococci have been mentioned, while outbreaks have been ascribed to *B. coli* and in one or two instances to sporing aerobes. In any individual outbreak such an association can only be accepted with considerable reserve. Not only must the organism be present in large numbers in the implicated food but it must be proved to be a strain which produces enterotoxin. While the demonstration of enterotoxin by the kitten test is suggestive that the strain which produces it is potentially a cause of food poisoning, we are not yet in a position to assert that proof is complete that the strain was responsible for a particular outbreak. Probably enterotoxin production, based on the kitten test, occurs with strains which never cause food poisoning. Quantitative factors enter into the question, and usually the presence of very large numbers of the enterotoxin-producing strain seems to be an essential factor in the ability to set up food poisoning. This toxin is heat-resistant.

I would emphasize that one of the most important facts to ascertain in investigating food-poisoning outbreaks is the interval between the eating of the food and the onset of symptoms. It is one of the vital clues to the type of food poisoning to be investigated. If you have persons who are ill twelve, fifteen, or twenty-four hours after taking food you can be certain you are not dealing with a toxin outbreak.

So much for the staphylococcus type, which may be encountered anywhere in connexion with the feeding of troops or in civil life and which seems to be getting more widely recognized and possibly more common.

Salmonella Food Poisoning

I pass to the Salmonella type. This type used to cause about 70% of the outbreaks in Great Britain. Those of you who are bacteriologists know that there are a great many types of Salmonella. When I started to work on food poisoning forty years ago there were three known types. There are now over eighty recognized types of Salmonella, each said to be different from the rest. It is necessary to remember that only some of them cause food poisoning. Some cause disease in animals only, others in man only, and some cause disease in both man and animals, and it is the last which are responsible for food poisoning. For example, *B paratyphosus* B causes paratyphoid fever but not food poisoning, except possibly in extremely rare instances. In the same way *B. equii* causes disease in horses but not food poisoning. The types which produce food poisoning in man are types which are responsible for disease in both man and animals.

This is not a public health lecture, and I am not going to say more about the large numbers of types except that they are important in later on eliciting the source of the outbreak because each type tends to have its particular habitats. To mention but one example. The Dublin variety of *B. enteritidis* is a bovine type and occurs mainly in calves. That is the type which may be found in milk; and there have been a number of food-poisoning outbreaks from milk due to this strain. On the public health side it is exceedingly important to discover the particular strain, but from the immediate practical point of view it does not matter; they all cause the same symptoms. It cannot be said that one type produces one type of symptoms and one another. True, *B. enteritidis* (Dublin) as a rule causes a mild type, but clinically and pathologically they are indistinguishable in their effects.

There are the following reasons why Salmonellas are so much concerned with food poisoning. The types that cause it are undoubtedly gastro-intestinal irritants, setting up inflammation of the stomach and duodenum and the first part of the tract beyond, and these show redness and signs of irritation. They produce heat-resisting toxins. They grow rapidly on suitable food and, doing so, cause no physical changes in the food. Obviously an organism which can camouflage itself in that way is much more likely to cause food poisoning than one that gives rise to an odour.

Botulism

Botulism is entirely a thing on its own. There are two well-recognized types—A and B—and there is also a C type. It is necessary to remember the types, because if an outbreak of botulism occurs it is of no use to give B antitoxin to a person who is down with Type A. *Cl. botulinum* is a sporing anaerobe which produces perhaps the most powerful toxin we know. There are three things to consider—the bacillus, the spore, and the toxin; and botulism is best understood by examining the salient points of each of these, including the relative resistance. The bacillus and its toxin show no particular resistance to heat. The bacillus is killed, like any non-sporing bacillus, by twenty minutes or so at 60° C. The toxins have no special resistance to heat, but the spores are among the most resistant spores we know, therefore they are apt to survive in heated foodstuffs. The spores as such are not toxic, and if one takes a million spores and washes them so that they have no toxic element, animal experiments suggest they can be swallowed without hurt, provided conditions are not such that they can turn into the vegetative form. Under favourable conditions the bacillus produces toxins which are able to be absorbed from the alimentary tract and to exert their influence on the nervous system. The bacillus is a true anaerobe, and therefore occurs under anaerobic conditions. It is a natural soil inhabitant and, curiously enough, it is found more often in virgin than in contaminated soil. A great many years ago I sent numerous samples of soil from England to Professor Mayer in California, and spores were found in five out of about eighty.

The earlier outbreaks of botulism were in connexion with foods like ham, bacon, and sausages. In a bacon factory the hams are placed one on top of the other; they therefore do not get much air, and if any are contaminated with infected soil the bacillus may grow and produce its toxins. Then there was an alarming wave of botulism in the United States in connexion with canned foods, particularly in California, where the soil is considerably contaminated with this organism. In consequence the factors of heat resistance of this organism have now been worked out very thoroughly, and canners are told in regard to each product exactly to what extent to heat so as to be sure of killing the organism. This varies with the kind of food: for example, lower temperatures are permissible with acid foods. In consequence this danger from commercially canned foods has been removed. The bacillus is a proteolytic organism, which means that it decomposes proteins and breaks them down, giving off an offensive odour. A sour sort of smell is characteristic. It is not invariably present, because it is possible to have a stage at which the proteolytic changes are not sufficiently advanced to give obtrusive signs, although enough toxin has been produced to render the food very poisonous. As a rule both changes are present together.

The Loch Maree outbreak of botulism was due to sandwiches containing wild-duck paste. The eight people who ate those sandwiches died. The cook said she did not notice any changes in the paste, which is natural because wild duck has an odour of its own and, not being a technical person, she might not easily notice any difference. But when, in the laboratory, we inoculated tins of the paste with *Cl. botulinum* and incubated them, we could later readily detect definite changes.

Incidentally, the decomposition changes explain why we have a considerable number of single cases of botulin poisoning. The woman of the house opens a tin, notices that it does not appear good, but takes one spoonful herself to clear up the point. She discovers that it is not sound and throws it away. She dies, but the other members of the family are unaffected.

The organism acts on the peripheral nervous system; it is not a gastro-intestinal irritant. In the initial stages in certain cases there may be gastro-intestinal symptoms—some nausea, vomiting, and diarrhoea—for the first twelve or twenty-four hours, but these pass away. These symptoms are probably due either to a mixed infection or to the proteolytic products causing slight gastro-intestinal disturbance and are not part of the toxic action. The most characteristic symptoms are the following: disturbance of vision appears early, including dimness of vision, mydriasis, diplopia, and loss of reflex to light stimulation; later there is complete loss of accommodation. Another group consists of a feeling of throat constriction and difficulty in swallowing and talking. There may be complete paralysis of the pharyngeal muscles. Eventually there is complete aphonia. General muscular weakness is a characteristic feature, while there may be incoordination of muscle movement. Inhibition of the secretions is characteristic, and especially so is a dry mouth and pharynx.

It is of value to realize that certain symptoms are not found. While in the initial stage diarrhoea may occur, the characteristic feature is marked constipation, and there is an absence of any rise in temperature. Sensory disturbances, including pain, are entirely absent.

The Loch Maree outbreak was the first in Great Britain; since then there have been about three little outbreaks, and that is all we have had. Botulism is a thing to look out for, but it is very rare in Great Britain and comparatively infrequent everywhere.

(*This paper will be concluded in next week's issue*)

Deaths due to air raids are not normally reported to coroners, and therefore the figures for coroners' inquests in London are no longer a reflection of the number of unnatural deaths. During 1941 the number of deaths reported to London coroners was 8,181, a decrease of nearly 2,000 upon the year before. Of this number just over 3,000 deaths occurred in hospitals and other institutions. The number of people who met their death by accident was 1,253, being 442 fewer than in 1940. The cases of suicide—348—were 190 fewer than in the previous year. Seven verdicts of murder were returned, compared with three in 1940. The deaths due to excessive drinking numbered 44, again a decline on the previous year. In only 6 cases was the verdict returned "Cause of death unknown."

Reports of Societies

FUTURE STATUS OF PHYSICAL MEDICINE

In his presidential address to the Section of Physical Medicine of the Royal Society of Medicine on Oct. 14 Dr. P. BAUWENS discussed the status, present and future, of physical medicine.

Physical medicine in pre-war days, he said, was "rather shapeless and unsatisfactory." Efforts to enhance its position within the existing scheme of medicine and surgery proved disappointing. Many of its practitioners still worked in their departments in hospitals in subordinate positions without full staff status or direct representation on medical committees. One mistake, in his opinion, was made when the Physical Medicine Group of the B.M.A. defined not physical medicine nor its scope or functions but its practitioners, whom it described as "primarily physicians who have a specialized knowledge of the use and application of methods employed in the practice of physical medicine." To inaugurate something, no matter what, by arrogating to oneself a title which could never be accepted by common consent was no mean error.

With the war the demands for physiotherapy were multiplied, but those demands, said Dr. Bauwens, must not be interpreted as a normal development such as might be expected to result from scientific achievement. It seemed to him necessary to start planning—or, rather, replanning, because it existed already in a rather ramshackle form—the physical medicine of the future. The first step should be to recant the definition of the practitioner of physical medicine and replace it by a definition of physical medicine itself. If it was defined as that branch of medical science which was concerned with the maintenance of health and management of diseases and injuries by means of physical methods, the implication clearly was that it served all aspects of medicine and surgery. There was no branch in which physical methods, either diagnostic or therapeutic, had not some application. But physiotherapy departments ran solely by the grace of orthopaedic departments, phototherapy departments were almost exclusively dermatological, electrotherapy departments led a much-resented parasitic existence in *x*-ray rooms, and whole physical medicine departments ran entirely as centres for the treatment of rheumatic and allied conditions. This was deplorable, at least in general hospitals, but it must not be assumed that the rest of the profession were entirely to blame for these tutelages. On paper the "physical medicine man" as a specialist was "not a very attractive proposition," and the principle of "you offer nothing and so you get nothing" had been responsible for the dearth of attractive posts, and the lack of young men choosing this specialty as a career.

Qualifying Examination and Diploma

The escape from this impasse was a special qualification denoting a knowledge of physics, of the effects of physical agents on tissues in health and disease, and of anatomy and physiology applied to movement. A diploma should be created. The discontinuance of the D.M.R.E. Cambridge was regrettable in some ways, but when teaching or examining for the medical electrology part of that diploma he had felt that electrology had outgrown its usefulness as a partner of medical radiology. With the establishment of a diploma in physical medicine, institutions might become aware of the shortsightedness of separating its various sections or running them as dependencies of other departments. That physical medicine in the future would be almost exclusively institutional must be expected. Probably it would exist as special departments in hospitals, health centres, nursing homes, and in connexion with non-medical institutions such as schools and factories. The effect of a supply of medical officers with special qualifications to direct these would be far-reaching and would lead to a higher standard of work, the disappearance of pseudo-science, improved status, standardization of methods, and uniformity in teaching, all of which were sadly wanting at the present time. While Dr. Bauwens was averse from a conception which represented physical medicine as a system of medicine based on special methods of diagnosis and treatment, thus putting it on a level with osteopathy and chiropractic, he equally resented the suggestion that it was in any way menial. It sh regarded as a co-operative branch of medicine.

Some form of higher qualification was desirable to en original research. A faculty of physical medicine m formed, with the diploma as a qualification of meml and a thesis based on some original work of value as a qu tion for fellowship. In due time this might give bir chair of physical medicine, but he declined to estim gestation period.

NUTRITIONAL ANAEMIA IN CHILDREN WOMEN

A discussion on nutritional anaemia in children and considered as a wartime problem, took place at the Sec Disease of Children of the Royal Society of Medic Oct. 23.

Dr. HELEN MACKAY said that anaemia in the infant, in part, was the result of anaemia in the mother pregnancy. A drop of 10 to 15% in the mean haemoglobi in infants was certainly significant of deterioration in being. Before the war the only British investigator published average figures for haemoglobin levels for a up to the adult were Davidson and his co-workers in Abe their investigations were made during economic depressi referred to the lowest economic class. Since last autur and Dr. Lucy Wills had estimated haemoglobin levels children and 550 women, nearly all of the working class found the largest number of cases of severe anaemia age group 6 months to 2 years. Of school children exa 90% had an average haemoglobin level of about 80% some 10% were lower than even the Davidson series o children before the war. In a series of school childre 7 to 11, with a mean haemoglobin level of about 85%, ment with iron or the provision of school dinners pro a significant rise, although the rate of rise was slow. Ch of higher economic status in a London suburb wer examined, but here those who were having school dinne not show a higher haemoglobin level than the others. A group of factory girls working in a country town and in their own homes had a higher level than any other examined last winter, perhaps because they had acc country produce; but a very low haemoglobin level was in a group of nurses and students working in the countr living in either hospital or billets with no adequate ca facilities. The mean for these was actually 5.5% lowe Davidson's mean for Aberdeen in 1931-5. Many clas the community showed a levelling down of haemoglobin the outbreak of war, though this must be offset amon poorer section of the community by a levelling up as a of the disappearance of unemployment, the introducti rationing, and the system of priorities for certain grou women and children. She suggested that iron therap iron prophylaxis should be widely employed, althoug deficiency was probably not the only factor operating.

The Blood as an Index of Health

Dr. LEONARD FINDLAY said that it was a pity that so of this work was restricted to haemoglobin levels; the re count was more dependable. Recently he had had an o tunity of examining 400 children at Oxford, and found a considerable number of the estimations of both haemo and the red cells were below the normal level. This p health of the child resident in Oxford and its environ most unexpected. If it was due to a dietetic fault, the was a peculiar one, because it allowed anaemia to de while at the same time apparently—to judge from other in gations of a more general character—the height and w of school children showed no deterioration, but rathe reverse, under wartime conditions. He had been additional iron for prolonged periods, but, roughly, he found no difference between those treated with iron and not so treated. In some there was a slight rise in haemo at the beginning of treatment, but it went down after weeks, and remained down even though the same or a dose of iron were given. It was not to be concluded th highest point to which haemoglobin could be raised necessarily the physiological level. It seemed more pro that the iron exerted a stimulating effect, to which, however, the haemopoietic system soon became accustomed. He ascribed the variations he had obtained more to environmental than to dietetic conditions. His conclusion was that the blood picture was not a true reflection of the state of health of the child. A well-developed child might have even lower haemoglobin and red cell values than an ill-developed child. Nor was the blood picture necessarily an index to the iron content of the diet. Iron administered considerably in excess of the body's requirements caused, as a rule, no permanent rise in haemoglobin level. In medicinal doses iron had an irritant effect on the haemopoietic system, and the highest values reached were not maintained.

Iron in the Dietary

Dr. **Hugh Sinclair** agreed that haemoglobin values were somewhat untrustworthy. He gave the figures for nutritional surveys in Oxford and other towns, and said that the results supported Dr. Mackay's contention that there was anaemia, presumably nutritional, among women, though iron was not necessarily the whole story. Rationing had produced a shift towards bread and potatoes and other vegetables, and away from fish, eggs, and meat, so that the iron intake was probably lower than before the war. A dietitian in Oxford had made a preliminary analysis of the diets of 22 families covered by the survey in 1941 and again in 1942. The main difference as between the two periods was the introduction of national wheatmeal bread. In these families it might appear from a study of the food consumed that iron intake had greatly increased. In 1941 it was below the League of Nations standard—not a high one—and in 1942 above it, but it was probable that the considerable increase of iron in the dietary was not very relevant, because in so far as it was accounted for by national wheatmeal flour it was not available owing to the presence of a large amount of phytic acid. Dr. Sinclair also mentioned an investigation into the use of iron cooking utensils. If a potato were cooked in an iron vessel for about 20 minutes, 3 mg. of iron per helping was obtained, or slightly more than with an aluminium vessel, but if an apple were boiled in an iron vessel for only 5 minutes, 19 mg. of iron would be found in the apple, whereas with aluminium the quantity was negligible.

In further discussion Dr. R. H. **Dobbs** and Prof. R. **Ellis** mentioned difficulties in obtaining accurate haemoglobin estimation, especially in cold weather when extremities were "blue." A short paper was read on behalf of Prof. L. S. P. **Davidson** showing low figures for haemoglobin among 831 infants and children of working-class families in Edinburgh. Dr. C. F. **Brockington** considered that, contradictory as the evidence might be with regard to the absorption of iron from the diet, a measure of fortification of the dietary in iron constituents should be undertaken. Dr. J. **Yudkin** said that the haemoglobin levels for some 1,100 Cambridge school children were very good, but some Scottish results with which he had also been concerned were poorer. Dr. **Marshall** described the results of 400 estimations made on blood donors at a blood storage depot. The average figure for men was about 100%, and for women during the reproductive period of life 82%.

Dr. **Helen Mackay**, in reply, said that there might be seasonal variations in the haemoglobin level. Dr. Findlay's findings and her own differed profoundly in many respects. She had found, contrary to his experience, that the haemoglobin levels of infants could be kept up satisfactorily by giving iron, not for a period of weeks but for many months, and she believed that these findings had been confirmed in other parts of the world.

D. Skinner and C. S. Keefer (*Arch. intern. Med.*, 1941, **68**, 851) record their observations on 122 cases of *Staphylococcus aureus* bacteriaemia with a review of the literature on experimental infection in animals. Only 22 recovered—a mortality of 81.97%. There was no correlation between the season of the year or the sex of the patient and the occurrence of bacteriaemia. Most of the patients who recovered were under 30. The most frequent portals of entry were the skin, respiratory tract, bones, and genito-urinary tract. Most of the deaths took place in the first ten days. The most constant feature was high remittent fever. Secondary infection took place in 82%.

Correspondence

Prevention of Small-pox

Sir,—The letter on vaccination against small-pox from Dr Killick Millard (Oct. 31, p. 530) is typical of the prejudiced point of view of present-day anti-vaccinationists. It contains several misstatements which should be corrected.

Vaccination is not "a serious operation," and in my experience it causes considerably less discomfort and incapacity than the usual injections for immunization against diphtheria. Why the prompt and effective steps taken by the M.O.H. for Glasgow to prevent spread of small-pox in that city should have caused a "scare and public alarm" I fail to see. Has the present nation-wide campaign by the Ministry of Health to induce parents to have their children immunized produced such a psychological upset or affected productive efficiency? Again I fail to see it. Would even Dr. Millard on that account advocate discontinuance of general immunization? Surely our aims in the future, as stated by the Medical Planning Commission, must be the attainment of positive health and the prevention of disease, especially such as those mentioned with high mortality and infectiveness.

We are to-day in the position of being exposed more than ever to a country-wide outbreak of small-pox as men return from the East and travel by air becomes general. It is time that the Ministry of Health drew up a campaign for universal vaccination on the same lines as that now being conducted for immunization against diphtheria. Perhaps the two could be coupled up?—I am, etc.,

Tredegar, Mon ARTHUR HOWARD

Vitamins and Capacity for Work

Sir,—I am very interested in your leading article on vitamins and capacity for work (Oct. 24, p. 485), and especially your mention of the Mayo experiments, of which I was unaware. I have been trying vitamin B_1 on the accident-prone. I found a great deal of nervous instability among this group and wondered if it was associated with deficiency of vitamin B_1. I therefore chose ten with the greatest number of entries in the accident book, and my firm readily agreed to supply them with tab. aneurin hydrochlor. 3 mg. three times a day for 100 days. Unfortunately, at the end of two months only six of the patients were continuing to take the tablets, so I decided to note the number of their accident entries during these 60 days and also those in the preceding 60 days. The results were as follows: A, 5—1; B, 5—2; C, 7—4; D, 6—2; E, 12—6; F, 3—0. Thus all had a smaller number of entries while taking the tablets, and the total number fell from 38 to 15.

I had planned to repeat the experiment with greater numbers and with controls to eliminate the effects of suggestion, but so far pressure of work has prevented this.—I am, etc.,

Stroud. H. W. HILLS.

What is "Sterile Blood"?

Sir,—I read with great interest Prof. M. R. Drennan's letter (Oct. 31, p. 526) on this subject. I have no experience of the microscopical characteristics of "sterile blood," but the observations Prof. Drennan has made appear to correspond to certain observations I have made on the microscopical appearances of fresh blood films.

An article entitled "Examination of Fresh Blood Films, with Special Reference to Haemoconia" appeared in the *Journal* in 1907—a long time ago, but which I considered of some importance and still relative to many questions under review to-day. Prof. Drennan refers to the "spinning" of the granules of the cytoplasm in white blood corpuscles, and as the white cell breaks up these spinning bodies can be seen floating free in the blood serum. He also refers to "other highly motile bodies in disintegrating sterile blood." These phenomena and many more can be observed in examination of fresh blood films, and can be watched until complete disintegration of the corpuscular elements occurs. This I found took place in about ten days, and was dependent on protecting the film so far as possible from contact with the air. The method I used was to put a drop of blood on a cover-glass and immediately to place it on a glass slide, protecting the cover-glass from the air by ringing it with rubber solution. Examination of the film was made by dark-ground illumination several times a day. By such a method complete disintegration of the corpuscular elements could be observed with many enlightening phenomena. The film must be kept in cool surroundings or disintegration will be more rapid and difficult to follow. If Prof. Drennan would compare his observations on "sterile blood" with those of fresh blood under conditions which I have indicated, I am sure that he would find greater illumination on an important subject. He would, for example, find that not only movement of granules appears in the white corpuscles but granules appear in the disintegration of the red cells, and which also show movement and finally escape into the serum. Those have the appearance of living entities, and no doubt correspond to those which Prof. Drennan has designated as "vital elements in stored blood."

"Sterile" by dictionary definition means: (1) having no reproductive power; (2) lacking something essential; (3) lacking productiveness or fertility; (4) containing no pathogenic bacteria or other micro-organisms. Prof. Drennan will no doubt agree that "sterile blood" may answer most of those definitions, but the question to be answered is: Are those inherent vital elements, which he ascribes to stored blood, capable of reproduction and a separate entity? I believe that the process of disintegration is one of reproduction, and that disintegration is dependent on that process for its completion. The living cell contains within itself vital elements for its own destruction. It is by the release of those that disintegration eventuates. Complete disintegration of the corpuscular elements of the blood results in serum, so that a further question arises—What exists in the serum? Does it contain something which can be separated and cultivated, or has it now entered the realm of chemistry or biochemistry? There is room for further investigation, which might open many closed vistas and elucidate such problems as cancer and filterable viruses.

I will not further trespass on your valuable space, but I should enter a plea for more examinations of blood and other fluids and tissues by non-fixation and non-staining processes.—I am, etc.,

Edinburgh. FREDERICK PORTER.

Crush Injury and Anoxia

SIR,—Dr. J. Walker Tomb (Oct. 24, p. 495) has rendered great service by his analysis of the crush syndrome. There can be little doubt that the crush syndrome and blackwater fever are similar conditions; even the theories advanced in explanation are the same. Blacklock and Macdonald (1928) suggested that blackwater fever might be due to anoxaemia. Ross (1932) was unable to find an increase in blood lactic acid in malaria, and accordingly rejects the suggestion.

We have a considerable amount of information about the effects of anoxia on renal function. In the anaesthetized animal, anoxia, whether from breathing gas mixtures of low oxygen content (Toth, 1935, 1937, 1940) or from clamping the renal artery (Marshall and Crane, 1923; Barclay, 1942), usually results in a fall in urine volume, and this diminution in volume is accompanied by a rise in *p*H. In the unanaesthetized animal the usual result of anoxia is an increase in urine volume; there may, however, be a drop in volume, and here also the *p*H rises. We have no information as to the behaviour of urinary *p*H when the volume rises, but if the rise is analogous to that brought about by cyanides, then here also we should expect a rise in *p*H. The urine in the crush syndrome appears in general to be low in volume and to have low *p*H values. I suggest that the facts cited make it unlikely that the condition is due, at any rate entirely, to anoxia.—I am, etc.,

The Medical School, Birmingham. JAMES A. BARCLAY.

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Tuberculin Skin Tests in "Influenzal Pneumonia"

SIR,—In describing an outbreak of atypical influenza pneumonia at a school Drs. H. G. Herxheimer and A. J. McMillan (Oct. 31, p. 513) do not state whether tuberculin tests were performed, and if so what the results were. With the increasing use of radiological examinations and the coming adoption of miniature radiography on a mass scale, it is becoming necessary for all practitioners to be aware of the value of the tuberculin skin tests; these are now standardized and so simple in performance that there is little excuse for omitting them in every case where the diagnosis of a chest condition is not quite clear. Could Drs. Herxheimer and McMillan assure us with any degree of confidence that these cases of "atypical influenzal pneumonia" were not due to primary tuberculous infection? It is well known that this condition often simulates "influenza" and is too often diagnosed as such. It is to be remembered that the more recent surveys in this country appear to corroborate the findings in Norway, indicating a shift to a later age group of the primary tuberculous infection.

Only two weeks ago I was forcibly reminded of the value of the tuberculin test by the finding of a negative Mantoux reaction in a boy aged 17 who had been kept in bed for nearly 5 weeks in a special chest hospital and subsequently transferred to the special unit at this hospital with a probable diagnosis of tuberculous lesion in the lung. The waste of time and anxiety caused would have been prevented by resorting to this simple test at the very first time of examination.—I am, etc.,

Queen Mary's Hospital, Sidcup. E. MONTUSCHI.

Treatment by Hypnosis

SIR,—Your interesting leader on the present position of hypnosis (Sept. 5, p. 283), besides stirring vivid personal memories, has aroused in my mind speculations of psychological and perhaps philosophical interest. My experience of hypnotic treatment dates back to the year 1910, when, under the title "Notes on a Case of Hysteria," I published in the *Journal of Mental Science* an account of a series of hypnotic experiments carried out at Gartloch Mental Hospital, Glasgow. Briefly, the subject of the experiments, a hysterical youth of 18, exhibited all the classical phenomena of true hypnosis, and would, I think, have satisfied the most exacting requirement of that condition, including those enumerated in your leader. Post-hypnotic commands, for instance, were repeatedly carried out with amnesia in the intervening period, while in the waking state. During actual hypnosis his anaesthesia was so complete that a minor surgical operation was performed upon him without movement, pain, or subsequent recollection, and a detailed account of this was published in the *British Medical Journal* of Feb. 25, 1911.

During the years 1910-14 I encountered several subjects who exhibited this extreme susceptibility to suggestion, and in whom it was possible to induce the classical manifestations of true hypnosis, including, in one case, post-hypnotic olfactory hallucinations. Subsequent experience showed, however, that this type of case was exceptional, and an attempt to induce hypnosis in the ordinary subject rarely, if ever, produced such dramatic results. Indeed, so far as objective phenomena were concerned, there was in most cases little or nothing to prove the existence of hypnosis in the accepted sense of the term, and in this I am apparently in agreement with the writer of your article. On the other hand, it was usually possible to induce a condition of mental quiescence, during which there was, or seemed to be, a heightened suggestibility, and which for therapeutic purposes proved all that was necessary.

Whether there are mental states short of true hypnosis and yet exhibiting the characteristics of increased suggestibility would seem, from the nature of the case, difficult to prove. Personally, I believe that there are, and I have been accustomed to describe them as hypnoidal states, after Boris Sidis, who, I believe, first described them. The nature, and even the existence, of such states may be a matter for speculation, but that they differ *toto caelo* from true hypnosis is, I think, beyond dispute. On the other hand, the few subjects I have encountered who exhibited the classical signs of hypnosis had certain characteristics in common. Apart from their extreme suggestibility they all gave indications of nervous or emotional instability, two suffered from hysterical attacks simulating epilepsy and were inmates of a mental hospital; one suffered from somniloquism and was undoubtedly of subnormal intelligence; while the fourth was subject to severe attacks of bronchial asthma, of which, incidentally, she was "cured" by hypnotic treatment. The conclusion I have tentatively formed is that individuals who display the unequivocal characteristics of true hypnosis are of relatively poor mental endowments, or show signs of nervous or mental instability of which their extreme suggestibility is only one form of expression.

As regards the question of surrender of personality even in true hypnosis, an amusing incident may be of interest. On one occasion I had hypnotized a girl (one of the four subjects mentioned above) in the presence of lay onlookers, one of whom, thinking to take a rise out of the girl, said to her: "Edith, with whom were you out last night when I saw you?" Quick as lightning came the rejoinder: "Oh, Miss Blank, what a question to ask!"—but she did not vouchsafe the wished-for information. This well-merited rebuff proved at least that the critical and controlling faculties were not in abeyance. As evidence, moreover, of the genuineness of the hypnosis, this patient on waking remarked on the strong scent of violets in the room, the suggestion having been made to her during "the sleep" that she would smell violets on waking. So vivid indeed was the hallucinatory impression that she was not easily convinced that there were not actually violets in the room.

With your leader-writer's general contention that success in suggestive therapy is proportionate to the therapist's own belief in it I am in complete agreement. I would go further, and say that as a rule one is acutely aware of one's power to influence a given subject, and this quite early in the treatment, and that one *knows* when one is going to be successful, and vice versa. The prepotence of the therapist's personality is, I would say, less evident in true hypnosis than in those allied conditions which fall short of it; and as suggestibility reaches its maximal degree in hypnosis, much less is demanded on the part of the physician, the patient, as it were, "doing most of it himself." Moreover, to deprive oneself voluntarily of the advantages of any particular therapy, whether hypnotic or other, merely because one has not reached a complete understanding of the mental processes involved, has always seemed to me irrational, to say the least of it. The truth would appear to be that however much the "modern physician" may wish to objectify his treatment, he is for the greater part foredoomed to failure, for in all that he performs, looks, and says, something of his personality obstinately adheres and clings.—I am, etc.,

J. E. MIDDLEMISS,
Leeds. Psychiatrist, E M.S.

Tonsillectomy: Guillotine or Dissection?

SIR,—Mr. T. B. Jobson (Oct. 31, p. 512) discussed the relative merits of the guillotine and dissection methods of removing tonsils. He stressed the importance of removing the whole tonsil. To my mind the success of the operation in children depends largely on whether the adenoids are properly dealt with, and the question whether a remnant of tonsil is left behind or not is of relatively little moment. Indeed, it is often advisable to leave the tonsils alone; a complete adenoidectomy will often be followed by the desired results.

Mr. Jobson remarks: "The removal of a child's tonsils and adenoids in a minute or two by the guillotine is a much less spectacular operation than a set dissection lasting ten times as long." This statement may be a slip of the pen, for I cannot imagine how anyone can remove adenoids with a guillotine unless he uses the La Force instrument; dissection of adenoids would be equally impracticable. However effectively the tonsils are removed in children there is nothing "spectacular" about the operation unless adenoid tissue present in the nasopharynx is completely removed. I have dealt with a large number of cases in children where a perfect tonsillectomy has been performed but where apparently the adenoids have been neglected; the results are generally most disappointing. In my opinion the so-called recurrence of adenoids is a myth, and the explanation lies in the fact that, although much care has been taken to carry out a complete tonsillectomy, the adenoids have been dealt with in a perfunctory manner.

To remove all lymphoid tissue from the nasopharynx is not such an easy matter as is generally supposed—quite as difficult as tonsillectomy. It should be recognized that a sharp curette must be used not once but at least three times. If a small curette is employed the result is that the central portion of the adenoids is removed, leaving the lateral masses of lymphoid tissue in the region of the Eustachian tubes intact. In order to remove these lateral masses the curette is employed on either side. The ordinary curette is liable to leave behind lymphoid tissue situated immediately behind the septum. For removal of this tissue a special curette, which has a ring so small that it enters the upper and back part of the nose, is necessary. Such a curette I have employed for years.

If operators would use the term "adenoids and tonsils" instead of that usually employed it would help to concentrate attention on the really important part of the operation, at least so far as children are concerned.

My anaesthetist, Dr. H. W. Loftus Dale, would like to point out that since the introduction of vinyl ether (vinesthene) we have entirely abandoned ethyl chloride, and have been impressed by the absence of laryngeal or masseteric spasm and vomiting associated with this agent. For the past ten months we have used trichlorethylene for dissection of tonsils and removal of adenoids, and have been favourably impressed by the absence of congestion and any irritation to respiratory tract and diminished bleeding during the operation and the greatly diminished post-operative vomiting. In a very few adult cases a small amount of ether had to be used to obtain enough relaxation to insert the Boyle-Davis gag. In all cases, save in small children, endotracheal technique, with the usual precaution against aspiration of blood and debris, was adopted.—I am, etc.,

Aylesbury. NORMAN PATTERSON, F.R.C.S.

SIR,—Mr. T. B. Jobson is to be congratulated on his temerity in subscribing a discourse on the perennial subject of tonsillectomy, but its almost universal interest is, I think, sufficient justification for a periodical review.

Over the age of 15 or 16 the prevalent complication of peritonsillitis with subsequent fibrotic adhesion of the tonsillar capsule to the bed demands some form of dissection, but there is no valid reason why the guillotine operation should not be a success in practically all cases under this age. In my view the occasionally disappointing results of the guillotine operation can be traced to:

1. Inadequate illumination. There is no need to emphasize that the scientific technique demands a field of operation which is exposed to critical inspection at all stages. How often is this elementary requirement evident in some of the methods still employed to-day?

2. Rushed work. In my experience ethyl chloride anaesthesia alone, unless pushed to extremes, does not give sufficient time to allow for a neat removal of both tonsils and adenoid, particularly if a haemostatic type guillotine is used. A little supplemental ether well administered confers that invaluable extra two or three minutes and a most useful short period of amnesia, which excludes the "psychological trauma" recently discussed.

3. Inexperienced, incompetent, or frankly clumsy surgery. It is in the public interest that the future qualifying examinations should evolve some means of eliminating the ambitious but "ham-handed" potential surgeon, however exalted his theoretic and academic attainments.—I am, etc.,

Liverpool. JOHN ROBERTS.

Rehabilitation Centres

SIR,—The memorandum of the British Orthopaedic Association, as amplified by its president (Oct. 31, p. 526), places in excellent perspective the relative parts to be played by the rehabilitation departments of acute hospitals and by special rehabilitation centres—better called "rehabilitation continuation centres"—in the post-war world. But such a picture hardly fits the realities of the situation which confronts us to-day. In how many hospitals where fractures and other disabling injuries are treated is there anything approaching rehabilitation methods as now understood and practised? In the great majority there is either prolonged immobilization, or, at best, a perfunctory prescription of "massage and exercises," with no attempt to provide daily medical supervision of such remedial measures or to fill the patient's day with a programme of planned exercises, occupational therapy, and organized games all directed towards the prevention of the disability with which he is threatened. As a result, barely a week passes without the transfer to rehabilitation centres of the same dreary list of the products of excessive immobilization—stiff backs, painful wrists and shoulders, flexion deformity of knees; and that most ungainly progeny of fractured tibia out of persistent plaster—namely, "plaster equinus."

The danger inherent in the advocacy of separate rehabilitation centres at this present stage, apart from the undue drain on medical man-power, is the suggestion—implicit, if not actual—that such centres should relieve the hospitals of the essential task of setting up such an organization themselves and of starting the work of rehabilitation within a few days of a patient's injury or surgical operation. As to the bogy of hospitalization, nobody who has watched the changed outlook of orthopaedic patients in hospital after the introduction of a full programme of modern rehabilitation need have any fears on that score. It is not without significance that the E.M.S. has set up its own rehabilitation departments, not in isolated centres of post-hospital activity, but as an integral part of the fracture A departments and orthopaedic centres of the emergency hospitals themselves.—I am, etc.,

Pinderfields Emergency Hospital. HAROLD BALME.

Breast-feeding

SIR,—I have read with concern the letter of Dr. J. Gordon Mathias (Oct. 17, p. 465) regarding breast-feeding. It is such a dispassionate attitude of mind on the part of the family practitioner towards the subject that in many cases undermines the whole structure, both physical and psychological, upon which the success of breast-feeding is built.

I would recall the article by Prof. Charles McNeil (April 4, p. 429) in which he discusses the reasons why the infant mortality rate in this country compares unfavourably with a number of other countries. After reading his carefully considered conclusions one is left with the definite impression that this unfortunate state of affairs finds origin largely in the ignorance of the care of infants by many practitioners. How often during routine ante-natal examination is the question asked: "Do you intend to breast-feed this baby?" Does not this show a wrong mental attitude on the part of the practitioner, immediately conveying a sense of doubt to the mother, thus starting a trend which the practitioner, purely as the result of his dispassionate state of mind, is so often unable to stop.

My impression in this district is that breast-feeding has increased following a better understanding, which is largely the result of the national propaganda on the subject.—I am, etc.,

Tenterden. THOS. H. E. TAYOR-JONES.

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SIR,—In a letter inspired by Prof. Charles McNeil's comprehensive article Dr. E. G. Housden (Oct. 10, p. 439) raises some interesting points. He says that the most difficult and dangerous period for mother and child in the effort to breast-feed is the four weeks succeeding the return from hospital or the departure of the doctor and/or midwife. With this none would disagree, but it is at this point that continuity of supervision is ensured by the arrival of the health visitor. She pays her first visit before the baby is two weeks old; she can revisit as often as may be necessary. If the mother is up and able to attend the clinic the health visitor may call between the weekly clinic visits if the mother is in difficulties.

While for the sake of order and coherence a clinic serving a large area prefers that patients should attend on the day for their own district, no anxious and harassed mother would be deterred from seeking advice if she reappeared before her visit was due. Although some mothers do come to the clinic to purchase artificial foods cheaply and to exchange chatty gossip, the aim of the clinic is child welfare, and we deplore Dr. Housden's impression that individual attention is impossible. The teaching and encouragement of breast-feeding are a most important aspect of infant welfare, and without individual attention carry little weight. The criterion of success is not number but the efficiency of the service rendered.

Even so all child welfare workers must be appalled by the small preparation of mothers who breast-feed their babies. When every factor has been considered and every aspect dealt with, the breast milk still diminishes. Almost all protest their willingness to breast-feed, but between desire and determination a great gulf seems to be fixed. Is the female physiological make-up changing, or are endocrine glands becoming less adequate, or should we reverse the "March of Time"?—I am, etc.,

Glasgow. MARGARET ISABEL MCGILL.

SIR,—Letters on this subject are making their appearance again, but surely the mortality rate, which few people seem to consider, is as worthy of consideration as the morbidity, which appears to be an obsession with most. Speaking of infantile diarrhoea, Holt says: "Of 1,943 fatal cases only 3% were breast-fed."—I am, etc.,

Wallington, Surrey. C. R. NUNAN.

"Constipation" in Breast-fed Babies

SIR,—Your correspondents might be interested in an article that was recently brought to my notice by Dr. S. K. Kon of the National Institute for Research in Dairying. It was published by F. W. Clements in the *Medical Journal of Australia* (Jan. 3, 1942, p. 12) and entitled "The Symptoms of Partial Vitamin B_1 Deficiency in Breast-fed Infants." He showed that partial vitamin B_1 deficiency in the food of breast-fed infants led to constipation, which could be cured by the administration of vitamin B_1 either to the infant or to the mother. Failure to gain in weight at a normal rate and vomiting were other symptoms of vitamin B_1 deficiency in breast-fed infants. The effect of administration by the mouth of 500 international units of synthetic vitamin B_1 per day was seen in a week and cure was generally effected within a fortnight. If this response was not obtained it was highly improbable that vitamin B_1 deficiency was the only cause of the symptoms. Dr. Margaret Price (*Journal*, 1940, **2**, 80) has also shown the beneficial effect of vitamin B_1 absorbate upon the weight and length of infants attending a welfare centre in this country.—I am, etc.,

London. W. C. W. NIXON.

Sedimentation Rate and the Sedimentin Index

SIR,—The letters following my paper on the sedimentation rate and the sedimentin index prompt me to reply to some of the points raised.

I wish to express my thanks to "Rural Practitioner" (Oct. 24, p. 497) for having put so aptly into words what I felt after reading the letters of Dr. P. W. Edwards and Mr. L. J. Cutbill and Dr. A. Clark-Penman (Sept. 26, p. 379). I should like to raise only one criticism. I do not think that a sedimentation rate carried out on the shaky floor of a moving car could be regarded the same as under "standard" conditions. It is true that we know very little about the laws governing the falling of particles in a standing or, alternatively moving environment; I have only observed the samples of blood conveyed after collection to the laboratory, and the bottles from the blood bank taken by car to the bedside of a patient who needs a transfusion in his home.

Dr. G. Day (Sept. 26, p. 379) seems to consider sedimentin as something contained in the plasma and to be looked upon as a constituent of it of the same rank as chlorides, sugar, calcium, etc. This is still to be proved; sedimentin may be a function correlated to the plasma and comparable to the complement or to the α and β isoagglutinins. Be it as it may, I think correction for anaemia to be essential, and am inclined to agree with Dr. Day's second hypothesis that the lowered cell volume is made good by replacement with whole plasma Cases of pernicious anaemia in relapse show an uncorrected sedimentin index well above 2.0 units, but falling within normal limits on correction; after a few weeks' treatment, when the blood count is normal also, the index is found normal. On the other hand, patients with fractures continue to present a very high sedimentation rate for long periods after the injury. I cannot also understand why Dr. Day considers that indices below 0.5 unit do not make sense; I have observed these more than once, usually in people with normal corpuscular volume who were investigated in the hospital for some condition eventually labelled "hysteria" or "anxiety neurosis." Such symptoms as the patients presented could not have been ascribed to lack of sedimentin.

As for the use of blood diluted with citrate solution, I feel that all estimations should be done on samples with as little interference or dilution as possible. If blood were diluted with citrate solution before estimating the urea or sugar, it would be necessary to correct for the dilution. Why treat the sedimentin differently? Also why does oxalated blood give figures 25% higher than citrated blood? If it is for the dilution 4 parts of blood to 1 part of citrate the figures ought to be 20% higher. If it is for-the-slowing down due to the sodium citrate the experiments of Ham and Curtis (*Medicine*, 1938, **17**, 447) show retardations of from 33 to 46%.

To conclude, I think that the comprehension of the nature of sedimentin would be facilitated by using a common and standard technique, no matter which technique be chosen; it seems to me obvious that the reading of the M.V. is the figure subject to least vagaries. If the haemoglobin instead of being referred to as percentage were reported in one case as grammes of haemoglobin and in another as mg. of iron per 100 c.cm. of blood, confusion would inevitably occur. This is now happening in the case of sedimentin and sedimentation rate. —I am, etc.,

Wolverhampton. B. L. DELLA VIDA.

SIR,—A more careful reading of our letters (Sept. 26, p. 379) would have saved "Rural Practitioner" (Oct. 24, p. 497) the trouble of refuting something we neither said nor implied. We are not averse from tedious and complicated tests providing the results are constant and reliable. Complexity is no absolute criterion of value. On experimental evidence alone we challenge the extravagant claims made for Day's sedimentin index as performed by "Rural Practitioner," who appears to be a close collaborator if not a near blood relation of Dr. Day.

The inconstant effect of temperature on the E.S.R. is shown by these few examples drawn from a large number of duplicate experiments:

Case	M.V. at 65° F.	M.V.	Temperature
(1) E. N.	92	116	53° F.
(2) D. T.	46	32	50° F.
(3) S. T.	10	4·5	50° F.
(4) J. B.	84·5	75	50° F.

Reduction of temperature of the test usually results in the slowing of the E.S.R., but occasionally in rapidly sedimenting bloods the reverse occurs, so one of these has been included in the examples. The discrepancies are not constant, and in No. 3 it is over 50%.

This ignoring of temperature and also perpendicularity of the column of blood when carried out in a motor car—only two of many variable factors influencing E.S.R.—indicates the value which can be put on the small fluctuations of the sedimentin index claimed to be so significant by Dr. Day and/or "Rural Practitioner." Given a standard technique, reliable and consistent results can be obtained by almost any method of estimating E.S.R. The Westergren remains after over 20 years as good as any method and better and simpler than some.

Our protest still stands against the over-elaboration of a useful test and the fallacious and unscientific appraisal of clinical changes on variations considerably less than the experimental error of the method employed.—We are, etc.,

PETER W. EDWARDS.
A. CLARK PENMAN.
Cheshire Joint Sanatorium, Market Drayton. LESLIE J. CUTBILL.

Splenectomy in Purpura Haemorrhagica

SIR,—I was very interested in the discussion on splenectomy in purpura haemorrhagica, and ask for permission to add something to it. I believe I have had the longest experience of this operation, and, like a mother naturally follows the ways of her child, I watched its development especially closely since my first cases in Prague. I saw two of the three cases described in my first papers for the last time shortly before I had to leave Prague into exile 3½ years ago, and the third one some years before that. They were all completely free from symptoms and signs of the disease which they had suffered from for many years and which had brought them into constant danger to life. The literature is very great, mostly in America. Dr. Bruce Williamson (Oct. 3, p. 407), who changed his original opinion so profoundly, will not easily find a companion, although there are similar voices (perhaps not quite so definite). The essence of all experience laid down in the medical literature of the whole world is, as Prof. L. J. Witts writes (Oct. 17, p. 466), that the value of splenectomy in purpura haemorrhagica is now a matter of orthodox therapeutics, with *one* condition: that the diagnosis is established beyond doubt by a competent haematologist. And this condition I believe is certainly easily fulfilled in your country.—I am, etc.,

Halifax General Hospital. PAUL KAZNELSON.

The Future of the Profession

SIR,—I belong to that large group of doctors who think it matters little whether the profession becomes a State service or not. What does matter is whether doctors are to be provided with such conditions of life and work that honest and good medical work can be done, and an efficient comprehensive service provided for the community.

It seems to be generally agreed: (1) that present conditions and the present services are defective; (2) that some changes are required; and (3) that those changes should be either towards a State service or towards a radical modification of the existing services. Accepting whole-heartedly the need for change, I think the root problem involved in choosing between the proposed alternatives is bound up in the word "planning."

1. What do we mean when we use that word? Do we mean a rigidly structured professional society in which every individual is given (by authority, I suppose) his exact place and prescribed function? Or do we mean what the biologists would call a patterned professional society? The difference of aim involved in the words "plan" and "pattern" is vital to every organized democracy. In a planned State service a formal rigidity must tend to destroy initiative; in a patterned State service the required regularity and discipline must be attained and preserved. I implore all doctors to consider once again whether their thinking is governed by a philosophy suitable for chemical atoms or by a biological philosophy suitable to human beings (Haldane, J. S., *Philosophical Basis of Biology*).

2. My second question is, What do we mean when we argue about the importance of the right to choose doctor or patient? Who cares what patients are allocated to him provided he can get rid of those he cannot succeed in treating? Who cares what doctor he is sent to provided he can make a change if need arises? Let us keep the real point clearly before us. It is the "right to change," not the "right to choose." Free movement of units is always possible in a patterned society, never in a planned one (*vide* wartime industrial and professional life).

3. We should ask how we can avoid the real dangers of making medicine an "established profession" in which a sterile orthodoxy stifles initiative. Shall we have room within our new services for the really unorthodox doctor? If not, a new "medical Luther" will soon arise, and side by side with "established medicine" will grow up a protestant and nonconformist medicine! If our planners hate vested interests, let them take heed lest they create them. Once again, the root problem is philosophical, of that I am persuaded.

Lastly, we are told (*a*) that the reform of the profession is urgent and should be dealt with now, and (*b*) that no significant change can take place for a long time, and anyhow nothing should be done until the end of the war. Surely the great question should be, What can we personally do, first, to resist static planning, and, secondly, to promote a true patterning of the profession?—I am, etc.,

Worcester HOWARD E. COLLIER

Safe Milk

SIR,—Your advocacy of pasteurization is well known, so it is a pity that little appears in the *Journal* about the progress made towards a better solution of the problem of safe milk.

Your leader on bovine tuberculosis (Sept. 26, p. 571) gives very little idea of the range of the discussion on the control of cattle disease reported in the *Proceedings of the Royal Society of Medicine* (May, 1942). From what was said during the discussion it is quite evident that the eradication of bovine tuberculosis in this country is within our reach. In the United States, Mr. H. T. Mathews said, twenty-five years' efforts have reduced the incidence from an average of 5% to 0.5%. The steps he advocated—extension of the Attested Herds Scheme, calf nurseries, and vaccination—only need to be pressed forward to be successful. Prof. Dalling's use of Wells's vole bacillus in the vaccination of calves seems to show that this will give a better immunity than B.C.G. vaccine.

As to distribution of milk, pasteurization as a means of preserving milk is out of date. Chilling, from the moment the milk leaves the cooler until it reaches the domestic refrigerator (which must no longer be looked on as a luxury), is the method that will come.

It is up to us to encourage these steps rather than to sit back and contentedly advise pasteurization because it has the merit of being easy, while to free the country's herds of tuberculosis will be arduous at first and will call for constant encouragement from those who should know what is right.—I am, etc.,

WILLIAM PICTON.

Cost of Treatment for Tuberculosis

SIR,—I have read the report of the M.R.C. Committee on Tuberculosis in Wartime, and note with pleasure the recommendation that the dependants of tuberculous persons should be given substantial financial help during the period of treatment. From the statement recently made by the Minister of Health in the House of Commons and later on the wireless, it appears that this principle has been accepted by the Government. Is it, however, realized that in many parts of the country, far from financial help being provided, the treatment of the tuberculous patients themselves is not free, and that they are actually assessed on their alleged ability to pay for their stay in a sanatorium?—I am, etc.,

F. D. G. THOMAS,
London, N.20. Assistant Tuberculosis Officer.

Obituary

ROBERT ESMOND MOYES, M.D.

Dr. R. E. Moyes, who died on Oct. 23, aged 58, had been secretary of the North Northumberland Division of the B.M.A. for eleven years and its chairman in 1932-3, and president of the North of England Branch in 1938-9. He was elected chairman of the Northumberland Insurance Committee in 1937. A colleague writes:

The sudden and unexpected death of Robert Esmond Moyes has stunned a wide circle of friends, both within and without the profession. In all the circumstances of life, both grave and gay, Moyes was an ideal support and companion. Broad-shouldered and broad-minded, he carried the burden of a busy life and practice with a sympathetic sanity.

At Edinburgh University, where he graduated in 1905, he had worked hard and had a host of friends. His father died while he was still a student, and force of circumstances compelled him to go into practice immediately after qualification, and he had to forgo the boon of holding resident appointments. The sacrifices made by his widowed mother before his qualification were ever in his mind, and no son could have done more to give her comfort and support as soon as he found himself in a position to do so. Settling in the colliery village of Broomhill, the practice included patients in the colliery itself and in the surrounding country. Moyes soon made a reputation as a most reliable practitioner. Happily married in 1915, he had scarcely settled in practice when the war called him to the R.A.M.C. and for two years he served in the East. Returning to Broomhill, his practice steadily increased, and there he lived and worked until, some years ago, he moved his home to Warkworth, leaving an assistant in the Broomhill house and surgery. Throughout his 37 years in Broomhill and Warkworth Moyes did a stupendous amount of work both day and night. Starting his round at 8.30 a.m., his widespread practice might have fully occupied his time, but in spite of the daily routine he found time to do much work on committees both of the British Medical Association and of the Northumberland Insurance Committee.

Throughout the years Moyes did his utmost to keep himself up to date in all branches of medicine. No doctor living at a distance from Newcastle was ever a more constant attender at postgraduate classes and medical society meetings, and he served a year of office as president of the Northumberland and Durham Medical Society. His large practice in colliery and rural areas comprised patients drawn from every grade of society. In pit cottage, farmhouse, and country house it was always the same Moyes. The patient had been thoroughly examined and assiduously attended; and when he called for help the consultation was invariably of his own seeking. There was always the beneficent atmosphere of confidence only met with in the practice of a really good doctor.

Moyes was a sportsman in the true sense of the word, and though the exigencies of his practice curtailed his opportunities, it enhanced the pleasure of both the sport and the companionship. An ideal companion on the golf course, an unselfish shot, and a painstaking fisherman, Moyes was certain of friends and endless opportunities of indulging in the many sports at which he excelled. Having played football for Edinburgh University, he always had an intense interest in the game, and seldom missed the Internationals at Murrayfield. Twice a year a company of friends composed of consultants and general practitioners (the Dormy Club) used to spend a week-end at Silloth for golf. Moyes thoroughly enjoyed these days of complete relaxation; and all enjoyed Moyes, who was sure to have some anecdote, usually some droll episode in his practice, true and humorous, and often told at his own expense.

Having the confidence of his fellow practitioners, it was inevitable that great calls should be made upon his time to serve on committees, and he was an ideal member and chairman of any committee on which he served. He had a natural and spontaneous tact which implies self-restraint, good temper, and quick and kindly sympathy with the feelings and opinions of others. He always seemed to gain his point, yet he never appeared to be in antagonism with anyone. Since 1939 Moyes had enormously added to his already burdensome practice and commitments by doing the work of colleagues in the district who had been called to the Services. During the last two years he had had no time to relax, and it is pretty certain that these strenuous years contributed to his early death.

PROF. HEDLEY WRIGHT, M.D.

Prof. G. S. WILSON sends the following at our request:

The brief obituary notice of Prof. Hedley Wright that appeared in the *Journal* on Sept. 26 needs amplification if due tribute is to be paid to one who occupied a leading position in the ranks of British bacteriologists.

Wright's early work at Edinburgh was concerned largely with serological problems, particularly in relation to the diagnosis of syphilis. During his seven years at University College Hospital, 1923-30, he concentrated his attention on infection and immunity. His careful qualitative observations on the mode of reaction of the rabbit to experimental pneumococcal infection added materially to our knowledge of the clearing mechanism of the normal and vaccinated animal. Two smaller contributions during this period were of importance in starting lines of investigation that were followed up by later workers. A study of two cases of puerperal fever due to pneumococci led him to conclude that infection might be conveyed to the patient from attendants or other persons in the environment; and the demonstration of bacteriaemia within a few minutes of urethral operations paved the way for the observations of Okell and Elliott on the streptococcal invasion of the blood stream following the extraction of septic teeth. From 1930 to 1934, while at Sydney, he interested himself in nutrient media. His finding of bacteriostatic substances in peptone that could be rendered inactive by reduction enabled him to devise a simple method for the preparation of basal media which is now extensively used.

The last eight years of his life, spent at Liverpool, were devoted to the application of bacteriology to public health problems. His work on the laboratory diagnosis of enteric fever did much to improve the current methods and to reform our ideas on the frequency of paratyphoid bacilli in the faeces during the early stages of the disease. His chief interest, however, lay in diphtheria. Taking full advantage of the opportunity that Liverpool afforded him, he studied this disease from different angles, and by a happy combination of bacteriological, epidemiological, and statistical methods, which served as a model for other investigators to copy, he reached conclusions of both laboratory and administrative significance. The whole of Wright's work was characterized by an insight, thoroughness, and accuracy that will remain the inspiration of all who knew him.

WILLIAM FRETSON SKINNER, aged 60, died at Sheffield on Sept. 30. He was the third generation in the practice. His grandfather, William, lectured on anatomy in the Medical School in 1852, and his father also taught anatomy. Educated at Wesley College and University College, Sheffield, with a brief spell in London at U.C.H., he qualified, and after holding a resident post at Chesterfield and a country assistantship he joined his father in a large industrial practice. It soon became too big for him and he took a partner. The partner joined up on the declaration of war, and Skinner was left to work a huge practice scattered to the four quarters of the city by slum clearance and bombing. Last winter he got a thrombosis in a tibial artery but continued work until it was followed by a coronary thrombosis, from which he died. To this bald account one must add an appreciation of a really remarkable man. One of those men who read little but learn much from experience, he was intensely practical and, I believe, never neglected to make a thorough examination. Possessed of a keen eye and a really uncanny intuition for prognosis, he became an extraordinarily good doctor. He was one of the kindest men, perhaps the kindest, I have ever met. He thoroughly enjoyed his work of visiting the sick and would do anything to help them. There are many anecdotes about this aspect of his character. He seemed to understand his patients and their relatives, and indeed to know the whole family by their christian names and possess their confidence. His shrewdness, powers of observation, sense of humour, and kindliness made it a joy to meet him in consultation. May the profession long continue to possess such members.—A. E. B.

Dr. **Herbert George Harris**, who had practised for the last 35 years in Southampton, died at Ashurst in the New Forest on Oct. 3 at the age of 68. For 20 years he was medical officer to the Ordnance Survey Office, and among other appointments he held was that of honorary medical officer to the Hampshire Girls Orphanage. He was educated at Bradfield College and studied medicine at St. Bartholomew's Hospital and Durham University, where he graduated M.B., B.S. in 1898 and M.D. in 1901. At the funeral service his friend Canon R. B. Jolly spoke of the loss which people felt at the passing of a beloved physician, a doctor whom his patients also regarded as their friend. Dr. Harris was the only son of the late Dr. William John Harris of Worthing.

Dr. **Frank Robinson**, who retired in 1935 from the post of medical officer of health and school medical officer for Cambridgeshire after 26 years' service, died suddenly on Oct. 5. He studied medicine in Manchester and graduated M.B., Ch.B. of Victoria University in 1891, proceeding M.D. in 1895 with a thesis on the clinical features of small-pox, and taking the D.P.H. of the English Royal Colleges in 1901. In 1905-9 he was assistant M.O.H. under the West Riding County Council. During his long period of work for the Cambs. County Council Dr. Robinson lectured on sanitary law and administration to candidates for the D.P.H. of the University. He was a Fellow of the Society of Medical Officers of Health and of the Royal Sanitary Institute. He joined the B.M.A. in 1910 and was president of the Cambs. and Hunts. Branch in 1933-4; since 1938 he had been emergency officer for the two counties and held the post of hon. secretary of the local medical war committee. R. F. writes: The tragically sudden death of Frank Robinson came as a great shock to his many friends. Before his arrival in Cambridge he had acted as medical officer in one of the Liverpool Poor Law Institutions, where he had had extensive experience of both small-pox and typhus fever, two diseases in which he was an acknowledged expert. Just before his death he had been appointed by the Ministry of Health as a consultant for the diagnosis of the latter disease in doubtful cases. During his long period of office under the Cambridgeshire County Council he saw many changes in the public health services. Naturally he had to administer many new developments in the work, and at the end he left a smoothly working service which presented his successor with few difficulties. In his retirement he received many tributes of respect and affection. Though a full-time officer he was, at any rate latterly, a firm believer in the voluntary principle, and many were the voluntary bodies on which he served, either as the representative of the County Council or as a directly elected member, but his interests extended far beyond his daily work. The theme of his life was service, particularly perhaps the service of youth, and no appeal to his generosity went unsatisfied.

The death of Major D. Y. **Richardson**, R.A.M.C., at the early age of 36, writes a colleague, came as a profound shock to his many friends. Douglas Richardson came to Lincoln in 1934, taking up a partnership in general practice. However, his main interest was in ear, nose, and throat work, and he later took the London diploma in oto-laryngology. Skill in his specialty, coupled with a keen and kindly interest in his patients, led to a rapid increase in consulting work and to appointments at the Lincoln County Hospital and the E.M.S. Hospital at Louth. Volunteering for the Services he entered the R.A.M.C., and was attached to a military hospital as ear, nose, and throat specialist at the time of his death. Conscientiousness in his work and the sincerity of his character, added to great personal charm, made Douglas Richardson very popular with patients and colleagues alike; and they, with a wide circle of friends, will mourn his loss and extend their heartfelt sympathy to his widow and four children.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly Comitia on Oct. 29, with Sir Charles Wilson, President, in the chair, Prof. W. G. Barnard, Major-General A. G. Biggam, Dr. Geoffrey Evans, Sir William Fletcher Shaw, and Sir John Stopford were elected Councillors. Dr. A. E. Clark-Kennedy was re-elected a representative on the committee of management of the Conjoint Board, and Sir Comyns Berkeley a representative on the council of the Central Midwives Board.

The President nominated Dr. W. E. Hume as Harveian Orator and Dr. J. W. Brown as Bradshaw Lecturer, both for 1943, and announced the appointment of Dr. A. H. Gale as Milroy Lecturer for 1944, the award of the Streatfeild Scholarship to Miss Enid E Sampson, the Jenks Memorial Scholarship to A. J. Graham, and the Linacre Scholarship to C. R. Cheadle.

The following, having satisfied the Censors' Board, were admitted Members:

M. G. C Ashby, B.M.Oxon., N. D Compston, M B.Camb., W. H Hargreaves, L.R C P., E. J. C. Kendall, M.B.Camb., L. Nagley, M D Leeds, J. Ll. Penistan, M.B Lond., E. Petrie, M B Lond., J. S. Pippard, M B Camb., R E. Rewell, M B.Lond., J. F Smith, M B Camb., L. W. Smith, M B.Camb., R. B. Thompson, M.B.Durham, A Topping, M.D.Aberd.

Licences to practise were conferred upon the following 274 candidates (including 28 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws:

Patricia R. M. Adlington, J. N Agate, P L Allen, E Asquith, E. O Barnes, A G. Barnsley, H. W. A. Baron, T. T. Bartlett, R W. Bazeley, Ruth A Bell, C. P. Bennett, H H. Bentall, C. Ben-Yallouz, G G B Blackman, J J. Bligh, S. O. Boldy, P B Booth, R. J. Bower, R. A Bradford, P. W. Brand, K. Braun, A H W Brenan, R. N Briggs, Ruth M Burt, P. H Buxton, N A. Campbell, A. W. Capon, R J D. Carrick, L S Castleden, Marjorie E. Chaplin, D P. Choyce, Ann B. Clark, M W. L. Clements, P Coggin Brown, J. A. H. Collyns, D. J Conway, E G Cook, J. B Cook, Rosemary I Cook, J. A. L. Cooper, P F Cooper, Prudence A. Cooper, M G. Corcos, J M G. Costello, Elizabeth Cullis, C. F A. Cummins, Joan M. Daniel, O Daniel, A S Davidson, D. P. Davis, H. Davis, W E. Denbow, R. J. Dickson, Ll S. P. Divers, C. E. P. Downes, J. T. Doyle, J G. Dumoulin, M P. Durham, V. Edmunds, H. W Eldridge, C. J L. Elsdon, R. N M Eminson, J D. Everall, G. E. Fearn, P. D. Fergusson, M Fertig, R J. Forster, G. C. Foster-Smith, M B. Fox, J. A Frais, B L. Frank, P Fry, D. I Fullerton, J O. Gallimore, M. Gamal el-Din, C. D. Garratt, G. E Garratt, K O. George, D Gill, A. E. Ginn, J F. Goodwin, J. V. T Gostling, S Gottlieb, A. J. R Green, K. Greenwood, J. S. Grewal, D. J. Hadfield, R G H Hall, A. H Hamed, S F Hans, D. M. Hare, A J M. Hargreaves, J R Harries, W A. Harries, R. M. Harrison, W. H. Helm, Frieda R Hendeles, J C Hesketh, S R Hewitt, A. C. Hicks, T. S. Hindle, F Hoffstein, Betty Holden, E. Holden, P. Holliday, S. C. H Hood, P. H. S. Hooper, H. Horbacz, A. L. Horetzky, H. J. Houghton, Geraldine M. Howard, S. H. F Howard, D A. Howell, T. E. Hughes, R. B. Illing, K P Isserlis, P. S Jaikaran, W James, R T. Jenkins, W R. John, P. F. Johnson, H. R Jolly, O M. Jonathan, A E. Jones, D. V. M. Jones, W. B E Jones, D. Keidan, T. D Kellock, R W. Kind, L. G. Kingdom, T G. Kletz, M. A. Kumar, P Lambah, V. H. Lees, M E. Lemerle, S G. F. Linton, Florence H Lomax, R. M. Lucas, G. R W N Luntz, J C. Macaulay, E L. McDonald, D. McGregor, R B McGrigor, Elspeth M. McKechnie, D McKinlay, V J McLean, J K McMyn, K. A McNeill, H G. McQuade, B. C Main, S Mandel, N M Mann, C. W. S F. Manning, C. W. Marsden, D. R I. Mason, H. F Melhuish, N. L. Mills, A Milton, D. L. Mollin, H Molotnikoff, G Morgan, J M Morgan, A. I Morrison, P. C. Moxon, J. R P. Morley, P. B Newcomb, J. Newcombe, G. McK. J. Nicholl, B. Nicholson, Helen M. Noble, C C Packman, F. E Peall, A. N. Pearce, W. H. Petty, A. B. Philipp, M P. Pick, R. Pilsworth, Ruby Posner, B Pownall, J. R. K Preedy, A I. D Prentice, E. J T Prettejohn, E. Pringle, N A Punt, P. M Ransford, J. B. Raper, J P. Raw, A. M Read, N P Read, R G Rees, H Rees, R K. Reid, S. C. Rexford-Welch, A L Ribeiro, A G Richards, J D. Riley, B H D. Robinson, R. A. Robinson, S. C. Rogers, A J Rook, L A Rook, Ruth Roseveare, M. H. Ryder, Olga B Ryland, L Sagorin, Olga M Sainsbury, J S. Salem, J W. P Salt, S C. Sandifer, R. H. Sandiford, H. C L Scott, O L. S Scott, J. Shackey, E G F Shaw, Patricia R Shaw, A Sherwood, D S. Short, G R. M Sichel, Jean V Simpson, S Singh, J. J. Slowe, Audrey V Smith, P A Smith, W. S C Snape, Angele M P Snow, P. J Spencer-Philips, J. W Squire, J. S. Stafforth, D A Stanley, J H Steeds, J P Stephens, Lilian E. Sullivan G E. Sutcliffe, Gwendolyn M. Sutton, G. F. Swann, P. G Swann, H F B Symons, J W Taylor, W. V Taylor, A R Thatcher, H E Thomas, J. B. T Thomas, W R G Thomas, D G Thompson, I F Thomson D J. Tibbs, R N Ticehurst, A. M B Tompkin, P. A Trafford, E J Tucker, D. R. Urquhart J Ward, R L Ward, C R M Warner, Edith M Waterhouse, B P. Webber, M E Weber, J R K. Wedd, M. W West, G H Wells-Cole, W. H Whelan, Beryl D. White, Pamela M. Wilcox, W. V. C Wiley, I A Williams, P. R. E Williams, J. M Wilson H P. Wingate J M. Winn, G. Winocour, R. Winston, J. F. R Withycombe, C. R Wood, L. P. J. Wright.

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons, to Gwendolen M. Allen-Williams, Nora E. R Archer, Hilda M. Robertshaw, F. S. D. Thompson, H G. Topping Diplomas in Child Health were granted, jointly with the Royal College of Surgeons, to the 9 candidates whose names were printed in the report published on Oct. 24 (p. 499).

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Faculty the following officers were elected for the ensuing year: *President*, Mr. James H MacDonald: *Visitor*, Mr. William A. Sewell; *Honorary Treasurer*, Mr. William J Richard; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative on General Medical Council*, Mr. Andrew Allison.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

A quarterly meeting of the Council was held on Oct. 24, with the President, Sir William Fletcher Shaw, in the chair.

The following were admitted: *To the Fellowship:* W J. H M. Beattie, C. M. Gwillim. *To the Membership:* Muriel Boycott, J. W. D Buttery, Marie H. Calverley, I MacG Jackson, Mary K Lawlor, W. J. McCord, Eleanor M. Mills, Mary R. Thompson, H. M. Wolff *In absentia,* H Agar, T. A Gillie, J. F. B Wyper.

The following have satisfied the examiners and have been awarded the Diploma of the College: I C Barne, Margaret R. Biggs, Ruth C. M Brown, Gertrude M Child, Edith M Druitt, Margaret D Dudley-Brown, Anne C Fletcher, F. G. M. Fraser, Mairidh A. M N. Graham, Margaret A. Hay, J. Hesketh, Eluned M. Lloyd-Davies, R. A Manclark, G, H Moore, J. E. E. Morgan, H A. Ripman, E Sharp, Daisy M Smith, Ruth M Stubbs.

The Services

The King has approved the award of the R.N.V.R. Officers' Decoration to Surg. Cmdrs. A. W. Kendall, R. R. B. Roberts, and H. Winstanley, R.N.V.R.

CASUALTIES IN THE MEDICAL SERVICES

War Subs. Capt. SAMUEL HENRY SEGERMAN, R.A.M.C., who is included as "killed" in an Army Council Casualty List published on Oct. 31, was born on March 3, 1914, and was educated at the University of Leeds, where he graduated M.B., Ch.B. in 1938. He also took the D.T.M. of Liverpool in the same year. Before entering the R.A.M.C. as temp. lieut. in Dec., 1940, he was in practice at Middlesbrough and Leeds. He saw service in the Middle East.

Wounded.—Capt. G. M. Calder, R.A.M.C.

Prisoners of War.—War Subs. Capt. H. Bloom, R A.M.C., War Subs. Capt. W. E. G. Bradford, R A.M.C., Lieut.-Col. W. B. F. Brennan, R.A.M.C., Capt. L. B. Gunn, R.A M.C., Capt. P. L. Headon, R.A.M.C., Capt. L. V. Macdonald, R.A.M.C., Prob. Temp. Surg. Lieut. J. C. de R. Sugars, R.N.V.R., Surg Cmdr. V. F. Walsh, R.N.

Missing, Believed Prisoner of War.—Major T. F. O'Donnell, I.M.S.

Missing, Probably Prisoner of War.—Major K. F. Alford, I.M.S.

Missing.—Capt. R. W. Lennon, R.A.M C.

DEATHS IN THE SERVICES

Surg. Rear-Admiral ALEXANDER JOHN JAMES JOHNSTON, R.N. (ret.), died at Crapstone, Devon, on Oct. 17, aged 87. He received his professional education at Guy's Hospital and qualified M.R.C.S.Eng. in 1877 and took the L.R.C.P.Ed. in the following year. Entering the Royal Navy soon afterwards he became deputy surg.-general (now surg. rear-admiral) in 1912, and retired after the war of 1914-18. During the latter part of his career he held the posts of deputy surg.-general of the Royal Naval Hospital, Malta, and surg.-general of the Naval Hospital, Chatham, and, later, was a temp. lieut.-col. in the R.A.M.C. He served throughout the war of 1914-18, receiving the medals. He joined the B.M.A. in 1899, and when the Association met at Leicester in 1905 he was vice-president of the Navy, Army, and Ambulance Section.

Lieut.-Col. CHARLES HARDWICK LOUW MEYER, I.M.S. (ret.), died at Exeter on Aug. 30, aged 82. He was born at Grahamstown, South Africa, on Nov. 19, 1859, the son of Capt. Nicholas Meyer, an officer of the old Prussian Army, before the German Empire came into being, who came to England, was naturalized, and entered the British service. Lieut.-Col. Meyer was educated at Grahamstown, Queenstown, and Bloemfontein, and at Guy's Hospital, qualifying M.R.C.S. in 1883. In the same year he graduated M.B. (with honours in forensic medicine), B.S. (with first-class honours) of the University of London, proceeding M.D. in 1885. After filling the posts of house-surgeon and obstetric resident at Guy's he entered the I.M.S. as surgeon in 1887, gaining first place in competitive examination in Feb. and first place in examination at the Army Medical School, Netley, in July, and winning the Herbert Prize and the Ranald Martin Memorial gold medal. He became lieut.-col. after twenty years' service and retired in 1913. Most of his service in India was spent in Bombay, where in 1889 he was appointed professor of physiology, histology, and hygiene in the Grant Medical College (later becoming principal), and physician and registrar of the Sir J. J. Hospital, and professor of pathology in 1902, holding these posts until his retirement. He rejoined for service in the war of 1914–18, when he was second-in-command of the Lady Hardinge Hospital for Indian Troops at Brockenhurst in 1914–16, consulting physician to the Waziristan Field Force in 1917 and to the war hospitals of the Southern Army in India in 1917–19, and was mentioned in dispatches in 1918. After retirement he was consulting physician to the Osborne Convalescent Home and a member of the India Office Medical Board in 1921. He had been a member of the B.M.A for 50 years and served on the Central Council in 1913–14.

Medical News

The Annual Meeting of Fellows and Members of the Royal College of Surgeons of England will be held at the College in Lincoln's Inn Fields, on Thursday, Nov. 19, at 2.30 p.m., when the President hopes there will be a good attendance.

Prof. J. C. Drummond, D Sc, scientific adviser to the Ministry of Food, will deliver a series of lectures on "The History of Our More Important Foods" at the Royal Institution, 21, Albemarle Street. W., on Tuesdays, Nov. 24, and Dec. 1, 8, and 15, at 3 p.m.

The Benjamin Ward Richardson Lecture will be delivered at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Wednesday, Nov. 25, at 2.30 p.m., by Lieut.-Col. D. J. Anthony, M.R.C.V.S, on "The State of Meat Inspection in Britain at War."

A general meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Friday, Nov. 20, at 2.45 p.m., when there will be a discussion on "The Treatment of Tuberculous Pyothorax," to be opened by Dr. J. Clifford Hoyle, Dr. W. C Fowler, and Mr. R. C. Brock.

Under the auspices of the British Council a reception was held in Liverpool on Nov. 6 by the Vice-Chancellor of the University and Sir Robert Kelly, F.R.C.S, at which members of the local medical profession and medical representatives of the Allied Nations heard an address by Prof. Henry Cohen, M D., on "The Principles of Diagnosis: A Retrospect and a Prospect."

At the inaugural luncheon at the Mansion House Mr. Herbert Morrison, Home Secretary, described as a wise and rational step the amalgamation of the Queen's Hospital for Children and the Princess Elizabeth of York Hospital for Children, which will function in future as the Queen Elizabeth Hospital for Children. He said it was true that a substantial portion of the London voluntary hospitals were large and efficient, but a number of them were small and uneconomical and their efficiency open to question. He hoped that King Edward's Hospital Fund for London would help to bring about further amalgamations, and advised greater co-operation in the purchase of supplies. He thought it was a good thing that there should be a certain degree of competition and rivalry in enterprise between municipal and voluntary hospitals.

The Joint Committee for Soviet Aid is launching a nation-wide appeal for medical aid for the soldiers of the Red Army. Every kind of medical supply, equipment, and comfort is urgently required in ever-increasing quantities by the Red Army and the Soviet people in the fighting zones. Donations may be sent to Sir Peter Chalmers Mitchell, F.R.S., Hon. Treasurer, Joint Committee for Soviet Aid, 171, St. Stephen's House, Westminster, S.W.1.

The Ministry of Health, with the co-operation of the Ministry of Information, is launching another winter health campaign to renew the attack on the careless cough and sneeze by means of persistent education on the dangers of droplet infection. Publicity media will be posters, exhibitions, films, and broadcasts.

On Nov. 3 the Minister of Health performed the opening ceremony of the 600-bed Merriston Hospital, near Swansea, which has been built at a cost of £180,000 under the Emergency Hospital Scheme. Until heavier emergency demands arise, five wards, with 200 beds, are being placed at the disposal of the Welsh National Memorial Association for cases of tuberculosis, and the hospital will also be used to relieve the pressure on the Swansea and General Eye Hospital.

At the time of the British occupation of Eritrea the Eritrean section of the Italian Society of Medicine and Tropical Medicine had ceased to function. In order to restore to normality the medical services, and in the interests of co-operation between Italian and British medical men, it was thought to be essential that this society should reopen its meetings and activities. We have received from Lieut.-Col. R. H. Bland, R.A.M.C., principal medical officer for Eritrea, the first two numbers of the *Bolettino* published at Asmara under the editorial direction of Prof. Giovanni Ferro-Luzzi. It is a substantial magazine, each number containing well over 100 pages printed in Italian.

Olive oil is supplied only against a doctor's prescription, but even so there is no guarantee that it will always be available, and the Ministry of Food announces that arachis oil may be substituted provided the prescriber's consent is first obtained. Arachis oil has already been used as substitute in many *B.P.* and *B.P.C.* preparations.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there was a general rise in the incidence of infectious diseases. The largest increases were those of measles 1,007 cases, whooping-cough 77, and acute pneumonia 51. Scarlet fever, with 84 fewer cases than last week, was the only disease for which a fall in incidence was recorded.

Within the counties no very striking fluctuations occurred in the trend of scarlet fever, diphtheria, and whooping-cough. The largest variation was that of Yorks West Riding, where the numbers of cases of scarlet fever and whooping-cough were 61 and 43 respectively below the totals of the preceding week.

There was a rise of 12 cases in the incidence of dysentery: 30 cases were reported in London, the largest total since February; 10 occurred in Woolwich: and the remaining 20 were distributed over twelve boroughs. Other large county totals were Yorks North Riding 31 (Middlesbrough C.B. 29); Yorks West Riding 29 (Leeds C.B. 15, Sheffield C.B. 8); Derbyshire 12 (Derby C.B. 7, Shardlow R.D. 5); Southampton 10 (Droxford R.D. 7); Wales 24 (Cardiff C.B. 9).

In *Scotland* there was a further rise in the incidence of diphtheria and measles of 39 and 26 cases respectively. Of the 257 notifications of diphtheria, 93 were reported from Glasgow; and of the 379 cases of measles, 120 were notified in Paisley burgh.

In *Eire* the incidence of acute poliomyelitis remains at a high level. The 28 cases were distributed through ten areas. The most important centres of infection were the rural district of Co. Roscommon 8 cases, and Co. Clare, Ennis U.D. 5 cases. One case of typhus was reported from the rural district of Co. Galway.

Small-pox

Six further cases of small-pox have occurred in Edinburgh, bringing the total up to 8; all are in males, and all, as well as the suspected cases, are connected with the original outbreak. The medical officer of health in a statement to an emergency meeting of the Public Health Committee said that the cause of the outbreak was at present unknown. No evidence had been found that could link these cases with the outbreak in either Fife or Glasgow. It was possible that a visitor to the institution had been responsible for introducing the infection.

Small-pox in Fife County

The following letter has been received:

"SIR,—I refer to the statement in the *Journal* of Nov. 7 (p. 565) regarding the Fife County small-pox outbreak. The statement, which appears to be founded on Press reports, is liable to give rise to misunderstanding. No contacts were allowed to return to work. They were not only isolated and kept under medical supervision but received the unusual advantage of being paid allowances. The reference to a colliery strike was an exaggeration. A girl who was not a contact was seen at a pit-head bath to have a rash on her back. Her companions became agitated, but were quickly reassured by an officer of the Public Health Department, and the incident closed.

"The outbreak was completely under control from Oct. 6, when the Public Health Department made the diagnosis, and all restrictions were removed on Nov. 3. In all, there were 27 patients with small-pox, 7 of whom died.—I am, etc., G. MATTHEW FYFE."

Measles

The incidence of measles has increased for six consecutive weeks and is now a little more than two and a half times the level at the beginning of this period. The largest increases in the week under review were those of Lancashire 226, Yorks West Riding 153, Leicestershire 106, Derbyshire 104. The rate of increase has been much greater in the North than in the South during recent weeks. The change in the geographical distribution of measles that has resulted can be illustrated by comparing the percentage distribution with that of the week ending July 25, when the total notifications were approximately the same.

Division	Week ended July 25 : 6,817 Notifications	Week ended Oct. 24 : 6,803 Notifications
London	10·2	5·3
South-Eastern	14·7	4·2
South-Western	0·9	0·8
South Midlands	8·8	4·4
Eastern	7·3	3·7
West Midlands	6·1	6·6
North Midlands	6·3	10·4
North-Western	23·3	24·4
Yorkshire	10·3	28·2
Northern	9·1	8·3
Wales	2·9	3·7

Returns for the Week Ending October 31

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,583, whooping-cough 1,015, diphtheria 898, measles 6,812, acute pneumonia 583, cerebrospinal fever 57, acute poliomyelitis 27, dysentery 290, paratyphoid 7, typhoid 12.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 24.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	66	5	21	—	6	107	7	32	2	8
Deaths		—	—				—	1		
Diphtheria	971	53	257	76	20	1,002	48	309	23	35
Deaths	21	—	4	1	—	11	1	6	1	2
Dysentery	177	30	59	—	—	143	12	93	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	—		—	4	1	1		—
Deaths		1	—				—	—		
Erysipelas		—	58	9	2		—	40	2	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				59						
Deaths ..	48	2	15	13		46	—	24	25	8
Measles	6,803	360	379	40	30	783	59	16	57	3
Deaths	7	—	1	—	—	1	—	—	—	—
Ophthalmia neonatorum	68	3	13	2	1	86	3	22	1	1
Deaths										
Paratyphoid fever ..	7	1	3	—		62	4	7	1	
Deaths	—	—			—	—	—			
Pneumonia, influenzal*	659	39	6	—	2	624	18	4	1	3
Deaths (from influenza)	18	1	1	—	—	12	24	1	—	2
Pneumonia, primary ..			164	19				159	3	
Deaths		—		7	8		—		7	—
Polio-encephalitis, acute	2	—				2	—			
Deaths		—					1			
Poliomyelitis, acute ..	25	1	—	28	—	50	1	2	1	1
Deaths		—	—				—	—		
Puerperal fever ..	—	6	10	3	—	4	4	13	1	—
Deaths		—					—			
Puerperal pyrexia ..	162	8	10		1	157	10	14		4
Deaths							—			
Relapsing fever ..	—	—			—	—	—			
Deaths										
Scarlet fever	2,619	169	430	59	50	1,195	43	233	52	32
Deaths	1	—	—	—	—	2	—	—	—	—
Small-pox	—	—	7		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever† ..	12	2	6	8	2	16	2	2	7	—
Deaths	—	—	—	1	—	1	1	—		
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	984	64	21	36	6	1,979	222	63	21	7
Deaths	6	—	—	3	—	10	4	4	1	—
Deaths (0–1 year) ..	314	27	67	25	27	307	27	74	41	18
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,818	523	550	182	114	3,677	502	548	149	104
Annual death rate (per 1,000 persons living)			12·4	12·2	‡			11·9	9·9	‡
Live births	5,847	715	899	380	260	5,240	474	814	255	210
Annual rate per 1,000 persons living ..			18·6	25·4	‡			16·6	16 9	‡
Stillbirths	188	17	39			180	18	37		
Rate per 1,000 total births (including stillborn)			42					43		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A or B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE No.—B.M A. and *B M J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Anaemia in Young Adults—Dietetic?

Dr. M. E. LAMPARD writes: In reply to Dr. G. D. Summers (Nov. 7, p. 566) parsley is a very rich source of vitamin C.

Aspirin for Asthma

J K. D. writes: The notes that have appeared in the *Journal* on the subject of the value of aspirin in asthma prompt me to record my own personal experience. Twenty-two years ago, after I had suffered from asthma off and on for 28 years—i.e., from early boyhood—I made the discovery of aspirin as a preventive in my case. My attacks were almost invariably nocturnal. During a spell of frequent attacks, when 4 a.m. never passed without my being awakened by an attack, I had a headache one evening. At bedtime I took an aspirin tablet, 5 grains, for the headache, and to my surprise I was relieved not only of the headache but for the night of asthma also. A few nights' trial with and without aspirin proved that the relief was no mere coincidence, and that my asthmatic tendency was very much reduced by one aspirin tablet. I therefore continued to take one aspirin tablet every night for some years, and I was very seldom troubled by more than slight symptoms. For the last 15 years, although I am still at times conscious of the tendency, I have regarded myself as practically cured. There may have been other factors partly responsible for my relief. I think there have been—e g., aborting any threat of an attack by a small dose, about four minims, of adrenaline hypodermically—but I am convinced that my small dose of aspirin has been of the greatest value. I never took more than one tablet. I have known a few patients who got some relief from aspirin, but in none was it so marked as in my own case. Like other doctors, I have had experience of the aspirin-sensitive asthmatic whom aspirin renders violently ill. I have not found it of any value after an asthmatic attack has developed. Though not requiring to do so, I still occasionally take aspirin to prevent the possibility, which may be nothing more than a fear, from the analogy of serum anaphylaxis, of long abstinence causing me to acquire sensitiveness to the drug.

Income Tax

Early Years of New Appointment

H. was appointed as a member of a medical board in 1939. For 1939-40 he received £130 and was assessed on £130; for the two following years the amounts have been respectively: 1940-1, £350 and £350; 1941-2, £200 and £350. Is this correct?

*** 1941-2 is the third year of the appointment, and the basis of assessment is the earnings of the preceding year, but if the earnings fall short of that amount a reduction to the actual basis can be claimed. The assessment of £350 was therefore correctly made, but H. can apply for it to be reduced to the actual figure of £200.

General Expenses of Practice

P. seeks information on the following points:

(1) Professional accommodation. One-half of the total cost of rent, rates, etc., is not now usual. On the other hand, one-quarter hardly seems adequate on the facts stated, especially if the total accommodation includes a garage for a car used professionally. We suggest an offer be made to accept one-third under protest. (2) Cost of maid. When only one maid is in fact kept it may be assumed that she assists in private house-work to some extent, and a claim to deduct her wages is valid only in the proportion her time is spent on the professional side of her total work. That no maid might be kept except for the existence of the professional work is not sufficient to justify a claim to deduct the whole expense; the facts have to be taken as they are, not as they might be. We cannot advise on what weekly sum should be charged for her food; it depends too much on the actual facts of the case. (3) If a medical man does in fact pay his wife reasonable remuneration for her services in assisting in the conduct of the practice (say £1 a week) he can deduct that sum as an expense, and she will not be liable for the tax on it as it is covered by the (£80) allowance for "wife's earned income." But if P. did not do so for 1941, he cannot now claim that he did.

LETTERS, NOTES, ETC.

Hypnosis

Dr. A. OWEN-FLOOD (London, N.8) writes: It is evident in Dr. L. H. Eunson's letter (Sept. 19, p. 353) that he has not made a deep study of hypnotism. I think he emphasizes the evils of the state. May I indicate some of its blessings when applied to cure many minor maladies encountered in general practice. Bed-wetting, nail-biting, and other "habits" soon disappear in a few sittings; care, of course, is taken to deal with any physical causes. Hyperemesis gravidarum, insomnia in the puerperium, and sudden arrest of the lactation can be cured by hypnosis. These conditions, often so trying to the patient, the relatives, and the doctor, are mild anxiety states. Hypnosis is a useful weapon in the armoury of the anaesthetist. The dangerous excitement stage of the induction can be prevented by using hypnosis before the induction, and it is especially easy to apply when the premedication is morphine and scopolamine in the usual doses. Spinal anaesthesia is robbed of all its tendency to produce psychic trauma if a trance state is induced as soon as the tingling and numbness are felt in the legs This seems to render the patient more sensitive to suggestion.

Gastritis in Children and Priority Eggs

Dr. PAUL R. E. KIRBY (Brighton) writes: I am at present attending a child aged 4 who is seriously ill with persistent vomiting and pneumonia. Amongst other forms of treatment albumen water is required. I gave the mother Form EG1/C.1 to take to the local food office, but left the category blank as the condition did not come under A, B, C, or D; I wrote on the back of the form: "Child very seriously ill with vomiting and pneumonia." Eggs were refused for the following reasons: (1) class not filled up; (2) condition did not come under category A, B, C, or D. If this child does not get eggs he may die, and yet an expectant mother in good health and doing a full day's work can get them. It does not make sense. Vomiting in children is one of the commonest conditions encountered in general practice and yet no provision is made for it. May I suggest a fifth category—namely, (E) for children suffering from gastritis and requiring eggs and milk or albumen water.

First-aid Treatment for Fractured Spine

Mr. J. R. M. WHIGHAM (St. Andrew's Hospital, E.3) writes: Lieut.-Col. J. L. Moir's letter (Oct 31, p. 529), in which he suggests a simplified method for the first-aid treatment of fractures of the spine, will be appreciated by all those concerned in this branch of work. Another point on which the guidance of orthopaedic surgeons would be valuable, and one which gives rise to confusion in the minds of students of first aid, is the desirability or otherwise of reducing open (compound) fractures of the limbs before applying splints.

MEDICINE 100 YEARS AGO

The following are answers to correspondents, printed at the end of the *Provincial Medical Journal* for November 12, 1842:

Dr. Hennen's communication, on the Mortality of the Children at the Royal Military Asylum, &c., shall appear in our next number. We have also to acknowledge the receipt of an interesting case of hydatids of the brain, by *Mr. Tanner.*

B.—We are not yet reduced to the necessity of inserting communications from quacks, whether professional or non-professional The gentlemen who inhabit certain "squares" must, therefore, content themselves with the publicity which results from the insertion of their puffs in the "Lancet" and "Medical Gazette." It is really deplorable to see how unwilling men are to practice what they preach.

The requests of *Mr. Walker* and *Philo* have been attended to.

We have received some letters relative to the transmission of the Journal, which have been submitted to the publisher.

Amicus.—We thank *Amicus* for his kindness, and shall be glad to receive the first part for perusal.

A.F.—We refer *A.F.* to our advertising columns. The manual of M. Cazenave is the best *elementary* work that the practitioner can possess. There are more elaborate treatises on diseases of the skin, but the one we allude to is the most practical and convenient one with which we are acquainted.

Z.—Our correspondent's prophecy has been fulfilled; but the poor attempt to revive the *Bat's Club* can at the present day only excite contempt. The time is gone by since a falling journal could be propped up by calumny and impotent sarcasm.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 21 1942

THE TYPHUS GROUP OF FEVERS

CLASSIFICATION, LABORATORY DIAGNOSIS, PROPHYLACTIC INOCULATION, AND SPECIFIC SERUM TREATMENT*

BY

A. FELIX, D.Sc.

(From the Emergency Public Health Laboratory Service)

The "typhus group of fevers," comprising a number of different varieties of the disease, is now firmly established. Typhus researches during the past few years have revealed the occurrence of typhus-like diseases in many parts of the world. Not a few endemic diseases of various tropical and subtropical countries, some of which had long been known under the label "unclassed fevers," have now been recognized as members of the typhus fever group. This recent development is mainly due to the application of serological and immunological methods to the study of these diseases. The so-called Weil-Felix reaction has provided in almost every instance the first evidence of the generic relationship of the unknown disease to classical louse-borne typhus, and thus opened the way for the experimental study which has led to the demonstration of the corresponding rickettsia. Some of the best-known instances of this sequence of events are: the endemic typhus of the United States of America (Maxcy and Havens, 1923); the tropical typhus of the Federated Malay States (Fletcher and Lesslar, 1925); the "fièvre exanthématique" of Marseilles, and "fièvre boutonneuse" of Tunis (Burnet and Olmer, 1927; Felix and Rhodes, 1931; Durand, 1932); São Paulo typhus (Piza *et al.*, 1931; Monteiro, 1931; Felix, 1933a); and the tick-bite fever of South Africa (Pijper and Dau, 1930, 1931, 1932).

The terms "rickettsial infections" and "typhus group of fevers" are not synonymous, the former being much wider than the latter. If the rickettsial infections that occur in certain domestic animals are excluded and only those that affect man are considered, there still remain some rickettsial diseases of man which, according to our present knowledge, seem to be unrelated to the typhus group of fevers. Among these diseases may be mentioned the "Q" fever of Queensland (Derrick, 1937; Burnet and Freeman, 1937) and of certain parts of the U.S.A. (Davis, Cox, Parker, and Deyer, 1938), and the "trench fever" which became known in 1916 as a wartime infection but has not again made its appearance in epidemic form, even during the present war.

Classification

Megaw (1921, 1930) was the first to attempt to classify the typhus-like fevers as members of one group of diseases and suggest a subdivision according to the transmitting insect vector. The suggestion was undoubtedly a step in the right direction, and so long as the group was composed of only a few diseases the differentiation according to vector seemed to fit the known facts. This, however, no longer holds good.

A satisfactory classification of the typhus group can be based solely on the antigenic type of the corresponding rickettsiae, upon which immunity and immunity-reactions depend. The antigenic analysis of the various typhus rickettsiae has, however, not yet passed its infancy. The most widely studied of these organisms is *R. prowazeki*, the causal organism of Old World and New World typhus of type X 19. It is known that *R. prowazeki* possesses a heat-labile and a heat-stable antigen (Castaneda and Zia, 1933), that the latter is common to *R. prowazeki* and *Proteus* OX 19 (Weil and Felix, 1921), and that this O antigenic component is alkali-stable (Bruce White, 1933). The antigenic structure of the rickettsiae of the other varieties of typhus and their relationship to each other have not been studied as yet, owing to the great difficulty in obtaining pure suspensions of rickettsiae in sufficiently large quantities. This difficulty has been overcome only quite recently, thanks to the discovery of two methods of growing rickettsiae—namely, in the yolk sac of the developing chick (Cox, 1938) and in the lungs of infected rats and mice (Castaneda, 1939). There is good reason for believing that as a result of these important advances the gaps in our knowledge will be filled very soon.

So far the serology of the typhus group has been based on the antigenic relationship between the rickettsiae of the different varieties of the disease and corresponding serological varieties of *Proteus* X. This relationship is most strikingly demonstrated by the close correlation between cross-immunity and agglutination reactions with the three types of *Proteus* X

TABLE I—*Provisional Classification of the Typhus Group of Fevers*

Immunological Subgroup }	Type OX 19	Type OX K	Type undetermined
Name of disease .	Classical epidemic typhus Tabardillo (Mexico) Brill's disease (U.S.A.) Endemic typhus of U.S.A and Australia, Greece, Syria, Manchuria, Malay (shop typhus), India, Burma, Philippines, Hawaii, Toulon (fièvre nautique), etc	Tsutsugamushi fever of Japan, Formosa, Malay, and Dutch East Indies Scrub typhus of Malay, Dutch East Indies, India, French Indo-China, Australia	Spotted fever of Rocky Mountains Spotted fever of eastern U.S.A. São Paulo typhus Fièvre boutonneuse (Mediterranean) Fièvre exanthématique of Marseilles Febbre errutiva (Italy) Tick-bite fever of South Africa Epidemic and endemic typhus of South Africa Tick-borne typhus of India, Kenya, etc.
Vector ..	Lice and rat fleas	Mites	Ticks, lice, and rat fleas
Reservoir of virus	Rats Man	Field mice and rats	Rodents. Dogs. ? Ticks. Man
Agglutination ..	OX 19 +++ OX 2 + OX K –	OX 19 – OX 2 – OX K +++	OX 19 + OX 2 + OX K +

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* A report to the Medical Research Council.

strains, known as OX 19, OX 2, and OX K (Felix, 1933b). The conception of serological varieties of typhus, based on the work of Fletcher and Lesslar (1925) and formulated by Felix and Rhodes (1931), led to the subdivision of the typhus group into three immunological subgroups.

Table I shows that the suggested scheme (Felix, 1935) comprises at present only two well-defined main types—namely, types OX 19 and OX K. The third subgroup, provisionally designated "type undetermined," probably contains several different types. Further subdivision will be made possible by the use of pure cultures of the corresponding rickettsiae, which will disclose the interrelationships of both the heat-stable and the heat-labile rickettsial antigens.

The most important of these diseases is the louse-borne typhus of type OX 19, known as the classical epidemic typhus and caused by *R. prowazeki.* The subsequent sections of this paper deal mainly with this variety of the disease, though some of the conclusions are applicable also to the other typhus-like fevers. A few remarks on nomenclature may not be out of place here. In the past some confusion has arisen from the tendency to use a number of different names to designate the same disease. In recent papers published in this country (Findlay, 1941a, 1941b) this tendency has reappeared, and the louse-borne epidemic typhus has been given a new name—viz., "exanthematic" typhus. It cannot be said that there was need of a new name. The one chosen by Findlay certainly does not offer any advantage over the generally accepted old names. There is nothing distinctive in the name "exanthematic" typhus, since all the varieties of typhus are exanthematous diseases. Louse-borne typhus occurs as an endemic disease in many parts of the world, but gives rise to widespread epidemics only under exceptional conditions, chiefly in the wake of war, famine, or other major disasters that favour louse-infestation. The term "louse-borne typhus," used throughout this paper, applies to both the epidemic and the endemic form of the disease.

Laboratory Diagnosis

The clinical diagnosis of typhus is not altogether easy, so that early guidance is sought from laboratory findings. The following laboratory methods of diagnosing typhus infections have been suggested at one time or another: biopsy of skin lesions, with a view to demonstrating typhus nodules or rickettsiae; inoculation of the patient's blood into guinea-pigs or other laboratory animals; serological tests. The latter alone have proved to be of practical importance. It is, of course, theoretically possible to diagnose a typhus case by isolation of rickettsiae from the patient's blood or from the insect vector, when this has been found on the patient. It is, however, a mistake to recommend these methods for diagnostic purposes (Army Pathology Laboratory Service, Current Notes, 1941). These complicated and rather dangerous procedures would hardly ever enable the pathologist to aid the clinician in diagnosing a case of typhus fever.

Fortunately, the isolation of rickettsiae is not necessary, since the diagnosis of typhus can be confirmed by a relatively simple serological test. The Weil-Felix reaction has been employed for the purpose during the past 25 years. The limited space here available precludes discussion of the technique of the test, its application by the clinician and epidemiologist, its limitations, and the interpretation of results, but it can be stated that practical experience on a very large scale has shown that the *Proteus* OX 19 reaction is the most constant sign of louse-borne typhus; the clinical symptoms, on the other hand, may show very wide variations.

Experiments on agglutination of rickettsial suspensions have been carried out ever since Weigl (1923, 1930) first obtained fairly concentrated suspensions by his method of anal infection of lice, and Zinsser and Castaneda (1932) by intraperitoneal infection of *x*-rayed rats. These experiments, though of outstanding importance in typhus research, have not so far made it possible to adopt agglutination tests with rickettsiae as a routine method of diagnosing typhus cases. The microscopical technique gives unsatisfactory results, while the macroscopic technique requires relatively large quantities of rickettsial suspensions, which can be more usefully employed for the preparation of vaccines. The most recent advances in growing rickettsiae (Cox, 1938; Castaneda, 1939) have not, for the time being at any rate, materially altered the position.

The published data on the agglutination of *R. prowazeki* by the serum of typhus patients and convalescents present a rather confusing picture. Some workers have reported almost complete parallelism between agglutination of *R. prowazeki* and *Proteus* OX 19 (Weigl, 1930; Zinsser and Castaneda, 1932), whereas others obtained quite different results (Liu, Zia, and Wang, 1938; Hudson, 1940). Obviously the confusion is due to the fact that agglutination of rickettsiae can be adequately described only in terms of two separate reactions—namely, those which occur between the heat-labile and the heat-stable antigens and their respective antibodies. According to Castaneda and Zia (1933), living or formolized rickettsiae are not agglutinated by the OX 19 antibody, but become agglutinable after heating at 75° C.; phenol seems to produce a similar effect to heat. Differently prepared rickettsial suspensions, such as have been employed by various workers, do not therefore indicate the same antigen–antibody reaction when tested against typhus sera that contain, or may contain, the two different antibodies.

What has been said about agglutination of rickettsiae applies also to complement-fixation with these organisms (Castaneda, 1936b; Mosing, 1938; Bengtson, 1941; Bengtson and Topping, 1941). Either of the two reactions may be used for the demonstration of the antibody corresponding to the heat-labile rickettsial antigen provided that a technique is devised by means of which the heat-stable O antigen is precluded from taking part in the reaction and thus obscuring the results.

Although the technique of the customary test-tube agglutination with *Proteus* OX 19 is very simple, still simpler procedures have been adopted by workers in the U.S.A. (Welch, 1937) and in Mexico (Castaneda *et al.*, 1940) in the form of slide agglutination tests. German workers even employ a slide test using dried drops of whole blood instead of the separated serum. Extensive surveys are being carried out by this method in endemic areas in occupied Poland, with a view to detecting missed ambulatory patients and cases of so-called inapparent infection. The latter cases are of special epidemiological importance since they do not show any clinical symptoms whatever, but are capable of infecting lice and spreading the disease. The dry-drop blood tests are carried out within a few minutes even under the most primitive conditions, and it is claimed that the results compare favourably with those obtained with test-tube agglutination (Eyer and Grützner, 1939-40; Steuer, 1942).

Immunity to Typhus in Relation to the Known Antigenic Constituents of Rickettsia

Immunity to typhus has been studied in experimental animals for the past 30 years, but is as yet very incompletely understood. The main obstacles to progress have been, and still are, lack of knowledge of the essential antigens of the causal organism and lack of a suitable experimental animal. Most of the work has been done on guinea-pigs and rabbits; more recently rats and mice have come into use. In none of these animals, however, does typhus infection run a course comparable to the disease in man. Only the chimpanzee reacts with symptoms similar to those of a mild case in the adult man. Monkeys of the various lower genera so far tested do not offer any advantage over the guinea-pig as test animal. Quite recently the Eastern cotton rat of the U.S.A. (Snyder and Anderson, 1942) and the common gerbil of South Africa (Gear and Davis, 1942) have been suggested as more susceptible animals, and are now being tried out.

It has been known for a long time that immunity to typhus is complex—that is to say, it is related to more than one antigenic constituent of the causal organism. The O antigen of *Proteus* X 19, which corresponds to the heat-stable antigen of *R. prowazeki,* does not induce immunity to experimental typhus infection, and the corresponding O antibody, though so valuable in diagnosis, does not account for the protective action of convalescent serum from man and animals. A clue to this puzzling problem has been provided by the work of Castaneda (1934, 1935, 1936a, b, c), who showed that *Proteus* OX 19 immune serum reacts with rickettsia only in agglutination, precipitation, and complement fixation, but is inactive in opsonization. It is the antibody to the heat-labile rickettsial antigen that is of outstanding importance in phagocytosis of *R. prowazeki* and in protection against infection with this organism.

It would be wrong, however, to conclude from these experiments that the heat-stable O antigen and its corresponding antibody are not concerned in typhus immunity, because a glance at Table I shows that they are. Cross-immunity between different varieties of typhus rickettsiae is accompanied by identity of the serum reactions to the O antigen of the corresponding *Proteus* X strains, whereas failure to obtain cross-protection coincides with dissimilarity in O agglutination reactions. The results of cross-immunity tests can thus be predicted from the O agglutination tests obtained with various types of *Proteus* X, and have in fact been so predicted (Felix, 1933b). It is also well established that there are two types of the curve of OX 19 agglutinin production in typhus patients, and that these are related to the clinical course of the disease (for references see Felix, 1930).

These facts can be reconciled with Castaneda's findings if it is assumed that the labile antigen of *R. prowazeki* plays a part similar to that of the labile somatic antigen of the typhoid bacillus, known as the Vi antigen. The analogy between the two is indeed very striking, for the typhoid O antigen alone is incapable of inducing in animals effective immunity to infection with virulent Vi + O bacilli, but the Vi antigen is. And, again, typhoid Vi antibody is a powerful opsonizing agent for Vi + O bacilli, but the O antibody is not. *R. prowazeki* and *Bact. typhosum* also show close similarity in the agglutinative properties of their somatic antigens. Living and formolized suspensions of both organisms are not agglutinated by their respective O antibodies but become agglutinable after heating. Breinl (1924) showed that the O antigen of *R. prowazeki* from the louse gut retains its agglutinogenic property after heating at 100° C., as do O antigens generally.

It seems, therefore, quite natural to assume that the O antigen of *R. prowazeki* plays a part similar to that of the O antigen of the typhoid bacillus and other Salmonellas, and of other organisms—namely, that of acting as an endotoxin. The corresponding OX 19 antibody would thus function as an anti-endotoxin (Boivin and Mesrobeanu, 1933; Raistrick and Topley, 1934; Felix and Pitt, 1934). Strong evidence in support of this view is provided by the clear-cut results of intradermal tests with heat-killed suspensions of *Proteus* OX 19 (Friedberger and van der Reis, 1919) or with extracts prepared from *Proteus* OX 19 (Fleck, 1931). In normal persons and non-typhus patients the intradermal injection of OX 19 antigen produces a local inflammatory reaction, reaching its maximum after 24 to 36 hours. Typhus patients react in a similar manner during the first few days of illness, but from the fifth or sixth day onwards the reaction is negative and remains so throughout convalescence and for varying periods, up to several months, after recovery. This period coincides with the presence in the serum of OX 19 agglutinins in significant titre. The toxicity to man of the OX 19 antigen and the specific neutralization of its toxic action as a result of recovery from typhus infection are thus clearly demonstrated.

The latest development in the study of typhus immunity is the demonstration by German workers of a heat-labile rickettsial endotoxin which is lethal to mice and specifically neutralized by convalescent serum from man and animals (Gildemeister and Haagen, 1940; Otto and Bickhardt, 1941). The lability of this toxic substance is much the same as that of the heat-labile rickettsial antigen described by Castaneda, and it seems very likely that the two are identical.

It would appear, therefore, that in two widely separated organisms, such as the typhoid bacillus and the strictly intracellular-virus-like *R. prowazeki*, the mechanisms of infection and immunity are in principle very much alike. In both cases a heat-labile somatic antigen, besides acting as a toxic substance, inhibits the interaction between the O antigen and the O antibody, and thus protects the bacterial, or rickettsial, cell against the opsonizing and bactericidal actions of the natural and immune O antibody. It is not suggested that these are the sole factors associated with immunity to typhus. Antibodies to yet other, still unknown, constituents of the rickettsial cell may also play a part. But it is obvious that the two rickettsial antigens and antibodies that have so far been defined are essential elements in immunity to typhus.

Specific Serum Treatment

Specific serum treatment of typhus fever of recognized value has not yet been evolved, and attempts at chemotherapy so far have also been unsuccessful. One of the German typhus experts working in Warsaw since 1940 recently reported that trials with nearly 100 different drugs, including 24 sulphonamide compounds, gave only negative results (Wohlrab, 1942). French workers who have had many years' experience of louse-borne typhus in Tunis consider treatment with sulphapyridine not only useless but even harmful (Durand and Balozet, 1941).

Convincing therapeutic effects have not been observed with convalescent serum, although such sera usually exert a definite prophylactic action when tested on the guinea-pig. Wohlrab (1942) found pooled convalescent serum ineffective not only in the treatment of typhus cases but even as a prophylactic when employed during a prison epidemic in Poland.

Durand and Balozet (1941) treated a series of 120 cases of louse-borne typhus in Tunis with serum from horses immunized with living rickettsiae from infected mouse lung and believed that they obtained evidence of its beneficial effects. It is, however, rather disappointing to note from their paper that only the indigenous patients seemed to respond to the treatment, while the European patients did not. Wyckoff and Bohnel (1942), using a strongly concentrated serum from immunized rabbits, described therapeutic effects in guinea-pigs infected with louse-borne typhus. The data published by these workers do not, however, warrant their conclusion, since the serum was in each instance administered before the onset of fever. The present position, therefore, is that there is no convincing evidence of the curative action of the so-called therapeutic sera, although their prophylactic value in animal experiments has been established beyond doubt.

In the light of the facts discussed in the preceding section it would appear that the efficacy of a therapeutic anti-typhus serum depends upon the presence in it of effective amounts of the two different antibodies corresponding to the heat-labile and heat-stable rickettsial antigens. It is, however, quite clear that sera of this kind have not yet been employed in the treatment of typhus patients. Convalescent sera cannot be obtained sooner than two or three weeks after defervescence, by which time the OX 19 titre has fallen to a mere fraction of its maximum value. In louse-borne typhus this maximum is usually reached a day or two before or after the first day of defervescence. There can be little doubt also as to the deficiency in O antibody content of the therapeutic immune sera so far prepared. Durand and Balozet (1940) showed that prolonged hyperimmunization of horses and donkeys in no instance resulted in an increase in the low-titre OX 19 antibody which each of the animals had developed at the very beginning of the immunization. While the titre of the neutralizing antibody rose that of the OX 19 antibody fell, although the doses injected contained enormous numbers of rickettsiae.

TABLE II.—*Showing OX 19 Agglutinin Titres of Therapeutic Anti-typhus Sera and Sera from Horses Immunized with Proteus OX 19 Antigen*

Serum	Antigen used for Immunization	OX 19 Agglutinin Titre
Anti-typhus serum (horse) (Durand and Balozet, 1940)	*R. prowazeki* from mouse lung. Tunisian louse-borne strain	1:100
Anti-typhus serum (rabbit, concentrate) (Wyckoff and Bohnel, 1942)	*R. prowazeki* from egg-yolk sac. European louse-borne strain	1:30
Horse 1	*Proteus* OX 19 alkali-treated	1:60,000
" 2	"	1:40,000
" 3	"	1:20,000
" 4	"	1:5,000

This difficulty may possibly be overcome by producing the O antibody by immunization with the O antigen of *Proteus* X 19. Horses are now being immunized at the serum department of the Lister Institute at Elstree in collaboration with Dr. G. F. Petrie. The immunizing material was designed to contain in concentrated form the alkali-stable O antigen of *Proteus* X 19, which, according to Bruce White (1933), is common to both *R. prowazeki* and *Proteus* X 19. Table II shows the OX 19 titres of the serum from horses immunized in this way. For comparison the OX 19 titres of the therapeutic sera prepared by Durand and Balozet (1940) and by Wyckoff and Bohnel (1942) have also been included in the table.

Three of the four horses immunized with OX 19 antigen developed titres higher than those usually met with in recovered typhus patients. The titres also compare favourably with the titre of the typhoid O antibody in therapeutic anti-typhoid serum (Felix and Petrie, 1938). It is known that the strong antitoxic activity of anti-typhoid Vi + O serum is mainly due to its anti-O component, and it seems worth while trying whether a potent OX 19 immune serum will exert a similar effect in cases of typhus fever.

It is hoped that a supply of this serum will shortly be available for clinical trial along with anti-rickettsia serum. Evidence of the efficacy of such treatment cannot be obtained from animal tests, since none of the experimental animals develops toxic symptoms comparable to those of louse-borne typhus in man. Anti-OX 19 serum should, of course, be tried in combination with anti-rickettsia serum containing neutralizing antibody in high titre. The relative importance of the effects of each of the two antibodies on the course of the disease can be assessed only by clinical trials on typhus patients.

Prophylactic Immunization

Immunization against louse-borne typhus is still in the experimental stage. It is only two or three years since methods of growing rickettsiae in large quantities have been developed. Vaccine made from the gut of infected lice (Weigl, 1930) is the only type of killed typhus vaccine that has, so far, passed its test for efficacy in the field. Unfortunately this vaccine is too difficult to make on a large scale. Most of the workers in America favour the use of rickettsiae grown in the yolk sac of developing chick embryos (Cox, 1938); French workers follow the method of Castaneda (1939) and grow the rickettsiae in the lung of infected mice or rabbits (Durand and Giroud, 1940). In Germany all three techniques are apparently employed.

A number of other problems of importance still remain to be solved before typhus vaccines of maximum prophylactic value can be obtained. One of these is the question how the labile rickettsial antigen can best be maintained in the cultures. The best methods of killing and preserving the vaccines have also yet to be found. At present phenol and formalin are employed. It is known that typhoid vaccines prepared in this way do not contain the labile Vi antigen in its most efficient form (Felix, Rainsford, and Stokes, 1941), and it is quite probable that the labile rickettsial antigen also is damaged by phenol and formalin.

The customary methods of testing the efficacy of typhus vaccines are active immunization of guinea-pigs and tests for OX 19 and neutralizing antibodies in the serum of inoculated subjects. It is not advisable to rely on any one of these tests as the sole method of assay. All three types of test should be employed when differently prepared vaccines are compared.

Tests of OX 19 agglutinin response were recently carried out on a number of volunteers in this country. The subjects were members of selected hospital staffs and sanitary personnel who were being inoculated under a scheme organized by the Ministry of Health in consultation with the Medical Research Council.* The immunizing course consisted in each instance of three doses of the size recommended by the various laboratories issuing the vaccines. Each volunteer had a sample of blood withdrawn before receiving the first dose of vaccine; a second sample was taken a fortnight after the third dose. Any rise in OX 19 agglutinin titre of 100% or more was taken to be a "significant" increase in antibody content. The results are summarized in Table III.

The table shows that the antigenic value of the various vaccines, as judged by the O antibody response, differed very much. Rabbits injected intravenously with the same vaccines failed to disclose any significant difference; all responded with OX 19 antibody formation.

TABLE III.—*Showing the OX 19 Agglutinin Response in Volunteers Inoculated with Various Typhus Vaccines. (Nov., 1941, to March, 1942)*

Vaccines			Number Inoculated	Number and Percentage showing Significant Rise in OX 19 Agglutinin Titre	
Batch	Prepared from Rickettsiae grown in	Prepared or Issued		No.	%
A	Yolk sac. European louse-borne strain	Oct., 1940	68	3	4.4
B	" "	10/5/41	144	25	17·3
C	" "	4/11/41	125	62	49 6
D	Mouse lung. Tunisian louse-borne strain. (Dr. G. M. Findlay)	1/11/41	16	3	18·7
E	Rat lung. American murine strain	Date of expiry, April, 1943	12	0	0

Neutralization tests of the sera from the various vaccine groups have not yet been carried out, but it is hoped the results will be available for publication at a later date. It is possible that phagocytosis tests may eventually be employed for the quantitative estimation of the antibody to the labile rickettsial antigen, since the O antibody, according to Castaneda (1936a), does not take part in the opsonization of *R. prowazeki*.

Recent reports from Germany emphasize the fact that a death from louse-borne typhus has not yet been recorded in a patient who had been fully immunized with Weigl's vaccine. Very encouraging results also have been obtained in Rocky Mountain spotted fever, the most malignant variety of typhus, by the use of a similar vaccine prepared from infected ticks. Parker (1941), summarizing the results of 15 years' experience of his tick vaccine, showed that the case-fatality rate was 82.3% in non-vaccinated cases in adults but only 8.1% in fully vaccinated cases. Unsuccessful vaccination experiments of earlier workers seemed to suggest that the rickettsiae in the arthropod vector may have some peculiar properties which rickettsiae in the tissues of man and mammals do not possess. It now appears to be likely that the differences are quantitative rather than qualitative: If this is so, one is justified in expecting *R. prowazeki* from animal tissue to yield vaccines of an efficacy equal to that of Weigl's louse vaccine.

Summary

The serological diagnosis and the classification of the fevers of the typhus group are based, so far, on the heat-stable O antigen which is common to the various types of *Rickettsia* and the corresponding types of *Proteus* X. Further subdivision will be made possible by the study of the heat-labile rickettsial antigen.

The roles of the two rickettsial antigens in typhus immunity are very similar to those played by the Vi and O antigens in immunity to typhoid fever.

Therapeutic anti-typhus sera, as at present prepared, contain only negligible amounts of the O antibody. The use of *Proteus* OX 19 immune serum, in combination with anti-*R. prowazeki* serum, is suggested for the treatment of cases of louse-borne typhus.

The methods of preparing and testing typhus vaccines are discussed.

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* Ministry of Health Memo. 252/Med, p. 3, para. 4.

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CIRCUMCORNEAL INJECTION AS A SIGN OF RIBOFLAVIN DEFICIENCY IN MAN

WITH AN ACCOUNT OF THREE CASES OF ARIBOFLAVINOSIS

BY

HAROLD SCARBOROUGH, M.B., Ph.D.

(*From the Clinical Laboratories and Medical Out-patient Department of the Edinburgh Royal Infirmary*)

From the heterogeneous collection of signs and symptoms called pellagra a number of specific syndromes are gradually becoming distinct. In 1938-9 Sebrell and Butler first described the specific syndrome of riboflavin deficiency in man, characterized by undue redness of the buccal mucous membrane at the angles of the mouth, by softening of the skin and subsequent fissuring at those angles, and by reddening, fissuring, and desquamation of the vermilion areas of the lips. Similar lesions were observed in the vestibule of the nose and involving the alae nasi and naso-labial folds; and seborrhoeic lesions of the nose, eyelids, and ears were frequent. These findings were confirmed by, among others, Sydenstricker, Geeslin, Templeton, and Weaver (1939), who drew attention to an associated dermatosis which was seen in 2 cases out of 6. A skin lesion, apparently similar, has since been noted by Duckworth (1942). In 1940 Kruse, Sydenstricker, Sebrell, and Cleckley added a further sign—viz., a specific glossitis, different from the red atrophic tongue of the pellagrin in that the organ is purple or magenta in colour, clean, with "flattened or mushroom-shaped" papillae and frequently fissured. They described for the first time ocular lesions characterized by circumcorneal injection, conjunctival congestion, and keratitis. Vascularization of the cornea followed by infiltrations and opacities had previously been described in ariboflavinosis in rats by Bessey and Wolbach (1939). All the above stigmata have been repeatedly resolved by riboflavin but not by any other vitamin, and all except the dermatoses have been produced as the result of experimental feeding.

The ocular manifestations of ariboflavinosis were more fully described by Sydenstricker, Sebrell, Cleckley, and Kruse (1940), who found by means of slit-lamp examination of the cornea that a superficial vascularizing keratitis was the principal ocular manifestation of ariboflavinosis in man. Definite ocular changes could be observed in subjects presenting no evidence of cheilosis or glossitis. Photophobia, blepharospasm, dimness of vision, burning sensations in the eyeballs, "roughness" of the eyelids, and extreme visual fatigue were frequent symptoms, and impairment of visual acuity in the absence of any refractive error or opacity was also described. The earliest and most common ocular sign was found to be circumcorneal injection, which, though "often grossly visible," could always be discerned with the slit-lamp microscope, which revealed actual invasion of the cornea by capillaries in 37 out of 47 cases. Gross injection of the vessels of the fornix and sclera without evidence of infection was also common (43 out of 47 cases). Certain changes in the iris (frank iritis, congestion and pigmentation of the iris) were observed, but much less frequently. Many of these lesions resemble, but are actually distinct from, the ocular manifestations of avitaminosis-A.

Among the series of 47 cases described by Sydenstricker *et al.* (1940) was a group of 18 apparently well-nourished institutional employees, 14 of whom were between the ages of 20 and 35. Only 3 of them were taking "restricted" diets on account of intercurrent disease. All these subjects were considered to have circumcorneal injection, and in addition 13 showed evidence of corneal vascularization when examined with the slit-lamp. On account of this striking finding, but also because of the relative ease with which circumcorneal injection may be detected, it was thought worth while to determine the incidence of this sign in a series of individuals of the hospital class. The results of such an investigation are now presented because of their striking nature, because we believe that the experience of other workers will have been similar, and in order to draw attention to the care which is necessary before circumcorneal injection can be ascribed to ariboflavinosis.

Material and Methods

The investigation was undertaken on a series of 204 cases seen during the routine work of the medical out-patient department of the Edinburgh Royal Infirmary between Oct., 1941, and March, 1942—i.e., during the season when the highest incidence of deficiency disease might be expected to occur. The ages of the patients, none of whom suffered from any ophthalmic infection, varied from 12 to 69. Each subject was examined for circumcorneal injection according to the description given by Sydenstricker and his colleagues, but in no case was the slit-lamp used, and no detailed examination for other stigmata of vitamin deficiency disease was made except in 8 selected cases referred to later. The great majority of the patients suffered from chronic organic disease, but, so far as is

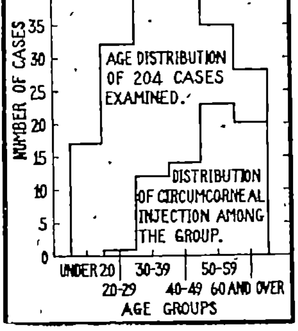

Chart showing incidence of circumcorneal injection, in reference to age, among 204 cases.

known, none was febrile when examined. Cases of frank vitamin deficiency disorder (2 cases of scurvy, 1 of frank ariboflavinosis, and 1 of pellagra with hypochromic anaemia) are not included in the analysis, but are referred to specifically below.

The riboflavin used in this investigation was "lactoflavin" Roche, supplies of which were made available by Roche Products Ltd. Particular care was taken to ensure that the material was protected from the light, strict instructions on this point being given to all patients.

Results

Out of 204 cases examined, 70 (34.3%) presented evidence of circumcorneal injection. On further analysis the physical sign was seen to be unevenly distributed through the series, occurring with relatively greater frequency in the older patients (see Chart). Among subjects aged 50 or over (63 cases) circumcorneal injection was found in 43 (68%). These striking findings might at first be taken to indicate that one-third of all the patients, and two-thirds of the patients over 50, manifested evidence of ariboflavinosis. This interpretation, even taking into account that the investigation was made during the winter and early spring of the third year of war, seemed to us untenable and to require further consideration of the possibilities involved. Essentially these seem to be (*a*) that we have not interpreted the description of Sydenstricker and his co-workers correctly, or (*b*) that circumcorneal injection cannot always be taken as evidence of ariboflavinosis. It is possible also that we may have erred on both counts. It was accordingly felt that a more detailed examination of a small number of cases would be of value. This was undertaken from two points of view, as follows:

1. On the basis of their willingness to co-operate, 8 subjects were chosen from the above series for more complete investigation, the results of which are briefly set forth in Table I. None of these patients suffered from obvious disease of the alimentary tract, and all were taking a usual diet, apparently adequate for their caloric, protein, vitamin, and iron requirements. They were instructed to make no alterations in their way of living during the period of investigation. With the possible exception of Case 1, there was no obvious difference in the degree of circumcorneal injection during or after oral or parenteral riboflavin therapy. Two cases given brewer's yeast after treatment with riboflavin also failed to improve.

TABLE I.—*Showing Results of Riboflavin Treatment of 8 Subjects with Bilateral Circumcorneal Injection*

Case	Sex and Age	Diagnosis	Other Ocular Symptoms and Signs	Other Stigmata of Possible Deficiency Disease	Riboflavin Therapy	Dosage (mg.)	Result
1	M 53	Chr. bronchitis. Emphysema	"Itchy" eyes	Dry, atrophic, pigmented skin	Oral 6 mg p.d. for 20 days	120	? Nil. "Eyes feel a little clearer"
2*	F 69	None made	Unequal and irregular pupils. Previous history of iritis	Bruises easily. Undue fatigue	Oral 12 mg. p.d. for 7 days, then I.M. 10 mg. p.d. for 6 days	144	Nil
3	M 48	Lumbar fibrositis	Nil	Nil	I.M. 2 × 10 mg. on first day, then oral 6 mg. p.d. for 14 days	104	Nil
4†	F 54	Colloid goitre. Auricular fibrillation	Eyes easily fatigued	Nil	Oral 6 mg. p.d. for 27 days	162	Nil
5	F 46	Obesity and glycosuria	? Allergic conjunctivitis in spring	Nil	Oral 3 mg. p.d. for 10 days, then 6 mg. p.d. for 10 days, then 12 mg. p.d. for 6 days	162	Nil
6	M 40	Chr. (left) pyelonephritis. Under urological investi ation	Nil	Nil	Oral 6 mg. p.d. for 14 days; 4 I.M. injections 10 mg.	124	Nil
7	M 42	Pleurisy. Unresolved pneumonia	Nil	General debility	Oral 6 mg. p.d. for 14 days, then brewer's yeast 2 oz. p.d. for 14 days	84+	Nil
8	M 50	Chr. bronchitis. Emphysema	Rapidly progressive presbyopia. Marked arcus senilis	Nil	Oral 6 mg. p.d. for 14 days, then brewer's yeast 2 oz. p.d. for 10 days	84+	Nil

* Gave a previous history of aphthous stomatitis four years ago.
† This patient was taking digitalis during the latter part of the investigation.
The riboflavin content of brewer's yeast is given by Fixsen and Roscoe as 1·5 mg. per 100 g.

TABLE II.—*Effect of Riboflavin Therapy in 8 Cases of Frank Vitamin Deficiency with Circumcorneal Injection*

Case	Sex and Age	Diagnosis	Other Signs and Symptoms of B-complex Deficiency	Riboflavin Therapy	When Given	Dosage (mg.)	Result
9	M 71	Scurvy	Peripheral neuritis. Sore tongue. Dry scaly skin*	Oral 6 mg. p.d. for 22 days + 2 I.M. injections of 10 mg. each	After ascorbic acid 5 9 g. and thiamin 0 35 g.	150+	? Nil
10	M 61	Scurvy	Nil	Oral 6 mg. p.d. for 28 days, with brewer's yeast 20 g. p.d. for 14 days	With ascorbic acid 500 mg. p.d. for 7 days	162+	Nil
11	M 58	Scurvy	Peripheral neuritis. Aphthous stomatitis. Dry scaly skin. Cured by brewer's yeast	Oral 6 mg. p.d. for 14 days	After ascorbic acid 3·5 g. and hesperidin 9 6 g.	84	Improved
12	M 60	Scurvy	Paraesthesiae; numbness in both feet later ? cured by thiamin	Oral 6 mg. p.d. for 14 days + I.M. injection of 10 mg.	After ascorbic acid 3·6 g. hesperidin 48 g.	94	Improved
13	F 48	Hypochromic microcytic anaemia	Bright-red painful tongue. Buccal ulceration. Rough pigmented skin elbows and wrists†	I.M. 5 mg. p.d. for 10 days	With $FeSO_4$ 9 g. p.d. and ascorbic acid 200 mg. p.d.	50	Cured
14	M 40	Scurvy	Marked peripheral neuritis and oedema responding to thiamin. Stomatitis. Sore tongue	I.M. 5 mg. and 10 mg. on alternate days	After ascorbic acid 5·5 g. and thiamin 0·35 g.	50	Cured
15	M 60	Scurvy	Nil	I.M. 5 mg. p.d. for 7 days, then brewer's yeast 2 oz. p.d. for 26 days	After ascorbic acid 6 g.	35+	Nil
16	M 40	Pellagra	Diarrhoea. Stomatitis. Red, raw, atrophic tongue. Thick dry pigmented skin †	I.M. 10 mg. p.d. for 5 days, then 12 mg. p.d. orally for 14 days	After ascorbic acid 5 g. and nicotinic acid 4·2 g.	218	Cured

* Circumcorneal injection very marked. No evidence of infection. Photophobia and blepharospasm, "roughness" of the eyes and undue visual fatigue all improved by riboflavin. Other signs and symptoms resolved by brewer's yeast or nicotinic acid.
† All cured by nicotinic acid.

It is clear, therefore, that a form of circumcorneal injection exists which is not cured by riboflavin even in large doses. In 8 cases this was not found to be associated with other evidence of riboflavin deficiency or with other stigmata of deficiency disease. It cannot, therefore, be ascribed to ariboflavinosis. It may be observed in this connexion that Youmans (1941) has evidently observed a number of cases of angular stomatitis (cheilosis), indistinguishable from those due to riboflavin deficiency, which failed to respond to oral or parenteral riboflavin therapy. He considered that these cases were unlikely to be due to riboflavin deficiency.

2. A second group of 8 subjects, all of whom presented evidence of frank vitamin deficiency disease, were studied in order to determine (*a*) whether circumcorneal injection similar in appearance to that already noted could be detected, and (*b*) whether riboflavin could resolve the abnormality. Table II summarizes the results of this investigation. Circumcorneal injection could be detected in all these cases; we have, however, records of subjects suffering from frank vitamin deficiency disease, especially scurvy, who do not show this clinical sign. Six of the 8 cases presented in addition other evidence of deficiency of the B-complex vitamins: of these, 3 were cured and 2 definitely improved in respect of circumcorneal injection by riboflavin therapy, the other manifestations of B-complex deficiency afterwards yielding to thiamin, nicotinic acid, or brewer's yeast. One case with marked circumcorneal injection showed no improvement from riboflavin or brewer's yeast, although other stigmata of B-complex deficiency were resolved and there was considerable, and almost certainly genuine, symptomatic relief (see footnote to Table II). Two cases of scurvy without evidence of B-complex deficiency had circumcorneal injection but did not respond to riboflavin therapy or to brewer's yeast.

It is clear, from the study of these cases, (*a*) that circumcorneal injection, even when associated with frank vitamin deficiency disease, cannot always be resolved by riboflavin, and is therefore not necessarily a stigma of ariboflavinosis; and (*b*) that a form of circumcorneal injection exists which is resolved by riboflavin but which has been, in our experience, invariably associated with other stigmata of B-complex deficiency. This latter finding confirms in part the observations of Sydenstricker and his colleagues, but seems to point to the fact that circumcorneal injection (as interpreted by us) is not in itself evidence of ariboflavinosis. The physical sign requires to be supported by other evidence of deficiency of the B-complex vitamins, or possibly by examination of the cornea by slit-lamp microscopy—a procedure of which we have no experience.

Further confirmation of these findings and of the classical description of clinical ariboflavinosis by Sydenstricker *et al.* is provided by the following 3 cases of the fully developed deficiency syndrome.

Illustrative Cases

Case 17.—This patient, a woman aged 53, had complained of the symptoms of flatulent hyperchlorhydric dyspepsia with considerable epigastric pain for some three months, together with recent loss of weight and constipation. On investigation she was found to have a small, probably benign, ulcer on the lesser curvature of the stomach. She had been dieting herself for many years. When examined she had photophobia, "roughness" of the eyes, "itchiness" of the lids, and undue visual fatigue for which she had recently been bathing her eyes each evening. Mild blepharospasm, marked reddening of the ciliary margin, and circumcorneal injection were also present. She had aphthous stomatitis and a painful fissure at the right-hand angle of the lips. Her tongue, which was often sore, was pale, smooth, and atrophic. She had recently become a little breathless on exertion, and had a resting pulse rate of 100 a minute and a blood pressure of 110/68 with no evidence of cardiovascular disease. Recently lassitude, depression, and undue fatigue, with pains across the shoulders and down the right arm, had been additional features of the case. This patient's ocular signs and symptoms were rapidly resolved by riboflavin in doses of 12 mg. daily by mouth. Thereafter, regulation of the diet, with the administration of brewer's yeast in doses of 1/2 oz. four times a day, produced remarkable clinical improvement. Pain disappeared within 2 to 3 weeks. She had much more energy and was able to climb stairs without dyspnoea. The resting pulse rate fell to 70–80, and the blood pressure increased to 128/80. The aphthous stomatitis was much improved but not cured. Four weeks after stopping brewer's yeast, and while she was still taking what appeared by normal standards to be an adequate diet, she developed circumcorneal injection, "roughness" of the eyes, and mild photophobia. These again responded to riboflavin treatment.

Case 18.—A woman aged 56, with steatorrhoea following multiple abdominal operations. She had had cheilosis intermittently for two years. On examination there was marked and multiple fissuring at both angles of the mouth, in the naso-labial folds, and at the lateral canthus of both eyes. She had a very painful aphthous stomatitis with dysphagia, and a smooth, pale, tender tongue. Circumcorneal injection was present together with "roughness" of the eyes and impaired visual acuity. Oral administration of riboflavin, 6 mg. daily for 6 days, produced considerable improvement, and daily intramuscular injection of 5 mg. for 10 days completely cured the cheilosis, circumcorneal injection, and ocular symptoms. The aphthous stomatitis, and especially the sore tongue, were not resolved by riboflavin, but responded to nicotinic acid in daily doses of 200 mg. by mouth. All the symptoms returned within 14 days after discontinuing the therapy, even although the diet, by normal standards, was more than adequate in respect of vitamins of the B complex.

Case 19.—This patient, a man aged 69, had been treated intermittently for "pernicious anaemia" since 1916, and for the last 10 weeks had been having injections of liver extract (pernaemon) every 14 days. At the beginning of the present investigation the Hb was 12.2 g. per 100 c.cm. (88% Haldane), with R.B.C. 4,000,000 and C.I. 1.10. He had been complaining for some six months of debility, lassitude, undue fatigue, and vague pains across the shoulders, down the arms, and in the back of the neck. For several years, especially in the winter and early spring, he had had a scaly non-erythematous skin lesion on the calves of the legs, forearms, and back of the hands that was always intensely itchy. On examination a dry "branny" skin was found, with perifollicular keratitis in both upper arms, patchy pigmentation on the back of both hands, forehead, and face, and deformed, ribbed, and very brittle finger-nails. Circumcorneal injection was present, associated with "roughness" of the eyes, some photophobia, and a previous history of iritis, of which residual evidence remained. There was marked cheilosis at the angles of the mouth but none elsewhere. The appearance of the tongue was very striking, the organ being large, somewhat painful and tender, irregularly fissured with large flattened papillae, and magenta in colour. The characteristic purple hue of the tongue in ariboflavinosis can be appreciated best if the organ is inspected within the mouth, where its colour can be viewed against the background of the palate. The tongue of the typical pellagrin appears relatively small and rough, and is redder than the palatal mucous membrane. The tongue in ariboflavinosis appears relatively large and smooth. It is, however, deeply fissured and strikingly more purple than the mucous membrane of the palate and cheek.

After several examinations at weekly intervals, during which no significant alteration in the clinical picture occurred, riboflavin 6 mg daily by mouth was given. After 30 mg. considerable clinical improvement was noted in respect of the ocular changes, cheilosis, glossitis, and dermatosis. In particular, circumcorneal injection was completely resolved. This improvement occurred in spite of the fact that the patient had been receiving every 14 days an injection of liver extract which probably contains some riboflavin. Further treatment by 2 oz. of brewer's yeast daily maintained the clinical improvement, and appeared, after two weeks' administration, to have had a favourable effect on the dermatosis. The perifollicular keratitis was not, however, improved. The patient was seen again 26 days after all therapy had been discontinued. His general health had improved considerably, but cheilosis, glossitis, and circumcorneal injection were again present.

Discussion

A striking feature of the clinical course of the above three cases has been the relatively rapid return, within 2 to 4 weeks after treatment had been stopped, of symptoms and signs (viz., cheilosis, glossitis, circumcorneal injection, and ocular symptoms) which are evidently to be ascribed to riboflavin deficiency, since they are identical with those described by Sebrell and Butler, and by Sydenstricker and his colleagues, and which, furthermore, have responded (in one case on two occasions) to treatment with riboflavin. In 18 out of the 47 cases referred to by Sydenstricker *et al.* (1940) relapse occurred shortly after riboflavin therapy had been discontinued. Apart from 15 apparently healthy individuals whose diets could not be regarded as deficient or unusual, the majority of their cases were taking a frankly deficient diet. Analysis of the diets taken by Cases 17, 18, and 19 of the present series reveals that Cases 17 and 18 were certainly receiving between 2 and 4 mg. of riboflavin a day—on at least 3 days a week in Case 17 and daily in Case 18. Case 19 took a diet which could not be criticized on any ground, and in addition received 2 c.cm. of liver extract every other week.

A possible interpretation of these findings is that the riboflavin requirements of certain individuals are unusually great, as the result either of abnormal utilization or of defective absorption, or both. The idea that synergistic reactions in respect of other vitamins condition the absorption and utilization of riboflavin must be taken into account in evaluating this possibility. Although the results of the present investigation may be taken to indicate the existence of at least two types of circumcorneal injection, only one of which is resolved by riboflavin therapy, an alternative interpretation would appear to be that the development of circumcorneal injection is conditioned by a number of limiting factors, only one of which is a relative deficiency of riboflavin in the diet. In the latter connexion it is of interest to recall the findings of Albanese and Buschke (1942), who observed the clinical manifestations of ariboflavinosis in rats occurring as the result of a lack of tryptophane in their diet. A relationship between the metabolism of protein and another vitamin of the B complex is indicated by the work of Banerji (1941), who found that the presence of a large amount of protein in the diet of rats prevented the bradycardia and loss of weight usually associated with thiamin deficiency, and also that the growth rates of rats on various graded levels of vitamin B_1 were better in each case with excess of protein than without it.

Summary and Conclusions

In a series of 204 unselected out-patients between the ages of 12 and 69 circumcorneal injection was observed in 70 cases (34.3%). In 63 of those aged 50 or over circumcorneal injection was found in 43 (68%).

The observations of Sydenstricker *et al.* on the occurrence of circumcorneal injection in ariboflavinosis have been confirmed, but a form of the condition exists even in subjects presenting evidence of frank vitamin deficiency disease which cannot be attributed to a deficiency of riboflavin, as it is not resolved by administration of the vitamin. The latter finding no doubt accounts for the relatively high incidence of circumcorneal injection observed.

Although circumcorneal injection may be an early stigma of ariboflavinosis it cannot be considered such unless supported by other clinical findings—cheilosis, glossitis, dermatosis, and ocular symptoms—or by slit-lamp examination of the cornea (Sydenstricker *et al.*). The result of a therapeutic test, however, probably still remains the best criterion.

Three cases of ariboflavinosis are described, and it is suggested that certain subjects manifest a requirement for riboflavin which, for reasons unknown, is unusually large.

ADDENDUM.—Since completing this paper we have had the opportunity of discussing the matter with Dr. Sydenstricker, who has seen with us several cases of ariboflavinosis confirmed by slit-lamp microscopy. It is evident that the circumcorneal injection which forms the basis of this communication differs in no material way, on purely clinical examination, from that described by Sydenstricker in frank ariboflavinosis.

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DOCTORS FROM OVER-SEAS: HOSPITALITY AT L.C.C. HOSPITALS

The London County Council is offering hospitality at its hospitals to Service doctors and nurses from the U.S.A., Canada, Australia, New Zealand, South Africa, etc. Details of the arrangements have been sent to the various authorities concerned. There may be, however, doctors and nurses who will not hear about it through official channels, and also there may be some from the countries mentioned who are serving with the British Forces. Any such who would like to visit L.C.C. hospitals or stay there during short leave should get into touch with the Medical Officer of Health, London County Council, County Hall, S.E.1 (telephone WATerloo 5000, extension 6425).

SULPHONAMIDES USED LOCALLY

THEIR ABSORPTION FROM SEROUS CAVITIES AND WOUNDS IN MAN

BY

FRANK HAWKING, D.M.
Of the National Institute for Medical Research

AND

ALAN H. HUNT, D.M., M.Ch., F.R.C.S.
Recently Temporary Assistant Surgeon at St. Bartholomew's Hospital

The sulphonamides are the most satisfactory of the drugs at present available for use in preventing the development of infection in contaminated wounds. There is evidence to show that they are more effective when used locally in the wound than when they are given by mouth or parenterally, owing to the greater concentration at the site of potential infection. The local effects of these compounds depend on their individual bacteriostatic powers, and their physical properties. To be of benefit the selected drug or mixture of drugs should be present in the wound fluids in sufficient concentration and for long enough for the infection to be wiped out or for the normal tissue reactions to obtain control of the situation. The rate of absorption of sulphonamides from wounds is therefore of importance, and the present study was undertaken to investigate this problem. As the work was interrupted by the change of appointment of one of the authors the results presented are unfortunately incomplete.

Methods.—Observations were made on patients undergoing operations, many of which were abdominal. Before the peritoneum was closed the sulphonamide was introduced in measured quantities. Powders were sprinkled or dumped into the cavity out of a small container and spread with the finger. Solutions and suspensions were inserted through a catheter, around which the peritoneum had been almost closed; in this way little or none of the drug was lost. The subsequent absorption was followed by taking blood samples at 6, 24, and 48 hours and by measuring the excretion in the urine.

Results

The results in 25 cases are shown in the accompanying table. These include 8 cases observed by Prof. R. S. Pilcher. Nearly 60 other cases were observed clinically, but they have been omitted from this table as the records are incomplete in some particular or other. The first group consists of 11 patients who received 5 g. of sulphanilamide powder. This group comprised 6 abdominal operations, 3 thoracoplasties (2 on children), 1 nephrectomy, and 1 wound of the forearm. The blood and urine figures varied somewhat irregularly, without particular reference to the nature of the operation; for conciseness they are given as an average. Three other cases received 7.5 to 10 g. and a fourth case 15 g., and the concentrations in the blood and urine were somewhat higher. It is seen that when 5 to 10 g. of sulphanilamide is placed in the peritoneal cavity most of the urinary excretion occurs during the first two days. An effective blood concentration was maintained for 24 hours, the maximum reading (at 6 hours) corresponding in this series to about 0.5 to 1 mg. per 100 c.cm. for each gramme of sulphanilamide inserted.

Three patients received 5 to 7.5 g. of "hypoloid sulphanilamide L.S.F." intraperitoneally. This is a Burroughs Wellcome preparation consisting of 15% sulphanilamide in solution as sulphanilamide lactoside sodium formaldehyde sulphoxylate, and it is intended for intramuscular injection. As seen from the table, most of the urinary excretion occurs during the first twelve hours, and probably bacteriostatic activity in the peritoneum is too brief for the optimum results to be obtained.

In 2 cases a wound was packed with gauze and an oil-in-water emulsion, Preparation C, made by the British Drug Houses Ltd. (sulphanilamide 30, beeswax 0.7, cod-liver oil 49, oleic acid 3.6, sodium hydroxide 0.5, water to 100 parts—Fuller, Hawking, and Partridge, 1942). In animals it has been found that the presence of the oil delays absorption, provided that the surface is small compared with the volume, as in the present instance. In these two cases the results are rather irregular, but after 5 to 6 days the dressing still contained considerable quantities of sulphanilamide. In a third case a small deep wound was packed with gauze plus a preparation consisting of sulphanilamide 30%, cod-liver oil 60%, and beeswax 10%, about 4 g. of sulphanilamide being inserted; the blood concentration at 24 hours was free 1.1, total 1.7 mg. per 100 c.cm., and during the next 5 days the daily excretion of sulphanilamide in the urine was about 0.2 to 0.4 g.; when the dressing was removed on the fifth day it contained about 0.2 g. of the compound. It should be noted that further histological study of experimental wounds has led us to the conclusion that all types of oil which may become embedded in a wound lead to undesirable tissue reactions and that cod-liver oil is particularly deleterious in this respect (Hawking, 1942).

Six patients received sulphadiazine inserted as a microcrystalline suspension (Chambers *et al.*, 1942), and the results with 4 of them are shown in the table. The blood concentrations in these cases were high, but the urinary excretion was less prolonged than animal experiments had led us to expect. The effect of this treatment on the clinical condition seemed to be good, allowing for the grave nature of these cases. Two of the patients died, on the eighth and tenth days respectively, and small cakes of solid sulphadiazine were found in the recto-vesical fossa, surrounded by adhesions and lymph; histologically, there was little evidence of irritation specifically due to these lumps. It is concluded that the absorption of sulphadiazine is incomplete and that it is not the best compound for intraperitoneal use. Further investigations were planned but could not be carried out.

Table showing Amount of Various Sulphonamide Compounds in Urine and Blood following Insertion into Abdominal or Other Wounds

Preparation and Dose	Daily Excretion in Urine (g.)					Total Excretion (g.)	Concentration in Blood, free/total (mg. per 100 c cm.)			Remarks
	1st	2nd	3rd	4th	5th		6 hrs.	24 hrs.	48 hrs.	
Sulphanilamide:										
5 g.	1·08	1·10	0·35	0 21	0 02	2·5	3·2/4·2	2·7/3·8	1 0/1·5	Av. of 11 miscellaneous cases
7·5–10 g.	2 0	2·7	0 85	0·48	—	6 0	6 3/8·1	4 2/6·4	1 2/2·2	Av. of 3 cases (thoracoplasty, thoracotomy, gastrectomy)
15 g.	anuria	0·76	0 90	0 76	0·26+	2·7+	—	12/13	2 3/3 8	Excision of loop of colon
Sulphanilamide L.S.F. 5–7·5 g.	(½ 1 1½ 2 3 days) 2 0 0 8 0·4 0 6 0			—	—	3·3	1·5/1·9	0·5/1·0	—	Av. of 3 cases (perforated D.U. (2), appendicectomy)
Preparation C:										
9 g. sulph.	1 0	0 84	0 04	0 09	0	2·0	(12 hrs.) 2·4/3·7	1·4/2·4	0/0·7	Wound of thigh. After 6 days 1·5 g. sulph. remained
30 g. sulph. ..	1·48	0·31	—	—	—	1·8+	2·3/3·1	8·1/9·5	2·3/2·9	Excision of rectum. After 5 days 19 g. sulph. remained
Sulphadiazine:										
3·7 g.	0·09	3·1	0·38	0·12	0·27	3·9	10/10·5	8 1/9·7	2·3/2·3	Perforated D.U. No drug excreted during 6th to 10th days
3·4 g.	—	1·5	0 72	0·24	—	2·4	7·5/9·0	2·4/3·3	1·4/1·3	Perforated D.U. 72 hours
4 0 g.	anuria	0 96	0 87	—	—	—	—	7·2/18	5 0/5·8	Perforated D.U. Died 8th day. Blood conc. at 72 hours, 2 6/3·8 mg.
4·8 g.	2·8+	0 71	0·30	0 07	0 07	4·0+	—	2·9/4·2	2·2/2 6	Pelvic peritonitis. Blood conc. at 72 hours, 0·6/0 7 mg.
Sulphathiazole:										
5 g.	0·44	0 68	0·36	0 08	0 02	1·7	—	(18 hrs) 1 9/3·0	—	Nephrectomy with drainage, 0·5 g. escaped on to dressing
5 g.	anuria	2 6	trace	trace	—	2·6	(12 hrs.) 1 0/1·0	0/0	0/0	Resection, carcinoma of colon. Drained

Clinical Conclusions

In only a few cases was it possible to estimate the absorption and excretion of sulphonamides with accuracy, but clinical conclusions have been based on a series of more than 60 cases, many of which were air-raid casualties.

(A) *Local compared with General Administration.*—Local administration was found beneficial in every case. In 20 severe cases of lacerated wounds, including many multiple dirty bomb wounds, no case of gas gangrene or spreading wound infection developed. On the other hand, a clean through-and-through bomb wound of the leg, not involving bone, developed a virulent gas-gangrene infection two days after operation in spite of radical surgical excision, with drainage, and full doses of sulphapyridine administered prophylactically by mouth from the time of operation onwards. As regards abdominal operations, the cases recorded in the table showed uniformly satisfactory results so far as concerned the prevention of local infection, in spite of the fact that in many instances the peritoneum was heavily soiled. In one case a peptic ulcer re-perforated 4 days after the original operation for closure of the opening, and a second closure combined with gastro-enterostomy had to be done, yet no peritonitis developed. In other cases existing infection was suppressed. An appendix abscess was evacuated and packed with about 15 g. of sulphanilamide powder; a corrugated rubber drain was inserted and removed 24 hours later; the wound then healed by first intention. Ten weeks later the appendix was removed. No trace of the powder remained, the only sign of the abscess being a few light adhesions.

(B) *General Toxic Effects.*—The quantity of drug inserted rarely exceeded 10 g., and no general toxic effects of any significance were observed. The method is considered perfectly safe. If systemic administration was combined with local insertion, due allowance was made for the amount which had been inserted.

(C) *Local Effects other than Counteracting Infection.*—In muscle and fascial layers the sulphonamides appear to delay healing by their chemical effects on cell-proliferation and by their presence as foreign material. Their use should be reserved for contaminated or potentially contaminated wounds. Serous cavities showed no surface reactions of an inflammatory nature. As noted above, caked sulphadiazine was walled off by adhesions and a deposit of lymph, and it is considered that it was too insoluble to be entirely suitable. By packing sulphanilamide at one end of a nephrectomy wound and placing a tubular cigarette drain at the other, it was shown that the drug diffused throughout both the wound and the drain within 48 hours. This observation indicates that although most careful distribution over the whole wound is desirable, sulphanilamide will spread beyond the exact area into which it has been introduced.

Discussion

Many papers dealing with the intraperitoneal application of sulphonamides have now been published, the majority by American authors. Besides the workers mentioned in a recent review (*Lancet*, 1942, **1**, 235), experiments with animals have been described by Schmidt *et al.* (1941); Stevens, Taliaferro, and Haag (1941); Rosenburg and Wall (1941); Epps, Ley, and Howard (1942); Harvey, Meleney, and Rennie (1942); and Pearl and Rickles (1942). Some of these authors described results in human patients. Clinical observations have also been described by Burford and Graham (1941), Kinney (1941), Anderson (1942), and Hudson and Smith (1942). Ryan, Bauman, and Mulholland (1942) inserted sulphadiazine intraperitoneally during 6 operations, with satisfactory results.

Harild (1942), working with the Finnish Army, reports the intraperitoneal insertion of sulphathiazole into 8 cases of abdominal wounds, and recommends further trial. A detailed discussion during a meeting of American surgeons is given by Mueller and Thompson (1942), and Jackson and Coller (1942). General opinion is in favour of using sulphanilamide in doses of 5 to 10 g. per patient, in cases in which the peritoneum has been contaminated by bacteria; the suitability of sulphathiazole for this purpose is still under consideration. Several writers have stated that the insertion of sulphanilamide into clean wounds of the abdominal wall may cause sero-sanguineous effusions and therefore its application at this site should be restricted to infected cases. The researches described in the present paper were designed to compare the suitability of the various sulphonamide compounds for this purpose and to amplify results obtained in animal experiments (Fuller, Hawking, and Partridge, 1942). Although they are incomplete they support the use of these compounds in cases in which contamination of the peritoneal cavity has occurred. Sulphadiazine appears to be too slowly absorbed, and "hypoloid sulphanilamide L.S.F." to be too rapidly absorbed, for the optimal results to be obtained. A mixture of sulphanilamide and sulphathiazole might be the most satisfactory preparation.

Before leaving the subject, however, it is necessary to draw attention to the need for sterilizing compounds before their insertion into wounds: this has been emphasized by the recent case of tetanus which followed the intra-abdominal insertion of sulphapyridine during an abdominal operation (*Journal*, 1942, **2**, 134).

Summary

Sulphonamide compounds were placed in all types of wounds, including the peritoneal cavities of patients undergoing certain abdominal operations. The absorption was studied by estimating the subsequent concentrations in the blood and urine. The effects of this treatment seemed beneficial.

When sulphanilamide powder (5 to 10 g.) was inserted most of the absorption and excretion occurred in the first two days. When "hypoloid sulphanilamide L.S.F." (5 to 7.5 g.) was inserted most of the excretion occurred in the first 12 hours; when microcrystalline sulphadiazine was inserted some of it was still present in the peritoneal cavity 8 to 10 days later. It is considered that the absorption of "hypoloid sulphanilamide L.S.F." from the peritoneal cavity is too rapid, and that of sulphadiazine too slow, for the optimal therapeutic effect to be obtained.

We express our thanks to Prof. R. S. Pilcher for allowing us to make use of his 8 cases; and to many members of the junior surgical staff and of the nursing staff of St. Bartholomew's Hospital for their assistance at the operations and in the collection of the specimens of blood and urine.

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A red pigment described as actinomycin A has been isolated in a pure crystalline organism, *Actinomyces antibioticus* (S. A. Waksman and M. Tishler, *J. biol. Chem.*, 1942, **142**, 519). Actinomycin is actively bacteriostatic and bactericidal in concentrations of 1 in 1,000,000 against certain Gram-positive bacteria. It is highly toxic to animals.

SPONTANEOUS ANNULAR DETACHMENT OF THE CERVIX DURING LABOUR

BY

M. DAVIES WESTERMAN, M.R.C.S.

This accident appears to be a rare complication of labour. DeCosta (1933) reported that there were only 32 recorded cases between 1820 and 1933, and the spontaneous nature of some of these was debatable. The following case can, however, be definitely included under the title given above. The last case published in the *Journal* was by Burt-White (1938).

Case History

The patient, a primipara aged 27, was a short, fat, flabby Jewess of excitable temperament who had attended the antenatal clinic regularly. She was always "full of woe," with multiple complaints but no abnormal physical signs, apart from oral sepsis. On routine vaginal examination (July 8, 1941) she was found to have a flat type of pelvis. The sacral promontory was felt. The foetal head remained high as she approached term, and she was booked for a trial labour in Shardeloes Emergency Maternity Hospital, Amersham. The expected date of delivery was Feb. 10, 1942.

First Stage of Labour.—The patient was admitted to hospital on Feb. 25, complaining of generalized abdominal pains and diarrhoea for 24 hours; there were no signs of labour having started. The head was two-thirds above the brim and freely movable; presentation V.R.O.P. The blood pressure was 150/100. At 10.15 p.m. on Feb. 26 her membranes ruptured, and she began having short pains every 5 to 10 minutes. After 10 hours the head was in the pelvis, and on vaginal examination the cervix was two-fingers dilated. The first stage continued normally, apart from difficulties arising out of her very unco-operative behaviour, until the evening of Feb. 27, when the pulse rate began to rise gradually from 88 to 110. Morphine 1/4 grain was given, and despite a good night the pulse had risen to 130 by the morning of the 28th. This rate was maintained till after delivery. The rhythm was always regular and the volume good, except for a short period (3 to 8 minutes) during the afternoon of the 28th, when it became irregular and thready. No cause for this rise could be found. Her general condition was good, and she was more co-operative. She was having fair pains every 5 to 10 minutes. There was no bleeding, the head was deeply engaged, and the uterus was relaxing well The following treatment was given during the first stage:

Feb. 26: Routine ol. ric.; bath; enema.
Feb. 27: 2.45 a.m, morphine gr. 1/4; 2 p.m., syrup. chloral gr. 30, pot. brom. gr. 30, tinct. opii m. 20; 11 p.m., catheterized. morphine gr. 1/4.
Feb. 28: 2 p.m., enema, pot. brom. and chloral gr. 30 āā.

Second Stage.—At 5.30 p.m. on Feb. 28 the patient began to "bear down," and the head appeared at the vulva. She was transferred to the labour ward, having poor pains at 15-minute intervals. The head did not appear again until 6.30 p.m., and showed no advance by 7.30 p.m. The general condition was good; the pulse rate was still 130 and of good volume. The foetal heart rate was 132. It was decided to terminate with forceps. She was anaesthetized with gas-and-oxygen and ether. The head was found well down, arrested in the transverse diameter. There was a small caput. The head was rotated; during this manœuvre a loose band of oedematous tissue was felt between the head and the sacrum. On further investigation this proved to be the prolapsed anterior cervical lip; the cervix having sloughed round the anterior two-thirds of its circumference, the head was presenting through the "rent." There were multiple loops of cord round the child's neck, which were pulsating slowly. As the "vital" part of the cervix had already separated, only the posterior third being left attached, it was considered that the danger of haemorrhage from the uterine arteries, and tearing into the vaginal vaults, was now over. Forceps were therefore applied to the head, through the rent, above the ring of detached cervix. The 8-lb. baby was easily delivered, but unfortunately it was stillborn. The cervix was delivered in front of the head, the posterior third evidently tearing off when traction was applied to the head.

Third Stage.—The placenta was expressed in 10 minutes. At no time during labour or delivery was there any abnormal or excessive bleeding. A careful examination was made both by hand and with the speculum, and a small tear in the left vaginal vault was sutured with No. 3 catgut. After delivery the patient was suffering from shock; her pulse was thready—rate 140—but the blood pressure was 110/80. She responded well to ordinary restorative measures.

The puerperium was uneventful. She got up on the twelfth day and went home 2 days later.

Post-natal Vaginal Examination.—The smooth regular cervical stump was palpated. It felt very like a normal short post-natal cervix. A speculum examination was not performed, as the patient would not co-operate. To all appearances the pain of this examination was as great as that experienced at any time during labour. The detached portion of the cervix was sent to the museum of the Royal College of Obstetricians and Gynaecologists. It was shaped like a quoit or a pineapple ring 3½ to 4 inches in diameter, with the centrally placed external os about two-fingers dilated. The anterior two-thirds was purple and oedematous, the posterior third pink and thin.

Commentary

Looking back on the case it is considered that the rising pulse rate was caused by the "shock" attendant on the detachment of the cervix, but it is surprising that the pulse volume and general condition of the patient were consistently so good. Had the nature of the condition been recognized earlier, would interference have been indicated or justifiable? It is probable that a live baby would so have been obtained; though an explanation for the stillbirth has not been found. As for the mother, it is hoped that, after the good termination, she will become pregnant again and have a normal labour, as was the end-result of the case reported by Epstein (1941). I should add that the maternal and foetal mortality rates in recorded cases of this complication are very high.

I wish to thank Dr. G. W. H. Townsend, medical officer of health for Buckinghamshire, and Miss Beatrice Turner, obstetrician in charge of Shardeloes Emergency Maternity Hospital, for permission to publish this case.

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Medical Memoranda

Riboflavin Deficiency: With a Case Report

Thiamin, nicotinic acid, and riboflavin are the three main factors in the vitamin B complex. They are necessary for the formation of coenzymes concerned in carbohydrate metabolism and are closely related. A deficiency in any one affects the function of the other two. Riboflavin forms a phosphoric acid ester which combines with protein to produce the yellow oxidation enzyme of Warburg and Christian, an essential part of one of the oxidation-reduction systems of the body, associated with respiration and other basic cell functions. The most readily available sources are liver, muscle meats, cheese, yeast, and most green vegetables. The physiology of the absorption, storage, and excretion of riboflavin is not clearly known. The optimum daily requirement for adults is estimated at 1 to 2 mg.

Ill-health caused by lack of a single food factor is uncommon. One syndrome may predominate, but search generally reveals other deficiencies. It is especially noticeable in hypovitaminosis of the B group, many cases of pellagra presenting signs of ariboflavinosis. Sebrell and Butler (1938) showed that certain characteristic lesions, thought to be part of the pellagra symptom-complex, were due to riboflavin deficiency. Sydenstricker (1941) suggests that beriberi, pellagra, and endemic ariboflavinosis are major syndromes of B group avitaminosis resulting from prolonged subtotal deficiency of the whole B complex.

The syndrome of riboflavin deficiency (Sebrell and Butler) consists of angular stomatitis, tongue changes, corneal vascularization and other eye changes, seborrhoeic dermatitis, and general debility. Few instances of the condition have been described, and of these some lack definition.

CASE REPORT

A farmer's widow aged 75 had been in "poor health" for eight or nine years. Two years ago she came under my care, complaining of digestive disturbances, weakness, "neuritis" pains, failing sight, and inflamed eyes. She was emaciated and had many small punctate haemorrhages under the skin of the arms and legs. The heart was weak and fast, and the blood pressure 110/60. There was some anaemia (Hb 9 g.). The eyes showed marked chronic inflammation of conjunctiva and margins of lids, with constant copious purulent exudation. There were early cataracts in both lenses and marked photophobia. Conjunctival vessels in the palpebral aperture were dilated. Deep, raw, and slightly painful fissures persisted for years, and extended from the corners of the mouth for about an inch. Her tongue was swollen, sore, and fissured. Patellar and ankle reflexes were diminished. She was treated with improved diet, large quantities of thiamin, halibut-liver oil, and vitamin C (redoxon). She improved considerably, but the eyes, the angular stomatitis, and the sore mouth were not helped. In the spring of 1941 she relapsed and had severe continuous diarrhoea, associated with dermatitis of the legs and again a sore tongue. Nicotinic acid cleared up the diarrhoea and dermatitis but not the tongue. Eye symptoms were not improved. Her case was described in a paper on pellagra (Deeny, 1942). This spring she became weak and debilitated and lost weight. Her eyes were still affected as described above, and a few tiny leashes of capillaries had invaded the subepithelial region of the cornea. Photophobia was especially marked. The tongue was pale, flabby, clean, moist, burning, and sore, with several deep fissures and enlarged and flattened papillae. Two deep fissures ran from the corners of the mouth, both over an inch in length, with granulating surfaces. The nose and the neighbouring cheek surfaces showed follicular hyperkeratosis, giving a swollen "doughy" appearance. The lips were redder than normal and the line of junction of the mucous membrane and skin was irregular. Nicotinic acid was given without result, and later a 2-mg. injection of riboflavin (B. W. & Co.) three times a week for three weeks, followed by 4 mg. of riboflavin daily in 1-mg. tablets (Roche). In four weeks the angular stomatitis was healed, the eyes were no longer inflamed, the photophobia had gone, and the general health was improved. Her sight remained unchanged. Dr. V. P. Sydenstricker, who saw the case later, suggested large doses of riboflavin (12 mg. daily for two weeks) in the hope that the cataract might improve, but without result.

COMMENT

A feature of interest is that, while the patient suffered from a multiple deficiency, the syndrome of ariboflavinosis was present from the beginning, was unaffected by any treatment, and cleared up only when riboflavin was given. In some cases I have seen bluish patches on the tongue, usually near the margin, contrasting with the colour of the surrounding tissues, disappear with riboflavin treatment. In Northern Ireland riboflavin deficiency is fairly prevalent among elderly persons living on a poor diet. When it occurs in young persons it does not seem to be related so closely to diet, but more to lack of sleep or overwork, or as a complication of illness. I have found "poor" general health an important feature of the syndrome.

I wish to thank the Medical Research Council of Ireland; Dr. Sydenstricker; and Burroughs Wellcome and Co. and Roche Products, Ltd., for their generous gifts of riboflavin.

Lurgan. JAMES DEENY, M.D., M.Sc., F.R.C.P.I.

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Convulsions under Trilene Anaesthesia

This case of convulsions occurring under trilene anaesthesia is of interest not only because I can find no other case reported in the recent literature on trilene, but because several of the factors usually seen when convulsions occur under anaesthesia are absent.

CASE RECORD

The patient was a pale nervous youth aged 17, and the operation to be performed was for cure of a right hydrocele. Routine examination of the chest revealed no abnormality. He had undergone two operations previously—one for an acute mastoid when 3 years old, following which he had pneumonia; the second for hernia when he was 12. There was no history of epilepsy.

The premedication given was omnopon gr. 1/3 and scopolamine gr. 1/300 one hour before operation; 0.5 g. of hexobarbitone was given intravenously, followed by nitrous oxide, oxygen, and trilene (using a Boyle's apparatus with the trilene in the chloroform bottle). No carbon dioxide was used Anaesthesia was smooth and the patient's colour good; about 18% oxygen was given most of the time. No pulse irregularity was noticed, and the respiration rate was slightly raised. Twenty minutes after induction had started, and with the patient in the first plane of third-stage anaesthesia, dissection of the hydrocele sac was proceeding when the respirations rather abruptly became irregular and shallow, then ceased No twitching of the face was noticed, but contraction of the neck muscles was felt at the same time. The patient became cyanosed, and clonic convulsions supervened, involving the whole body, so that the patient had to be held down on the table. These continued for about one minute. The anaesthetic was discontinued immediately and oxygen and carbon dioxide were administered, with rhythmic pressure on the bag, as, although the airway was clear, there was complete cessation of respiration. The pulse remained regular throughout, though the rate increased during the convulsions. The latter ceased, the patient's colour improved, and respiration recommenced in about three minutes. The operation was concluded under nitrous oxide and oxygen with no recurrence of the fits. The patient's condition seemed satisfactory on leaving the theatre, but he became cyanosed on return to the ward, where he was given oxygen intranasally. His recovery since then has been normal, and his condition now (a week later) is satisfactory. Morning and evening temperatures on the day of operation, and also the temperature taken immediately after the operation was completed, were normal. The temperature of the theatre was 74°.

The patient was never deeper than the first plane of anaesthesia, and only about 2 drachms of trilene was employed. This was taken from a newly opened bottle, some of which had already been used on other patients without ill effects

COMMENT

If it may be assumed that convulsions occurring under anaesthesia are not specific to any particular anaesthetic, then this case is unusual in that pyrexia and infection, which so often are predisposing conditions, were absent. Another point to note is that no atropine had been given, and only a small dose of scopolamine. Barbiturates and possibly morphine are regarded as inhibiting factors, and the patient had been given both. The airway was clear and there was no element of anoxia up to the onset of muscular contractions. I do not think that the sensory stimuli being produced at the time of onset were strong enough to initiate the convulsions. It has been suggested that convulsions can be caused by carbon dioxide imbalance, and it seems possible that in this case the slight hyperpnoea caused by the trilene may have resulted in a low alveolar concentration of carbon dioxide, following which came the period of apnoea with spasms. In favour of this was the speedy recovery when carbon dioxide with oxygen was administered.

YSOBEL GARLAND, M.B., B.S., D.A.
North Middlesex County Hospital, Edmonton

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Adder Bite

In view of the renewed interest taken in adder bite in Great Britain the following case may be worthy of record.

A W.A.A.F. patient aged 23 was admitted at 3.15 p.m. on July 6, 1942, to the medical department of the Newcastle General Hospital under the care of Prof. Hume. She gave a history of having been bitten by an adder in the region of the left internal malleolus at 4.30 p.m. the day before. A few minutes after the bite she noticed a swelling of her tongue and some difficulty in swallowing, swelling of the eyelids, and a gradually increasing swelling of the left leg. The swelling of the tongue lasted three hours, that of the eyelids five hours. She vomited a few times and had some abdominal pain at midnight.

On admission her general condition was good. There was a slight pyrexia of 99° F. The left leg showed a marked swelling up to the inguinal region. The skin temperature of the swollen leg was increased, and there was an erythematous rash on the medial side of the calf extending to the knee-joint. Two minute marks of fangs were seen in the region of the internal malleolus, and according to the patient these marks corresponded to the seat of the snake bite. No other abnormalities were found. The patient had complete bed-rest and no other treatment. The temperature returned to normal next day, and the swelling of the leg gradually subsided. In about two weeks the oedema had completely disappeared and the patient was allowed to get up. After three weeks she was discharged from the hospital, the bitten limb being normal in every respect.

I would like to take the opportunity of raising the question of serum treatment of adder bite. Is there any specific or satisfactory polyvalent serum against adder bite in Great Britain, and, if so, is the serum to be administered in every instance? In our case, though the patient's general condition was not much affected, there were pronounced toxic (allergic) signs, which cleared up spontaneously within two weeks.

I wish to express my thanks to Prof. Hume for his help and suggestions, and to Dr. J A. Charles, medical officer of health, Newcastle-upon-Tyne, and Dr. G. P. Harlan, medical superintendent of the Newcastle General Hospital, for permission to publish this case.

PAUL SZEKELY, M.D.,
Medical Registrar, Newcastle General Hospital

Reviews

EVOLUTION

Evolution: The Modern Synthesis. By Julian Huxley, M A., D Sc, F R S (Pp. 645 25s.) London: George Allen and Unwin. 1942.

A book on evolution may be concerned with whether it happened, what happened, and how and why it happened, whilst a preface by Shaw on the subject describes how it ought to have happened. Huxley's book is mainly concerned with how and why. He is certainly better equipped than any other British zoologist to answer these questions, for he has made personal contributions to genetics and natural history which allow him to write with authority on both topics, and has discovered quantitative laws of growth which apply both in the development of the individual and the evolution of species. His knowledge of the literature is most impressive; indeed, no writer on the subject since Darwin has produced such a body of facts from different sources in support of his standpoint.

Huxley is a Darwinist in the sense that he believes that the main trends of evolution were determined by natural selection, and not by inheritance of the effects of use and disuse, by an inner urge, or by supernatural guidance. And he holds that the steps have generally been small. But he admits that some species have arisen by sudden leaps, and that the evolutionary paths possible for a species are more limited than Darwin seems to have thought, among other things by the gene mutations available.

A large part of the book deals with the different ways in which species may originate. Where the barrier is spatial—for example, a mountain range—they may hybridize readily on meeting. Where it is one of habit—for example, a difference of flowering time or mating instincts—the hybrids may be quite fertile when formed. But, especially in higher plants, a reorganization of the nucleus may give fairly complete intersterility in a single step.

Medical readers will perhaps be disappointed that Huxley has not dealt in more detail with man. A good deal of human mortality is selective, apparently against predisposition to disease. And since men began to acquire skill with their right hands, human evolution has probably centred round the development of the left cerebral cortex. However, he deals vigorously with the fallacy which one still finds in some medical writings, that natural selection necessarily makes for progress. This is particularly far from the truth in a dominant species such as man, whose members, as a result of selection, may become better equipped for overcoming one another, and worse so for overcoming their environment.

In spite of this every reader who has kept an interest in zoology, and particularly in natural history, will find *Evolution* a unique storehouse of information; and for many years to come it will be absolutely indispensable for any serious study of the questions with which it deals.

J. B. S. HALDANE.

SUBACUTE BACTERIAL ENDOCARDITIS

Subacute Bacterial Endocarditis. By Emanuel Libman, M D., and Charles K. Friedberg Reprinted from Oxford Loose-Leaf Medicine. (Pp 108 15s) London, New York, Toronto. Oxford University Press 1942.

While the new chemotherapeutic agents have given striking results in the treatment of certain infections, bacterial endocarditis remains one of those which are usually uninfluenced by these drugs. Drs. E. Libman and C. K. Friedberg have written this monograph on subacute bacterial endocarditis in the hope that wider knowledge of the malady may lead to earlier diagnosis and more successful treatment. Among predisposing factors are mentioned previous valvular disease or defects, physical and mental strain, influenzal infection, operative procedures (notably dental extractions), and pregnancy and the puerperium. The section on symptomatology contains a useful survey of skin lesions, including petechiae, subungual splinter haemorrhages, Osler lesions (which are attributed to arteriolitis rather than embolism), and the less common Janeway lesions.

That subacute bacterial endocarditis may develop in many guises is shown by the authors' list of syndromes, in which the disease is demonstrated as simulating influenza, pulmonary tuberculosis, rheumatic fever, typhoid fever, malaria, myocardial failure, hepatic or subphrenic lesions, reno-vesical disorders, gastric carcinoma, acute appendicitis, and cerebral lesions. One of the most important sections of the work is that devoted to the "bacteria-free" stage of the disease: in this phase the patient is afebrile, the skin lesions are infrequent, the anaemia persists, but a leucopenia may replace the usual leucocytosis. Sternal tenderness is mentioned more than once by the authors, but most clinicians who have sought help from this sign will probably agree that it is an uncommon phenomenon. It is not surprising that Drs. Libman and Friedberg take a poor view of prognosis; it is even perhaps remarkable that they put the spontaneous recovery rate as high as 3%. This is an important monograph on a dramatic but depressing disease.

SIR WILLIAM WILDE

Victorian Doctor. Being the Life of Sir William Wilde. By T. G. Wilson, M.B., Litt.D., F.R.C.S.I. (Pp. 338. 15s.) London: Methuen and Co.

To most of those few who remember him at all the name of Sir William Wilde is merely that of "Oscar Wilde's father." Yet the reader of Dr. T. G. Wilson's *Victorian Doctor* will readily admit that William Wilde deserves a biography in his own right—far more, indeed, than his much-publicized and unhappy son. His biographer claims for him that it was he who first put aural surgery on a scientific basis. Certainly he was the leading aurist and ophthalmologist of his day, and his hospital, St. Mark's, for years the pioneer on aural teaching in these islands. Famous throughout Europe, in Dublin he was a legendary figure, and society flocked to the house in Merrion Square where Sir William and his no less remarkable lady entertained. His greatness was not confined to surgery: he had travelled far and read widely, and he made important contributions to Irish archaeology. His last years were a period of decline, for the notorious Travers case marred his zenith. He gave less time to surgery and more to archaeology and his beloved Connaught. He died at sixty, eccentric and embittered, a quaint figure, jeered at by the children of the streets. To-day this is the only period that is remembered, even in Ireland which he served so well, and Dr. Wilson's biography is a service not only to his memory but to the history of medicine.

Wilde's was a full life, and he lived it in an age of change. Born in the year of Waterloo, he was a student in the days of body-snatching, worked in the horrors of the famine years, and lived to see the birth of antiseptic surgery. The years of his prime were the heyday of Dublin medicine, and the background of Dr. Wilson's story is richly laced with the great figures of Stokes, Graves, Colles, Crampton, and Corrigan, men whose fame has lived where Wilde's has faded. These, with the picture of the Ireland of his day, give the central figure its perspective. Nor does he lose stature by their proximity. Brilliant, imaginative, and active, entirely human in his virtues and in his vices, William Wilde has real greatness, and Dr. Wilson's admirable and delightfully written biography does him but justice.

TUBERCULOSIS IN CHILDHOOD

Tuberculosis in Childhood By Dorothy Stopford Price, M.D. With a chapter on Tuberculous Orthopaedic Lesions, and other contributions, by Henry F. MacAuley, M.Ch., F.R.C.S.I. (Pp. 215; 87 illustrations. 17s. 6d.) Bristol: John Wright and Sons, Ltd 1942.

It is still too common a belief that primary tuberculosis in childhood is an infection acquired and overcome by every child, with minimal, if any, disturbance of health and without significant sequelae. Occasionally we even hear the opinion expressed that such an infection is a "good thing," since by its means immunity is acquired to tuberculous disease later in life. Dr. Dorothy Price firmly, and quite rightly, believes that "many vague symptoms of ill-health besides actual disease" can be attributed to the tubercle bacillus, and that primary tuberculosis is of great importance not only because it can be immediately fatal but because it may give rise to various forms of the disease which cause severe ill-health and may prove fatal later. Dr. Price not unjustly expresses a strong opinion that too little attention is paid to this subject in this country, and therefore her book "is intended to be a brief practical guide to the diagnosis and treatment of tuberculosis in children." Now there can be no doubt that Dr. Price has read widely the relevant literature and has herself had ample material on which to base a personal study. But, judged by the standard the author herself has set, the book is not likely to achieve its purpose. In spite of its format, it is not brief (there is much repetition) nor is it written as a "guide" should be: indeed, the reader seeking guidance for everyday practice may often be confused. The pathological background of tuberculosis is not simple, and cannot be simplified by a rigid use of the three-stage classification, which is forced on the reader on almost every page. Even more unfortunate is Dr. Price's insistence on immunological associations with the three stages, which themselves have little practical meaning in connexion with tuberculosis in childhood. There are other grounds for criticism. Thus the author states: "The foci which initiate tertiary phthisis show a marked tendency to caseation in contrast with the focus of primary tuberculosis." Clearly for "caseation" we must read "liquefaction." The following speaks for itself: "When a child is known to have passed successfully through a primary tuberculous infection and then dies some years later of tuberculous meningitis, the state of affairs is rather different from acute meningitis. These cases are uncommon; they are usually the result of a fall or blow on the head." Dr. Price revives mediastinal gland tuberculosis as "a clinical entity in which the primary lung focus is closed, but the tuberculous process in the mediastinal glands remains active." She has an unjustified belief in the value of the Hamburger ointment test and in the conclusions to be drawn from its sole use. Finally, one would need much more than the figures given by the author to convince us that "if all pulmonary cases were diagnosed during primary infection, and treatment instituted, there would be complete cure in very nearly 100 per cent."

In spite of the severe criticisms expressed, we would advise paediatricians and tuberculosis workers to read the book, not only because it contains useful and important matter, but also because it is based on a point of view fundamentally different from that current in this country.

Notes on Books

Food and Beverage Analyses, by Dr. M. A. BRIDGES and Miss M. MATTICE (2nd edition, Henry Kimpton, 20s.), provides readily accessible information on all that may be asked regarding the contents of articles of food and drink. The information covers nutritive and calorific values, quoting the percentages of carbohydrate, protein, and fat, and indicating the intake usually practised for each article. It also gives tables showing the proportions of all the mineral constituents contained in them and their values in terms of the several vitamins. The range of information is very extensive; hardly any article of diet is omitted. A general discussion of dietetic requirements and the function of vitamins completes a very useful volume.

Dr. A. H. DOUTHWAITE has again edited *Hale-White's Materia Medica, Pharmacy, Pharmacology and Therapeutics* for its 25th edition (J. and A. Churchill, 14s.). This incorporates 71 additions to the *British Pharmacopoeia* that have appeared in the official addenda. In spite of extensive additions the size of the book has shrunk without any loss of legibility. Near the index is a list of drugs which must not be prescribed during wartime or in which strict economy should be exercised by reason of their scarceness. The parts of the volume most thoroughly revised for this edition include the chapter on sulphonamides, which has been rewritten and expanded; and Dr. P. M. F. Bishop has revised his contributions on the subject of the sex hormones. Sir William Hale-White must look with pride upon this evergreen manual which he first gave to the medical profession fifty years ago—one of the good things that came from Guy's and have remained "in the family."

The calendar of the Royal College of Surgeons of England for 1942 (Taylor and Francis, Ltd., Red Lion Court, Fleet Street, 2s. 6d.) is even smaller than its predecessor, having 200 pages compared with 226 pages for 1941. Before the shortage of paper began to become progressively more acute the pages numbered well over 600. All the current official information is given, and the register of Fellows in alphabetical order, with their addresses, has reappeared, taking the place of the regulations for the diplomas and the licence in dental surgery. The Roll of Honour is now nearly twice as long as in 1941.

ACTIVITY IN REHABILITATION

BY

Sir ROBERT STANTON WOODS, M.D., F.R.C.P.
Consultant Adviser in Physical Medicine; Member of the Committee on Rehabilitation, E.M.S., Ministry of Health

When a member of the rescue squad gingerly removes the debris from the limbs of the entombed air-raid victim, or a stretcher-bearer picks up the wounded soldier, he takes the first step in a long series of activities destined to rehabilitate or restore to health the casualty he has rescued. Every phase of the patient's subsequent treatment—first-aid, resuscitation, operation, blood transfusion, skin-grafting, physiotherapy, psychotherapy, supervised exercises, occupational therapy, vocational training—is part of a well-ordered plan with one object in view: that of returning the injured person to the fullest possible living and working capacity.

Such a plan, whereby the industrial or war casualty is followed through from the injury to his return to work, is fundamental in the organization of the Emergency Medical Service. At no period has the pronouncement "The operation was successful but the patient died" ever been more than a popular gibe. Paraphrased, however, as "the fracture was successfully set but the limb completely useless," it becomes relevant to what not seldom occurred in the recent past when the unfortunate victims of injury were sent out into the world with the not unfamiliar rigid joints, the wasted claw-like hands; so that, encountering them, one was at times forced to the conclusion how much better a really good artificial limb would have been.

Early Application of Physical Measures

With the extension of modern rehabilitation facilities came the widespread realization that physical measures for restoring function—massage, electrical stimulation, remedial movement—must, to be effective, be applied early, in many cases from the beginning of treatment. The fracture case is no longer merely a broken bone to be joined together in good alignment, but a bone clothed in muscles, whose blood and nerve supply must be maintained throughout in the face of enforced immobilization, and in which healing must keep pace with the bony union. Massage, electrotherapy, assisted movement, afford very necessary and very effective means for maintaining the ebb and flow of blood and lymph in a muscle which must not or cannot be moved by the patient himself.

But as soon as the patient *can* move the injured part with safety, such purely local and passive measures of restoration may in the majority of cases be abandoned with advantage in favour of active therapy, since the muscle stimulus most potent for good is the one coming from the central nervous system. As the patient's muscles contract in voluntary effort they promote the blood and lymph flow and bring fresh supplies of nutrient fluid to the injured tissues by a much more physiological mechanism than that of artificial stimulation. Furthermore, these nutrient fluids bathing the injured area must possess certain biochemical properties if optimum healing is to occur. Thus the health and general muscle tone of the patient have to be considered, the scope of rehabilitation is widened still further to include dietetics and general exercise, and we are no longer dealing with an injury but with an injured body.

Quite apart from the economic fear, the dread of losing one's job, of having to be kept by relations or by the State, even the merely temporary loss of use in an arm or leg can be accompanied by serious mental depression peculiarly inherent in this type of illness, since movement, one of the fundamental attributes of living matter, is as natural and necessary as breathing and eating. The patient becomes convinced that he is crippled, paralysed; he will never be any good again. Once the disabled person can be shown that he can throw a dart or kick a football or hammer in a nail or work a loom almost as well as the next patient and certainly better than he himself did yesterday, he is on the road to recovery, mental as well as physical. And now we are no longer dealing with an injured body, but with an injured person—body, mind, spirit.

Purposeful Movements of Muscle Groups

Even stereotyped voluntary movements of the injured part alone, since they demand the patient's co-operation and introduce the element of self-help, are excellent psychologically. Of far greater therapeutic value are purposeful and productive movements of groups of muscles such as those required in the performance of games and handicrafts, or the resumption of Army training, where the creative and competitive instincts can be brought into action and the patient's attention is no longer focused on his disability but rather on his returning skill in achievement. It is better still when he can actually forget himself in the interest and usefulness of the work or the sheer enjoyment of the game so that muscular co-ordination is achieved automatically and without conscious effort.

The importance of activity in recovery is not confined to injuries. Before and after an abdominal operation, before and after childbirth, in recovery from many illnesses, and very especially in the treatment of the psychoneuroses, active and productive exercise now plays a prominent part in treatment. In a certain Army convalescent depot of 1,000 beds, as at present constituted, 25% of those undergoing active rehabilitation come under the category of "hernia."

Medical Supervision

All these therapeutic measures ought to be under the direct supervision of an instructed medical practitioner, whilst the patients are guided at their work and play by a staff of male and female medical gymnasts and occupational therapists. In this way only such movements as are safe and effective in any given case are performed, and the range of activity is gradually increased with the patient's increasing capacity.

Planned at first to deal with air-raid victims only, the E.M.S. later afforded accommodation for Service casualties, and later still its orthopaedic and fracture centres have become extended and will co-operate in the ambitious scheme for industrial rehabilitation now on foot. It would seem that the demands of such an elaborate and growing organization for trained masseuses must become for a time increasingly difficult to meet. Fortunately, however, the problem is being partly solved by the more widespread use of active than of passive physical treatment. Not only does the patient benefit mentally and physically, as we have seen, by the increasing use of active rehabilitation, but whereas in the past a masseuse might spend three-quarters of an hour giving passive treatment (massage and electrotherapy) to one patient, or could treat at the most only two patients simultaneously, she can now give active treatment in medical gymnastics to eight or nine patients at the same time. Passive therapy still has an important place in rehabilitation, but as soon as the injured part can be used at all the physician or surgeon in control makes his decision as to how far active therapy can be substituted. The earlier this can safely be brought about the more rapid the patient's recovery and the greater the saving in trained personnel.

MEDICAL SICKNESS AND LIFE ASSURANCE

The annual meeting of the Medical Sickness, Annuity and Life Assurance Society, Ltd. (whose registered offices are now at Highfield, Chesterton, Cirencester), was held in London, with Mr. R. J. McNeill Love, chairman of the Board of Directors, presiding. Reference was made to the heavy personal losses the Society has suffered during the year in the death of its chairmen, Dr. F. C. Martley and Dr. G. de Bec Turtle, and of Sir William Willcox, who had been a member of the Board for more than twenty years.

The chairman said that the amount of new business in the Life Assurance Fund was only slightly smaller, but the claims by death had been lighter and the surrenders fewer. On the Sickness Fund the claims had been considerably lighter and the premiums were up a little. The funds of the Society had been increased by £173,537, and now stood at £2,355,319. The quinquennial valuation had taken place at the end of the year under review, and on a cautious estimate a surplus of nearly £83,000 was disclosed on the Life Assurance and Annuity Fund and of £120,850 on the Sickness Fund. Both Funds had been strengthened and provision made for all known contingencies.

A vote of thanks was accorded to the staff on the motion of the chairman, who mentioned that Mr. Bertram Sutton, the manager and secretary and now one of the directors, had been with the Society for 43 years, 30 of which had been in the capacity of chief officer.

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CONTROL OF VENEREAL DISEASE

The use of compulsory measures for the control of venereal disease has been debated often enough, and now, under Defence Regulation 33B, powers are made available to apply compulsion in certain carefully defined circumstances. As a statement from the Ministry of Health published at p. 616 makes clear, this limited compulsion leaves the voluntary basis unchanged. In brief, the regulation provides that persons named by two separate patients as the suspected source of infection can be required by the M.O.H. of the county or county borough in which they live to attend for examination and, if necessary, for treatment by a special practitioner.

It may be recalled that when in 1928 the Edinburgh Corporation introduced a Bill which, following the Swedish model, was among other things to authorize the M.O.H. to serve a notice on defaulters to complete treatment until certified cured, it was defeated in the House of Commons by 156 votes to 93. In 1923 the Trevethin Committee concluded that legislation was impracticable and inadvisable. In 1937 the Minister of Health sent a commission of experts to study the conditions in Holland and the Scandinavian countries.[1] The commission doubted whether compulsion was justifiable in view of their conclusion that in Holland and this country voluntary measures of treating venereal disease "have been almost equally successful" in controlling these diseases as in the Scandinavian countries. This conclusion has been challenged.

Defence Regulation 33B once more opens the question of compulsory notification and treatment of diseases which, however small in extent in peacetime, nevertheless constitute a serious public health and social problem. It is well, therefore, to consider briefly the arguments for and against, so that the medical profession and through it the public may have their minds clear on the subject. The success of the voluntary basis of treatment must in the long run rest upon fully informed medical and lay opinion, and upon a healthy attitude of mind towards sex and diseases which in the main arise from promiscuous sexual intercourse. As Dr. Margaret Rorke pointed out in this *Journal*,[2] "There is not the same sense of shame and necessity for secrecy as regards venereal disease in Scandinavia as still exists in England." The Scandinavian peoples seem to have a more matter-of-fact attitude towards sex—a public health official in one large Scandinavian city strongly advocated the supply of contraceptives through automatic machines. Sir Wilson Jameson, the Chief Medical Officer to the Ministry of Health, performed a great service when he broke the V.D. taboo in a broadcast given at the end of last month, and struck the right note when he invited the public to look upon venereal diseases in the same way as a doctor did, regarding them as presenting the same sort of problems as other infectious diseases. He decried the hush-hush attitude that prevails in a country where puritanism and hypocrisy are at times not easily distinguishable from each other. This broadcast, with the official background behind it, was an important step towards that enlightenment which is essential if voluntary measures are to succeed in controlling venereal infections. In the past the British Social Hygiene Council has battled manfully with this problem, but the success of its propaganda efforts was rather sharply challenged by Col. L. W. Harrison at a meeting of the Medical Society for the Study of Venereal Disease in March of this year.[3] He criticized county councils and county borough councils for a lack of zeal in acting upon propagandist advice issued by the Ministry of Health, and at conferences early in 1939 with medical officers of health and venereal disease officers he found no great enthusiasm for the use of lectures and films as a means of instructing the public. Numbers attending courses of instruction, lectures, exhibitions, and film shows organized by the British Social Hygiene Council during the ten years 1930–40 were analysed by Dr. Hartley of Scientific Computing Services, Ltd., and this analysis, according to Col. Harrison, brings out that 944 persons in every 1,100 could not have attended a lecture or film show on the subject more than once in the ten years. He asks the question, "Could they [i.e., lectures and films] have made much more improvement than the posters displayed in the public lavatories?" Various speakers at the meeting did not share Col. Harrison's scepticism about lectures and films—and incidentally he made it clear that his remarks should not be considered as an attack on the B.S.H.C.

If we accept the view that propagandist efforts in the past have had very limited value, this does not imply that they will have as little value in the present and the future, but it may be that the time, energy, and money spent on such propaganda could be more fruitfully used for other purposes if notification and treatment of the disease were made compulsory. The case for compulsion was forcefully put by Major S. M. Laird[4] at a meeting of the Medical Society for the Study of Venereal Disease in April this year. An investigation in which he took part in 1937 showed that in various parts of Staffordshire 50% of cases of early syphilis and 30% of gonorrhoea defaulted. Sir Kingsley Wood, when Minister of Health, stated that the percentage of clinic patients in England who completed treatment and tests of cure was 12.9 in 1925 and 17.5 in 1935. Major Laird points out that the defaulter rate of England in 1935, at 82.5%, compares most unfavourably with the corresponding defaulter rate of 2.5% for Sweden. This and other comparable figures make it impossible for him to agree with the conclusion of the British commission in 1937 that "the degree of success in reducing the incidence of syphilis in the countries employing compulsory treatment and in those which rely on a voluntary system is broadly similar." After the discussion which followed Major Laird's paper, the Medical Society for the Study of Venereal Disease passed the following resolution with an overwhelming majority: "That in the opinion of this meeting . . . further powers, legislative and administrative, in the treatment and prevention of venereal diseases are required to deal with the sources of infection, contacts, and defaulters."

The arguments adduced by the British commission against compulsory measures were that they (1) may induce the infected to conceal the disease from fear of exposure, (2) are not easy to apply in such a densely populated country as this on account of the difficulty in tracing those who try to evade the law, (3) may open the way to blackmail, and (4) are not consonant with the British idea of the liberty of the subject. If we share Sir Wilson Jameson's view—as we must—that venereal infections present to medical men problems similar to those of other infections, then it would seem a little late in the day to talk about the liberty of the subject in this context. The medical profession and the public have accepted without demur the compulsory notification of small-pox, diphtheria, scarlet fever, whooping-cough, typhoid, and other infectious diseases. They raise no objection to a law which may inflict a penalty upon any person who, "(*a*) knowing he is suffering from a notifiable disease, exposes other persons to the risk of infection by his person or conduct in any street, public place, place of entertainment or assembly, club, hotel, inn, or shop, or, having the care of a person whom he knows to be so suffering, permits him to expose others to the risk of infection in any such places, or (*b*) knowing he is suffering from a notifiable disease, engages in any trade, business, or occupation which he cannot engage in without risk of spreading the disease."[5] Nor is any voice raised against the regulations which make it possible to remove to hospital any person suffering from a notifiable disease, "(*a*) if his circumstances are such that proper precautions cannot be, or are not being, taken to prevent spread of infection, and (*b*) that serious risk of infection is being caused to other persons."[6] There is no need to elaborate the argument which distinguishes licence from liberty, especially when it is a question of the liberty to pass on venereal disease. In considering the other objections to compulsion, we believe that it should not be difficult to make adequate safeguards against blackmail or the spread of misinformation through malice. It cannot be denied that compulsory measures are more easily enforced in less densely populated countries, such as Sweden, Norway, and Denmark, and in Great Britain the control of venereal disease in the ports must always be a difficult matter. Whether these difficulties would be greater or less with compulsion is an open question. The most formidable objection to compulsion is that it might carry with it a risk of driving the disease still further underground because of the fear of public exposure on the part of infected persons. But, provided adequate steps are taken to maintain the confidential relationship between patient and doctor, and provided venereal disease centres are made inconspicuous by, for example, their inclusion in institutions where other clinic work is carried out, the risk would appear to be minimal, and it would be the duty of public health authorities, by propaganda, to convince the infected that knowledge of their disability would be a private matter between them and the medical profession. Fortunately modern medicine can offer effective treatment for venereal diseases, and is, therefore, in a strong position to insist, if it wishes so to do, that infected persons should be treated and that such treatment should be carried to completion. If treatment were of little avail, then a suspicious public might accuse the medical profession of a wish to pry into its intimate affairs.

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[1] *British Medical Journal*, 1938, 1, 1224, 1277
[2] Ibid., p. 1224.
[3] *Brit. J. vener. Dis.*, July–October, 1942, 18, 77
[4] Ibid., p. 84.

It should be made clear that the question of compulsory notification is not raised in Defence Regulation 33B, but this question will no doubt arise in time. When it does we can only hope that both doctor and public will discuss it in objective terms so that a reasoned conclusion may be arrived at. Meanwhile every possible step must be taken to stem the increase of venereal disease that has inevitably occurred in this war. So far official advice is rather like the well-known advice from *Punch* to those about to marry. We cannot, of course, expect that health authorities in this country would go so far as the Scandinavian public health official referred to above; as things are at present many believe that the issue of prophylactics is more likely to be successful in the prevention of venereal disease than the issue of moral and hygienic propaganda.

CAVERNOUS SINUS THROMBOSIS

Cavernous sinus thrombosis is a comparatively rare condition. Smith[1] in 1918 could collect only 300 cases from the literature. The majority are secondary to sepsis of the face and orbit and show the classical signs of chemosis, exophthalmos, and ocular palsies. A more chronic type with much less distinctive symptomatology occurs in association with ear disease. Aseptic thrombosis is also occasionally found as a terminal marantic event. Grove,[2] in a comprehensive review in 1936, concluded that the mortality of the anterior fulminating type was probably 100% and that the recovery rate of all types—traumatic, aseptic, and septic—was not greater than 7%. Several methods of surgical approach to the sinus have been described which aim at drainage and ligation of the venous channels. Grove found these methods more disappointing than when the original focus alone was treated surgically, the operation being combined with ligation of the common carotid as described by Eagleton.[3]

In the past few years there have been several reports of recovery with the use of drugs of the sulphonamide series. Seydell[4] and Barnshaw[5] have both reported cures with sulphanilamide. Barnshaw's patient was a child of 7 who had a bilateral infection after a stye on the eye. He used 10 c.cm. of prontosil 4-hourly for 6 doses and then sulphanilamide 10 grains four times a day for 4 days; in spite of the short course of treatment the child recovered completely. Morrison and Schindler[6] treated a boy of 5 years successfully with sulphapyridine; they gave a total of 63 grammes of the drug and maintained the blood concentration between 10.4 and 16.5 mg. per 100 c.cm. for 9 days. Wolfe and Wolfe[7] were the first to use sulphathiazole. Their patient was a boy of 17 who developed signs of thrombosis after a furuncle of the nose. He was first treated with small doses of sulphanilamide, but as soon as *Staph. aureus* was isolated from the blood stream sulphathiazole was substituted in doses of 2 grammes every 4 hours, maintaining a blood concentration between 10.0 and 17.6 mg. per 100 c.cm. The dose was reduced after 14 days and continued for another 15 days. Moore *et al*[8] also used sulphathiazole in very large doses, securing a blood concentration between 25 and 33 mg. per 100 c.cm. for 6 days. Their case was complicated by multiple embolic phenomena, but eventually, apart from some mental impairment, the patient recovered. The drug was continued in small doses for three months after the infection subsided.

Heparin has recently been combined with chemotherapy. Lyons[9] was the first to apply the treatment to this type of thrombosis. His object was to prevent extension of the thrombosis and dissemination of infected emboli. The heparin was given by continuous intravenous drip in amounts sufficient to maintain the blood coagulation time at approximately 90 minutes. Heparin treatment was kept up for 15 to 20 days, sulphathiazole being given concurrently in large doses and continued for some 3 to 4 months after the infection had subsided. Both the cases described developed pulmonary infarcts during treatment. Leroy Schall,[10] with the same method, had no haemorrhagic manifestations in his two cases. Erschler and Blaudill[11] were not so fortunate. Their patient, a girl of 22, developed sinus thrombosis after nasal furunculosis. Sulphathiazole and heparin were given and a blood concentration of 8.15 mg. of sulphathiazole per 100 c.cm. was maintained. On the second day of the heparin therapy the patient had haematuria, and by the ninth day she was passing clots of blood in the urine, and purpura, ecchymosis, and haemorrhages into the joints had appeared. Both forms of treatment were stopped for 36 hours, but as there was a recurrence of chills and fever the sulphathiazole was restarted and continued for 13 days. There was no recurrence of haemorrhage, and the patient made a complete recovery. *Staph. aureus* is the infecting organism in the majority of cases of cavernous sinus thrombosis, and therefore penicillin is the ideal remedy; at least one encouraging example of its use has been reported.[12] Until penicillin becomes available for general clinical use, sulphathiazole is the sulphonamide of choice. It should be given in large enough doses to obtain a blood concentration of about 10 mg. per 100 c.cm. during the acute stage, and it is probably wise to continue treatment in small doses for about 3 months after the original infection has subsided. From the few published cases it would appear that this drug has revolutionized the prognosis in cases of septic cavernous sinus thrombosis. While theoretically there is an indication for the use of an anticoagulant, there is no evidence that this gives more satisfactory results than when sulphathiazole is used alone, and any theoretical advantages are outweighed by the risk of severe haemorrhagic reactions.

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[5] Public Health Act, 1936, Sects. 148–9.
[6] Ibid., Sects. 169–70.

[1] *Arch Ophthal*, Chicago, 1918, **47**, 482.
[2] *Arch. Otolaryng.*, Chicago, 1936, **24**, 29.
[3] *Cavernous Sinus Thrombophlebitis*, New York, 1926.
[4] *Arch. Otolaryng.*, Chicago, 1939, **30**, 429.
[5] *J. med. Soc. New Jersey*, 1939, **35**, 22.
[6] *Arch. Otolaryng.*, Chicago, 1940, **31**, 948.
[7] Ibid., 1941, **33**, 81.
[8] *J. Amer. med. Ass.*, 1942, **119**, 708.
[9] *Ann Surg.*, 1941, **113**, 113.
[10] *J. Amer. med. Ass.*, 1941, **117**, 581.
[11] Ibid., 1941, **117**, 927.

CLINICAL IMPORT OF RECENT WORK ON VITAMIN A

From prolonged research on the influence of a shortage of vitamin A on the central and peripheral nervous systems, Sir Edward Mellanby has recently concluded that the degeneration observed is due to pressure exerted by the overgrowth of the bone contiguous with the affected tissues. In 1938[13] he showed that a dietary deficiency of vitamin A resulted in bony overgrowth of the periosteal layer of the labyrinthine capsule, especially of that part surrounding the internal modiolus. The dogs on which his experiment was made showed incoordinate movements of locomotion and evidence of deafness. The overgrowth of bone must press on and in some places touch the nerve, which seems to cause its degeneration. A similar hyperplasia was found in the neighbourhood of the optic and trigeminal nerves, and this may be the cause of the xerophthalmia associated with vitamin A deficiency.[14,15] In advanced stages of the deficiency serous labyrinthitis was found; this was cured by giving vitamin A, though the nerve degeneration was not. Substituting potatoes for the cereals in the diet greatly reduced the nerve degeneration. It was suggested that the small amount of carotene in the potatoes eaten was enough to account for their action or that the cereals had a toxic action which hastened the pathological changes in the absence of vitamin A. The deficiency produced more severe changes in the bones of young animals than of adults. Large reserves of vitamin A postponed the development of symptoms.

In 1941[16] Mellanby described more fully these bone changes affecting the nervous system. He concluded that a function of vitamin A is to limit the number and the degree of activity of osteoblasts and osteoclasts, a deficiency resulting in proliferation of cancellous at the expense of compact bone and causing many bones to lose their normally fine moulding and outline and to become thickened and enlarged. Overgrowth of the cranial bones may press on and produce deformity of parts of the brain. The greatest hypertrophy was found in the bones forming the posterior fossa of the skull, so that the medulla oblongata, pons, cerebellum, and nerves in close association with these parts of the brain are more particularly affected. The posterior root ganglia and the anterior root nerves of the spinal cord may also be squeezed and the nerve fibres destroyed by overgrowth of the vertebral bones. The bone overgrowth and degenerative changes in nerve are greatest in the cervical region of the cord. In advanced cases of this deficiency there is evidence of a substantial rise in intracranial pressure. The pressure of the cerebrospinal fluid in the cisterna magna may be double that of animals receiving similar diets containing vitamin A. Associated with these changes, the cisterna magna and the fourth ventricle are diminished in capacity, while a degree of internal hydrocephalus (expansion of the third and lateral ventricles) indicates increased pressure, probably transmitted from the posterior fossa.

LONDON'S BILL OF HEALTH FOR 1941

In the second full year of war London—by which is meant the county, with a population of 4 million or thereabouts—remained remarkably healthy.[1] Even the biennial rhythm of measles epidemics was broken. The expected outbreaks of contagious disease consequent upon shelter life did not materialize. Influenza, pneumonia, and bronchitis claimed fewer victims. Small-pox and typhus went unrecorded. Scarlet fever, which fifty years ago had a death-roll of four figures in London, was the cause of only 2 deaths in 1941. The deaths from diphtheria and whooping-cough rose slightly, but the totals remained small. Notifications of diphtheria multiplied by 4 compared with the year before, but even so the total was only 600, and the deaths in 1940 and 1941 together were fewer than in 1938. Pulmonary tuberculosis caused some disquiet by reason of an increase in notifications, but the number of deaths was down. Maternal mortality went back, unfortunately, to the higher rates of 8 or 9 years ago, and the infant death rate rose to the 1938 figure of 57 per 1,000 births; but even the 1938 figure was considered a low one at the time. Deaths from street accidents fell by one-third. The school medical service reported that of the children examined in four age groups 93.7% were of satisfactory nutrition, compared with 93.4% in the last pre-war year. Venereal disease clinics had fewer cases, but here, of course, it must be remembered that a large proportion of the population of the ages at which venereal disease is most likely to be acquired were no longer civilians. That illustrates one of the possible fallacies which underlie these cheerful statistics. The population of London has altered so much as a result of war conditions that there is no certain base-line from which to calculate percentage rates and make comparisons with normal years. Successive evacuations have taken place, but very many evacuees have returned. In the year under review the number of elementary school children in London in January was 85,000 and in December 150,000. The business and residential life of London has also been in part uprooted and again to some extent replanted. Nevertheless, after making all discounts, the resilience of London in health and spirit, despite aerial bombardment in the earlier months of 1941, transport difficulties all the time, black-out, restrictions on amenities, shortage of certain popular articles of food, and the strain and anxiety of war as well as its petty exasperations, is not merely a thing to wonder at but a subject worthy of the serious consideration of students of social science. The streak of heroism appears again and again in Dr. Allen Daley's routine record of health services. During the year 26 members of the staff of the health department lost their lives at the post of duty, and 95 were injured by enemy action. A woman medical officer and a man ambulance driver gained the George Medal, and awards and commendations for gallantry were made to 9 other members of the staff, 7 of them women. Special mention is made of the Council's midwives, who never left a call unanswered, and cheerfully carried out their duties in exacting circumstances, often delivering their patients while bombs were falling. The ambulance service manifested its usual initiative, pluck, and efficiency. As for the hospitals, if a hospital was partly or wholly put out of action patients and staff were promptly transferred elsewhere. The work of the health services was never disorganized.

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[12] *Lancet*, 1941, **2**, 177.

[13] *J. Physiol.*, 1938, **94**, 380.

[14] *IIIe Congrès neurologique international: Comptes rendus*, 1939, p. 797.

[15] *J. Physiol.*, 1939, **96**, 369.

[16] Ibid., 1941, **99**, 467.

[1] *London County Council Interim Report of the County Medical Officer of Health and School Medical Officer for the Year 1941.* Westminster: P. S. King and Staples, Ltd. (6d.; post free 7d.)

RESUSCITATION FROM ASPHYXIA

In experiments on dogs G. L. Birnbaum and S. A. Thompson[1] of New York have pointed out that in advanced asphyxia—produced by inhalation of pure helium or nitrogen, or by tracheal obstruction—temporary resuscitation can be effected, after respiration has ceased and the circulation is rapidly failing, by rhythmic inflation of and suction on the lung with the inert gas (nitrogen or helium); this is termed asphyxial resuscitation, and as a result the animal may be kept alive for 1 to 3 minutes longer without oxygen or air. For this mechanical resuscitation they employed the Emerson resuscitator, which inflates the lungs to 14 mm. of mercury pressure and aspirates to -9 mm. The apparatus was usually regulated to make 16 to 20 complete excursions or respiratory strokes per minute and was connected with the face-mask or intratracheal tube. Birnbaum and Thompson find that the mechanism of this asphyxial resuscitation is primarily a reflex phenomenon which is initiated most efficiently by suck-and-blow resuscitation within safe limits of pressure. This temporary resuscitation with inert gas can be accomplished by suck and blow with the Emerson apparatus, arranged as described above, in 85% of instances, if the resuscitation is started within periods of 45 seconds to 2½ minutes after cessation of respiration. On the other hand, similar resuscitation with the inert gas can be accomplished in only 15% to 20% of instances by one of the following methods: manual artificial respiration with nitrogen inhalation, rhythmic pressure with nitrogen at $+12$ to 14 mm. Hg, or rhythmic suction on the lung at 8 to 12 mm. Hg alternating with nitrogen inhalation. The main point is that for the best results both active suck and blow are necessary. Suction must be active, because with mere passive expiration action currents are not set up in the nerves involved, whereas with active suction they are. Thus with rhythmic inflation and suction a powerful reflex mechanism allows temporary resuscitation to take place in the experimental animals with the use of only inert gas—that is, without oxygen. The circulation recovers regularly before spontaneous respiration begins. The addition of 10% CO_2 to the inert gas inhibits this resuscitation, as do bilateral vagus section before asphyxia is started and, to a less extent, denervation of the carotid sinus. The reflexes concerned apparently arise not only in the vagal endings in the lungs and cardio-aortic region but also in the carotid sinus area, and travel by the corresponding afferent nerves to the medullary centres—vasomotor, cardiac, and respiratory. As a result of these animal experiments it is suggested that, clinically, in advanced asphyxia when the respiration has ceased, oxygen alone or oxygen plus carbon dioxide should be administered by the suck-and-blow type of resuscitation, within safe limits of pressure.

MAN AND HIS ENVIRONMENT

Mr. A. M. Carr-Saunders[1] has recently reminded us that we find it more attractive to think of mastering our surroundings than of mastering ourselves. The pioneer efforts of Galton in the latter direction were weakened by his conventional class-consciousness and lack of appreciation of social problems; still truer was this of some of his disciples. Consequently professional biologists stood rather aloof; and indeed, until the rediscovery of Mendel's work laid bare the mechanism of inheritance, eugenics could hardly claim to be a science. The obstacles in the way of making a genetic analysis of man are immense, but it will be seen that the results obtained so far do not clash seriously with Galton's intuitive conclusions. We must remember that inheritance merely means that offspring get their genes from their parents, while environment includes for man not only physical factors, as for all animals, but also the provision of opportunities for learning. The object of social organization is not standardization but the creation of conditions under which genetically unique individuals (which we all are) can best fulfil the promise that is in them. Unfortunately there is reason to suspect that the genetic material in any civilized society deteriorates slowly but almost certainly, for harmful mutations are preserved which would perish under cruder conditions. True, they are compensated for, but that is not cure, and their persistence must be injurious to the common stock. There are always some people of subnormal mind and physique who cannot hold their own in the circle in which they were brought up and who, therefore, tend to sink. The damage is enhanced by the inverse relation between social class and fertility, even though this is now on the wane except in the lowest group of all. In the other strata the average of intelligence does not vary greatly. But the danger of unfavourable mutations occurring and being encouraged to persist is insidious, for there is a not inconsiderable element in the population which by reason of inferior hereditary endowment cannot take advantage of a good environment. Carr-Saunders, in his interesting review of the biological basis of human nature, brings to his support J. B. S. Haldane.

Mr. H. S. Souttar, Chairman of Council of the British Medical Association and chairman of the Central Medical War Committee, has been made chairman of a mission to report on the medical services for the armed Forces in India. Prof. R. M. F. Picken has been appointed acting Chairman of Council during Mr. Souttar's absence.

A Royal Medal of the Royal Society has been awarded to Dr. W. W. C. Topley, F.R.S., for his outstanding work on experimental epidemiology and immunology, and the Buchanan Medal to Sir Wilson Jameson for his distinguished administrative service to hygienic science and practice.

The next session of the General Medical Council will open on Tuesday, Nov. 24, at 10 a.m., when the President, Mr. H. L. Eason, will take the chair and deliver an address.

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[1] *J. Amer. med. Ass.*, 1942, **118**, 1364; *Proc. Soc. exp. Biol.*, 1941, **48**, 203; *Surg. Gynec. Obstet.*, 1942, **75**, 79.

[1] *The Biological Basis of Human Nature* By A. M. Carr-Saunders, M.A. Hobhouse Memorial Lectures, No. 12. Oxford University Press (2s.)

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

FOOD POISONING

BY

Sir WILLIAM SAVAGE, M.D., B.Sc.

(*Concluded from p. 585*)

Epidemiological Features of Food Poisoning

The epidemiological features of food poisoning merit some attention. I have already mentioned the physical condition of the food. Seasonal prevalence is much higher in the summer, particularly so for Salmonella outbreaks and those of other living bacilli. The infectivity rate varies considerably, and, except in botulism, not all the people who have taken the food become poisoned. In an outbreak from a toxic staphylococcus less than half the people who have eaten a particular food may be attacked; with living Salmonella poisoning the proportion is usually much higher, but all consumers are not invariably affected. There is practically no case-to-case infectivity unless people are really dirty in their habits. The case mortality with living Salmonella is from 1 to 2%; with the toxin outbreaks it is practically *nil*; in botulism, however, it is 60 to 70%.

The nature of the food vehicle is important. In botulism it is something which has been maintained under anaerobic conditions and often kept under wrong conditions. Botulism can arise from home-canned foods because the heating has been inexact, but in modern practice it very rarely occurs with the commercially canned article. With Salmonella, the more food is manipulated the more it is apt to be a danger. Slightly manipulated food like ham does not cause so many cases, but when we come to much-manipulated foods like brawn, meat pies, or ice-cream, the liability is increased. Tables I have published show very clearly the association of food poisoning with human food handling.

In Salmonella poisoning the three cardinal symptoms—diarrhoea, vomiting, and abdominal pain—are almost invariably present. Others are rise of temperature, nausea, and cramps, but these vary. The clinical distinction between the different types is important. Botulism can be distinguished by its characteristic symptoms. The toxin type may be due to staphylococci or it may be due to toxins of other organisms. If it is the toxin type you can usually distinguish it at once. Most important is the very short incubation period, while usually the onset is acute. The symptoms may be severe, but they last only a short time and recovery is rapid. This follows from the fact that the sufferer is taking into the body with this food all the poison at once; none is manufactured in the body. Therefore it acts quickly and its onset is abrupt. Directly it has sufficiently irritated the stomach and intestine it begins to act. It does not last very long, and when the toxin is eliminated the patient gets better. On the other hand, with living Salmonella bacilli the position is different, since the bacilli multiply inside the body. The incubation period will be considerably longer than for the toxin type, the length in part depending upon the amount of preformed toxins introduced. The bacilli have to establish themselves in the duodenum or jejunum and to grow there and manufacture their toxins. There is a gradual dosing with toxins, and the malady lasts a good deal longer. If these considerations are kept in mind confusion between the different types is unlikely.

Investigating Cause of an Outbreak

Given an outbreak, what are the lines of action? I cannot go fully into the public health side, but we have to endeavour to find out certain things. No investigation is complete unless four things are ascertained. The first is the vehicle of spread; the second is the causal agent, such as toxin or Salmonella. But that does not end the matter. So many of the reports I read include those two points and then those who write them appear to think they have finished their job. There are two more things to know. One is the reservoir from which the organism passed to the vehicle; the other is the path by which the organism was conveyed to the vehicle from the reservoir. For example, with an outbreak of ice-cream poisoning due to *B. enteritidis*, the vehicle and organism are known. But we still have to ask how the Salmonella got into the ice-cream and from where. This may be from various sources, and when elicited we know the reservoir. As to the path, we may find that the ice-cream was put to cool in a chamber where there was evidence of rats; but that is rare. I have investigated hundreds of outbreaks, and in a great many I have not been able to prove every one of these four things, but in each instance I have sought for all of them.

The ascertainment of the vehicle is sometimes easy, sometimes difficult. It is necessary to inquire what was eaten by all the persons concerned. In a recent ice-cream outbreak of mine associated with the Sonne dysentery bacillus it was easy. There were two ice-cream vendors at a little country fair; one sold his wares inside and the other outside, and all the people who had the illness had bought their ice-cream from the man inside, while none of those who had bought it from the man outside were ill. Then I found that this inside man had a regular itinerary and that wherever he stopped to sell his ice-cream there were sporadic cases of ice-cream poisoning.

In making an investigation leading questions must be avoided. Do not jump to a conclusion and say, "Did you eat that?" All the people must be asked in turn what they ate, and this inquiry may point to one particular item. It is quite useful to have a typed list of all the foods available at the peccant meal and ask every person who took part (whether sufferer or not) to tick each article eaten. I have had occasions when cases have occurred after banquets or parties, and it was discovered that the remnants of the food went to somebody else. If there is illness among those to whom particular foods were afterwards distributed that may clinch the matter. These ancillary inquiries are often exceedingly valuable in defining the vehicle at fault.

As regards the reservoir, that is a public health question. A large number of animals suffer from Salmonella diseases. These include most animals and many birds, but sheep very rarely. Rats and mice commonly suffer from these diseases, while ducks are susceptible. There have been a number of outbreaks in which ducks' eggs were concerned. When a custard seems to be the source of the trouble it is well to find out whether it was made from ducks' eggs. One has nearly always to look for an *animal* reservoir. In rats waves of Salmonella infections may occur and the bacilli may persist for long periods in the survivors. I have examined numbers of rats in slaughterhouses and have found a certain proportion harbouring Salmonella bacilli.

In a large proportion of outbreaks the investigator seeking the reservoir concentrates upon looking for a human carrier—a vain quest, for in general we do not get food poisoning from human carriers. The Salmonella organisms are gastro-intestinal irritants; they do not invade the body at all. An examination of the blood in cases always fails to show Salmonella bacilli. In other words, the Salmonella organism in food-poisoning outbreaks acts as a local organism. It stays in the gastro-intestinal tract (unless the patient dies) until it is washed out—quite different from *paratyphosus* B, which does not cause food poisoning but which does invade the blood stream. The ordinary food-poisoning types are local and it is a waste of time to look for a chronic human carrier. The human carrier is only seen as a hangover from an outbreak a few weeks earlier, before the bacilli have had time to be eliminated.

When confronted with an outbreak how should one deal with it? The first thing is to try to ascertain how many were ill, the magnitude of the outbreak, and the kind of symptoms from which the victims were suffering. This should be done roughly and not in full detail at the onset. The next point is to discover whether the outbreak is associated with a living bacillus, is a toxin outbreak, or is a botulinus outbreak. The symptoms and the incubation period will probably tell you right away what you are likely to be up against.

The next step is to ascertain the vehicle by inquiry and, if it is still operating, to stop its use. Sometimes it is most difficult to discover the vehicle, but do not leave it all to the bacteriologist to find it, for this is really an epidemiological job. It is unfair to collect samples of all the foods eaten and expect the bacteriologist to find the infected food. That may be necessary, but, done indiscriminately, is a waste of time. Having ascertained what is the vehicle, try to collect some of it for examination. Here some ingenuity must be employed. What are wanted are scraps left over from the food eaten. I have been able to isolate Salmonella from a tin thrown in the dustbin with a little food at the bottom of it. Do not be satisfied with a statement that the food has all been eaten. That is often not the case, and with persistence scraps of it may be found.

It is then important to go at once to the place where the food was made. In many outbreaks the investigator takes a lot of time collecting particulars of the cases and on the following day goes down to the shop where the meat pies or whatever is implicated were sold and reports everything beautifully clean. The shopkeeper is not a fool, and having heard of the matter everything is cleaned up. When you have knowledge of an outbreak go to the place of preparation (if there is one) *at once,* and then you are likely to find everyday conditions, including possibly a lack of cleanliness, remains of rats and mice about, and the like. A detailed inquiry elicits all sorts of things, while investigation should be made as to the habits of the staff regarding cleanliness. You may want to collect from the shop some of the food for the bacteriologist. Particular attention should be given to the way the food is cooled. A number of outbreaks have been caused by preparations like brawn, which are infected after being put out to cool. The slow cooling, perhaps for over twelve hours, enables specific infection to be enormously multiplied. I have known cases in which brawn was cooled by being put out on cellar steps. An examination should be made for all voided material suggesting rat and mouse infection.

The materials to send to the bacteriologist at once are the suspected foods, specimens of the vomit or faeces, and, in the case of death, post-mortem material. When there is death it is generally pretty easy to prove the nature of the infection. In many toxin outbreaks the bacteriologist finds nothing. If the outbreak is due to a staphylococcus which produces toxin, staphylococci will be found in the food, and one may expect to get the toxin; but in cases due to Salmonella toxins, with no bacilli present, nothing definite will be found. The diagnosis has to be made on the clinical symptoms and other facts. It is of no use sampling the blood in the acute cases for living bacilli. After a week from the onset blood for agglutination tests is most valuable.

With regard to prevention one has to find the cause and stop the vehicle. While case-to-case infectivity is low, nobody who is recovering should handle food until the stools are free from bacilli. In some recorded outbreaks the bacilli have persisted in the stools for a number of weeks.

CHRONIC SOURCES OF VENEREAL INFECTION

POWER TO ENFORCE TREATMENT

The following notes on Defence Regulation 33B have been supplied for publication by the Ministry of Health :

A new Defence Regulation 33B has been made which extends the powers available under the present law for the treatment of venereal diseases and enables compulsion to be applied in certain carefully defined circumstances.

Hitherto the arrangements for the treatment of these diseases in this country have been based exclusively on voluntary attendance for treatment, in contrast with the compulsory basis adopted in most other countries. The voluntary system has met with a large measure of success, and before the war the rate of incidence was low and compared favourably with the record of other countries. The new Regulation leaves the voluntary basis unchanged, but provides for compulsion, where necessary, to bring under treatment the group of persons—small in numbers, but responsible for a comparatively large amount of harm—who are impervious to methods of education and persuasion and who refuse to attend voluntarily for treatment although known to be infected and to be spreading infection.

In outline the Regulation provides that persons named by two separate patients under treatment as the suspected source of their infection can be required, by notice served on them by the medical officer of health of the county or county borough in which they live, to attend for examination and if necessary treatment by a "special practitioner," and to continue treatment in accordance with his directions until they are certified as free from venereal disease in a communicable form. A special practitioner is defined as a registered medical practitioner employed as, or qualified to act as, a venereal diseases officer of a treatment centre; or a specialist in venereal diseases in His Majesty's Forces or the Dominions Forces; or any other practitioner designated for the purpose by the Minister of Health.

The Regulation imposes on "special practitioners," on receiving information from a patient under treatment for venereal disease as to the person from whom the patient suspects that the disease was contracted ("the contact"), the duty of sending particulars in a prescribed form to the medical officer of health of the county or county borough in which the contact is believed to live. These particulars must be sent in each case unless, having regard to the information before him, the practitioner is of opinion that there is no reasonable cause to believe that the disease was in fact contracted from the person suspected. All information obtained is of course to be treated as strictly confidential.

A special practitioner is also required to supply free of charge any necessary certificates, and to serve on the contact (if found on examination to be suffering from venereal disease) a notice requiring attendance for treatment in accordance with his directions. The Minister has given certain general directions to special practitioners, as well as prescribing certain forms, and has compiled notes for their guidance. Copies of all these may be obtained from the Secretary, Ministry of Health, Whitehall, London, S.W.1, or from the medical officer of health of any county or county borough.

A special practitioner in private practice is under no obligation to undertake the examination or treatment as a private patient of a contact on whom a notice has been served by a medical officer of health; but if he does accept the contact as a private patient he must discharge the duties laid down in the Regulation. Any practitioner not otherwise qualified as a special practitioner who wishes to be designated as a special practitioner for the purposes of the Regulation should apply in the first instance to the medical officer of health of the county or county borough in which he practises, giving particulars of his experience in the treatment of venereal diseases.

Correspondence

Child Health

SIR,—Capt. Eric Townsend's letter (Nov. 7, p. 558) is excellent, for it goes to the very root of the matter. Child welfare clinics will never be any better until they are managed by those who have had a thorough training in diseases of infancy and childhood, including infant feeding and management. Those attached to a public health department are seldom, if ever, possessed of such knowledge. It has recently been decreed by the G.M.C. that this subject shall be taught clinically without the very necessary background of a systematic course of lectures. This, in my opinion, is a grave mistake. I have been teaching this subject for many years, and my experience is that young practitioners who have only attended a clinic know very little about infants and children or their diseases. It is essential that students should be compelled to attend a systematic course of lectures on this important subject. Unfortunately, the powers that be seem to have disregarded this either owing to ignorance or error on their part.—I am, etc.,

Edinburgh. JAMES BURNET.

Service Cases of Venereal Disease on Demobilization

SIR,—Post-war reconstruction is being widely discussed at present, and it therefore seems opportune that plans should be considered for the problem of dealing with Service cases of venereal disease on demobilization. We must avoid a repetition of the situation at the end of the last war, when many incompletely treated cases of V.D. returned to civil life and too often sought no further treatment. Much of the tertiary syphilis encountered in the past decade appears to have resulted from early disease inadequately treated at that time. Further, the Services are constantly discovering unsuspected cases of congenital syphilis in men in their twenties, and many of these can be attributed to the same premature cessation of treatment in their fathers.

Even if on demobilization incompletely treated Service patients are given adequate details of the treatment they have received and are advised to continue their course at a civilian clinic, it is probable that only a small percentage will actually do so in that reactionary period. We shall require an "Army of Occupation" when an armistice comes, and with modern treatment it would not be incompatible with the efficiency of such an Army if V.D. cases were retained in the Services until the full standard treatment had been completed to the satisfaction of the authorities. We might thus prevent a considerably increased incidence of tertiary and congenital syphilis in the next generation and avoid an epidemic of early syphilis in the immediate post-war period. The problem might well be discussed now so that suitable arrangements can be prepared in advance.—We are, etc.,

DAVID ERSKINE.
Guy's Hospital, S.E.1. V. E. LLOYD.

Control of Venereal Diseases

SIR,—As a clinical (V.D.) medical officer may I be extended the courtesy of your *Journal* to express my thanks to Col. L. W. Harrison and Dr. P. W. Hamond for their well-timed letters (Oct. 31, p. 528) in regard to the correct use of sulphapyridine in the treatment of gonorrhoea. I need hardly say that I endorse their remarks to the full. The common practice of administering sulphapyridine in cases of definite or suspected urethritis without taking preliminary steps to establish a diagnosis is clinically unsound and may result in tragic sequelae. The ritual of prescribing such a drug in total disregard of methods which have proved universally effective in the vast majority of cases is far more serious a matter, and may have far-reaching and untold deleterious results. It is quite trying enough to have to deal with one's own cases of drug-resistance, but when they arrive "ready made" on the doorstep it is sufficient to test the patience of a Job!

May I add an appeal in regard to another clinical procedure which is equally frequent in my experience and causes no end of trouble—namely, that of applying any form of antiseptic to genital lesions which may or may not be manifestations of early syphilis until such time as that diagnosis has been definitely ruled out. Much valuable time in arriving at a diagnosis, and instituting treatment if necessary, will be saved if this simple regime of "masterly inactivity" is observed. Venereal diseases clinics are provided to deal with all suspects and/or sufferers from such diseases, and I would earnestly ask all practitioners to refer their cases direct without recourse to previous efforts relative to diagnosis or treatment. By adopting such a line of action I am confident that the health of the whole community, individually and collectively, would derive inestimable benefit.—I am, etc.,

Durham. W. GILLIES ANNAN.

Sulphonamides for Gonorrhoea

SIR,—A few years ago Col. L. W. Harrison stated in the *B.M.J.* that "it is better to wait until the attack [of gonorrhoea] has lasted 3 weeks before starting treatment with any of the remedies [i.e., sulphonamides]." Now he says that "sulphathiazole eradicates the disease in 2 days in 90% of cases." This too optimistic statement cannot be allowed to go unchallenged.

If the patient presents himself within 4 days after coitus—just as the inflammation is beginning to show itself in the mouth of the urethra—sulphathiazole would work the above wonder. But the same result has been obtained in the past by injecting 20% argyrol 3 times a day and sealing the urethra up by pressure for 15 minutes. The patient now, as before, asks for treatment when the discharge is fully established and thick pus is pouring out of the urethra. To expect sulphathiazole to cure this case in 4 days is to expect a miracle, and it never happens.

For successful treatment all patients (especially soldiers) should be put on the sick list for 2 weeks and ordered to irrigate with a bulbous-end glass syringe 3 times a day, using permanganate solution 1 in 4,000. I have found the big douche-can quite unnecessary and even harmful in acute cases. Sod. sulphathiazole 1 gramme every 4 hours (during day and night) should be given to the robust and every 6 hours to the others for 4 days.

The disappearance of gonococci from the urethral smear or from a centrifugalized specimen of urine after prostatic massage is not a proof that gonorrhoea has been eradicated. So long as pus cells and threads are present the case should be treated as infectious. There has been a great increase recently in the number of young women suffering from vaginitis of non-specific origin. Is it not possible that men who have got rid of their gonococci by taking sulphathiazole for 4 days have introduced other organisms into healthy vaginae and caused the above condition? To cure a woman of vaginitis is not a matter of days but weeks and months. No woman is ever cured by douching at home, inserting pessaries, and taking sulphathiazole or sulphapyridine by the mouth.—I am, etc.,

Withington, Manchester. M. R. SONI.

Vitamin C and Resistance to Infection

SIR,—In reference to your annotation (Oct. 31, p. 518), I think that it is important to emphasize the other side of the picture. The boys in this institution were crowded together into badly ventilated dormitories and exposed to a virulent haemolytic streptococcal infection. Yet many of them achieved a high degree of immunity without ever falling ill, smoothly and silently, in spite of an intake of only 10 to 15 mg. of vitamin C daily (Thomson and Glazebrook, *J. Hyg.*, Camb., 1941, **41**, 570).

There is, of course, a wide variation in the susceptibility to hypovitaminosis C among individuals, and conclusions drawn from experiments on individuals are not of much value. This variation in susceptibility extends to tissues too, so that scurvy may first show itself as a gingivitis or an anaemia; while both conditions are commonly absent in frank scurvy, in my experience. One reason for these varying clinical pictures, besides local tissue susceptibility, is that additional factors are usually required to precipitate illness in latent scurvy. The factor may be, for instance, a suboptimal intake of iron or of the anti-pernicious anaemia factor insufficient in itself to cause an anaemia. In the presence of vitamin C deficiency the interplay of factors produces a hypochromic or hyperchromic picture, curable in either case by vitamin C. Thus, scorbutic gingivitis may be regarded not so much as a manifestation of scurvy but as a gum reaction to toxins or local infection in the presence of vitamin C deficiency. The gums will heal when treatment is directed to whichever of these factors is predominant. As an example, 300 cases of gingivitis in adults whose intake of vitamin C was low were examined. All showed evidence of varying degrees of vitamin C deficiency, 27 refused to heal until local treatment was stopped and vitamin C given. The remainder healed quite well with local treatment only. It is probable that vitamin C would have accelerated healing in these cases, but the planning of the experiment did not allow of this.

It seems that vitamin C plays a relatively minor though essential part in resistance to generalized infections, just as it plays a minor though essential part in haematopoiesis or in the maintenance of healthy gum tissue. Many boys aged 16 can lead healthy lives on an intake not exceeding 15 mg. daily. Their existence is a precarious one, however, for once a serious breach is made in their defences the tissue reactions are inadequate and their attempts at repair clumsy and laborious.—I am, etc.,

Royal Infirmary, Edinburgh. A. J. GLAZEBROOK.

⁂ We apologize to Dr. Glazebrook for misspelling his name in our recent annotation.—ED., *B.M.J.*

Prevention of Small-pox

SIR,—Dr. C. Killick Millard criticizes the mass revaccination method of combating the recent small-pox epidemic in Glasgow. It would be interesting to know, as he says, the total amount of time lost through revaccination and compare that, not with the time lost through immunization against diphtheria, but with the total amount of time lost through small-pox, including, of course, an estimate of the time lost through deaths.

He states that such a drive as has been practised in Glasgow inevitably gives rise to "scare." I have no inside knowledge about the late epidemic, but I know something about the previous one when about 400,000 people were revaccinated. The "drive" was nearly a week behind the "scare" or, more correctly, "panic." After the epidemic had been smouldering for some time a rumour got about that there had been 50 new cases of small-pox over the week-end in my district. I believe that was the number for the whole of Glasgow. When I went to my consulting room on the Monday evening I found a crowd at the door and my waiting and consulting rooms packed. When I asked what was wrong, the answer was, "We want to be vaccinated." No one offered to pay. They all expected that the town would pay. When we rang up the M.O.H. he said he would let us know, but it was several days before he told us that we should be paid. In the meantime we had to note the names and addresses of those we vaccinated and the results. Thus every general practitioner became a public vaccinator in fact if not in name and freed the M.O.H. and his staff to attend to what Dr. Millard calls "really important matters." Personally, I think revaccination was the most important matter at this time.

The year after that epidemic there was another one with 500 cases. I was informed by the superintendent of the small-pox hospital that not one of these cases had been revaccinated. So that the 400,000 who were revaccinated had 100% immunity. Dr. Millard is not logical in stating that he has a profound belief in the utility of selected individual vaccination and yet objects to mass revaccination during an epidemic. To depend on following up contacts alone without revaccination seems like trying to empty a bucket with a sieve. For one contact that is known there are probably dozens that are not known. Here are some examples.

Coming home late one Saturday night I found three people waiting for me in the hall. The first, a man, said he had a rash on his arms. He had small-pox. The other two I revaccinated at once. That man had been to a football match and had travelled in several trams. How many contacts had he made during that day? A baby, 17 days old, I found suffering from small-pox. On inquiry I discovered that the grandmother, who had visited it every day, was not very well. I went and saw her and found she had just recovered from small-pox, but had been about all the time, going into shops, etc. I had heard of a woman who was going about with a shawl over her head and most of her face, and this was the woman. I wonder how many people got small-pox from her.—I am, etc.,

Birmingham ROBERT ANDERSON, M.D.

The Dysentery Carrier

SIR,—In England and Wales the annual notifications of dysentery have shown a marked upward tendency during the last seven years, and the figure for 1941 was considerably higher than in any year since the disease was made notifiable. The increase in recent years was apparent well before the war, and cannot, therefore, be ascribed to wartime conditions. It is probable that the increase is due in part to the fact that we are becoming more bacteriologically minded, but even so, a considerable number of dysentery cases are still not fully investigated and do not appear in the notification records.

Modern sanitation, pure water, and safe milk have largely abolished the menace of intestinal infectious diseases. How is it, then, that dysentery seems to be increasing? There can be only one answer. We know that the disease is kept alive by the presence of carriers and "missed" cases; and we know that if carriers observe scrupulous care, particularly in the hygiene of the toilet, they cease to be dangerous to others. Each case of dysentery probably means that somebody has been careless in personal hygiene, and an outbreak usually means that the person at fault is a food handler. The prevalence of dysentery may be taken as an index of the standard of personal hygiene in the community.

Two things are necessary—the provision of washing facilities and education of the public in the importance of their use. Legislation has now ensured the provision of washing facilities and soap and towels for food handlers, but only education can ensure their regular use. There is room for improvement in the standards of hygiene in the home, at the place of work, and in public places. Too often it is found that the conscientious citizen is penalized by having to pay the extra cost of a "wash and brush up."

It is not enough merely to teach the subject of hygiene in school classes. Good habits should be inculcated until they become second nature to the children. The public should not be permitted to retain the present universal belief that attacks of diarrhoea are the inevitable consequence of wartime food and conditions. Such complacency leads to an increase in the number of undiagnosed convalescent dysentery carriers. Publicity on intestinal infections and their relation to personal hygiene would not be easy, but it should be within the means of publicity experts to devise and propagate suitable material, even for this unattractive subject.—I am, etc.,

London, S.W.1. IAN TAYLOR.

Epidemic Hepatitis

SIR,—Earlier this year (April 11, p. 466) you published a short account by me of a series of cases of epidemic hepatitis that occurred in this district in September and October, 1941. The following report on the subsequent course of the disease may be of interest.

Onset of last case in the 1941 series, Oct. 22, 1941; onset of next case notified to M.O.H. in Jan., 1942. This first case in the present year was followed by a second case in the same family in February, and on April 10 a third member of the family developed icterus. There were two other cases in March and April, the dates of onset being March 17 (the child was a playmate of the family in which there were three cases) and April 18. These two children and the family of three all attended the same school, and two of the families were, as stated, close friends. All five children developed icterus after an illness with a coryzal onset.

At the other end of the town three cases occurred as follows: (1) onset of icterus March 15; (2) first symptoms April 1, icterus April 8; (3) first symptoms April 10, icterus April 15. All these patients lived near one another, attended the same school, and their illness began with abdominal symptoms. After this there was an interval of 4½ months before the next case was notified; in this the coryzal onset was on Aug. 27 and icterus appeared on Aug. 31. No further case has been notified up to the date of writing, Oct. 21.

It is unwise to draw conclusions from a small series of cases, but it would appear that the incubation period may well be one month—e.g., the family of three and their playmate developed icterus at intervals of one month. The disease is not notifiable, so that there may well have been other cases during the closing months of last year and during the summer of this year, or the infection may have been kept going in the district by subclinical cases, or the initial patient in any series may have contracted the infection outside the district. There are still many points for elucidation in this affection, and the collection and correlation of reports from as many sources as possible would be of service.—I am, etc.,

Mirfield, Yorks. C. GRANT NICOL.

Control of Malaria in Palestine

SIR,—In the leading article on the control of malaria in Palestine (Oct. 31, p. 517) it is stated: "Perhaps the most noticeable feature in respect to species is that *A. maculipennis*, which assumed such importance in Macedonia in the last war, does not occur." This is very far from being the case. *A. elutus*, the dangerous malaria vector in rural areas of Palestine, is one of the varieties, or races, of *A. maculipennis*. It is indeed the very variety that is responsible for most of the malaria in Macedonia. *A. maculipennis* var. *elutus* in Macedonia appears to have a more marked predilection for slightly saline breeding places than does its Palestinian prototype, but no other differences have, I think, been recorded.—I am, etc.,

Bicester. NORMAN WHITE.

⁂ As the passage referred to in Dr. Norman White's letter is evidently liable to give rise to some misconception a word of explanation is desirable. *A. elutus* Edw. (more correctly *A. sacharovi* Favr), though originally described as a species resembling but distinct from *A. maculipennis*, was for some time frequently treated by authorities as one of the five or six varieties of this species. It is now, however, generally considered and referred to as a species in its own right. That *A. elutus* was mentioned in the leading article among the three species playing an important part as carriers in rural areas in Palestine should have been an indication that it was so regarded both by the author of the report and by the reviewer. *A. maculipennis* in any of its varieties (if we except *elutus* as not being a variety but a distinct species) has never been recorded from Palestine, an interesting fact in distribution which is repeated further east where in Iraq *A. maculipennis* is not encountered going north until at or beyond Mosul, although incidentally *A. elutus* has been recorded from Basra some hundreds of miles to the south.—ED., *B.M.J.*

Tetanus

SIR,—I was extremely interested in the article on this subject by Dr. Leslie Cole (Nov. 7, p. 550). I agree in general with his able article, but I should like to add a few points which I developed in treating a case a few years ago.

The patient was a gardener aged 52 and he developed tetanus after pricking his finger while at work. I kept him under continual avertin anaesthesia for 6 days, giving a full surgical dose per rectum every 12 hours during this period. I kept his lungs dry with atropine and sustained him with a rectal drip of saline and glucose. I gave no antitoxin as I believe that if the spasms can be controlled the body will produce its own antitoxin in due course. In my case the patient recovered in some 10 days' time and is alive and well to-day. I had some difficulty with breathing, but found that nasal doses of CO_2 from time to time restored respiratory rhythm.

As this disease is common on the battlefield, more attention will have to be given to it than in the past.—I am, etc.,

Weybridge. JOHN H. HANNAN, M.D.

First-aid for Fractured Spine

SIR,—My thirty years' experience as an industrial surgeon has shown me that fracture of the spine is a far less uncommon injury in the heavy industries than is usually appreciated. In the absence of repeated *x*-ray examinations cases are overlooked until later disabilities arise. An essential link in the chain of cure is a specially trained industrial first-aid team. It is important that the idea should be removed from the first-aider's mind that paralysis is a sign of a fracture of the spine. His duty is to recognize the simple fracture, and by his handling of the case to avoid the complication of cord damage.

Having to deal with large numbers of first-aiders and to face on the operating table and in the hospital ward the failures of my teaching, I evolved a method of handling these cases that proved most satisfactory and which the first-aiders learned without difficulty. I am strongly of the opinion that fractures of the thoracic and lumbar spine must be transported face downwards with a firm pad—e.g., rolled-up blanket—immediately below the clavicle and immediately above the knees. The method of turning the patient on to his side, and the stretcher on to its edge to meet him, I found not only unsatisfactory but dangerous.

I shall be pleased to supply any of my colleagues who may be interested with details of my method of turning, lifting, and carrying cases of fracture of the cervical and of the lumbo-thoracic spine. I fear it would occupy more space in the *Journal* than in wartime the Editor can spare.—I am, etc.,

THOMAS E. A. STOWELL, F.R.C.S.,
Chairman, Advisory Medical Committee,
Industrial Welfare Society.

14, Hobart Place,
Westminster, S.W.1.

Shock Treatment in Psychiatry

SIR,—Your admirably balanced assessment of the new methods for the physical treatment of the psychoses (Oct. 3, p. 397) is welcome. It required to be more widely known that much can be done for the early schizophrenic with insulin and for the depressive with convulsion treatment, and that convulsion is not a promising treatment for schizophrenia. Furthermore, it has been made clear why, in the face of better knowledge, convulsion has been so extensively applied to schizophrenics to the neglect of insulin, and that the prospects offered by the latter are favourable enough to make an acute treatment centre a communally profitable enterprise.

For want of facilities most early schizophrenics—i.e., those sent to public mental hospitals—cannot be given insulin (there are a few exceptions), and only a few can avail themselves of the facilities offered by some private and registered institutions. I fail to see the logic of Dr. K. A. Graf's argument that it would be difficult to get in touch with the early cases, since most public mental hospitals run independent villas and clinics for this very purpose, only they simply have not the staff and the time to undertake the far more exacting insulin treatment.

I trust your statement that "for the early schizophrenic . . . this latter use [convulsion] instead of insulin is, except in the rarest cases, really disastrous" may not be misread as implying that, rather than give the early schizophrenic convulsion in default of insulin, convulsion should be withheld from him altogether. No one, however much convinced of the merits of insulin, would wish to see that happen, and, until your scheme has been put into operation, we shall have to cut our coat according to our cloth. I write as one responsible for the introduction of insulin shock treatment into this country, and have always regretted the tendency to regard convulsion as a cure-all (Dec. 31, 1938, p. 1390). I have seen, however, what can be done with convulsion even in schizophrenics, provided it is combined with sustained psychotherapeutic encouragement as taught by Meduna. Pioneers see a great deal of their patients between treatments, but once the method has become popular patients are more and more left to themselves between treatments. The latter does not so much apply to insulin, where the physician willy-nilly has to be with his patients 5 hours each day during several months, but it certainly applies to convulsion; as far as this goes, the universal introduction of foolproof electrical apparatus is to be regretted, and only recently FitzGerald and Saul (June 13, p. 736) said they saw it coming when the house-surgeon would be left "to press the button." Also, your observation, all too true, that results obtained by haphazard playing around with insulin and convulsion cannot be compared with those obtained by system and planning applies even more to convulsion, where judicious spacing of the fits may make a great deal of difference, and where results are more liable to be frittered away by want of persistence and perseverance.

I trust that these remarks will not be misunderstood: the aim is to provide insulin for the early schizophrenic throughout the country, but until then we shall have to get the best out of convulsion.—I am, etc.,

Falmouth. H. PULLAR-STRECKER.

Dressing for Thiersch Grafts

SIR,—The late Sir Henry M. Gray, who gave so many good things to the profession, used to leave his skin grafts bare whenever possible. This allows one to snip any blebs that form. The atmosphere under the cradle should be kept moist. One can generally tell if a take is probable before the patient leaves the table. The old "Worth's patent buff strop"—now, I fear, unobtainable—gives such a splendid edge to a razor that anyone with a little practice can cut large sheets of graft. These, when left alone by Gray's method, give the best results I have seen; but I can recall cases in which pressure by sponge rubber might have prevented a loss of the graft. It is often found that the basal cells have taken in this type of case.—I am, etc.,

London, W.1. G. H. COLT.

Aortic Regurgitation and Mitral Stenosis

SIR,—In his paper (Oct. 24, p. 473) on some aspects of carditis Dr. T. F. Cotton states that out of 194 cases of valvular disease 38 had aortic regurgitation and mitral stenosis. Surely some of these must have been cases of aortic regurgitation with Flint's murmur and no mitral stenosis. In 1862 Austin Flint first pointed out that when a presystolic murmur was heard in aortic regurgitation, only a small proportion of cases had mitral stenosis. In 1901 Thayer, at the Johns Hopkins Hospital, found that "in 45 post-mortems of cases of aortic regurgitation with a presystolic murmur only 12 had any mitral stenosis, and in these the pulse was noted as not large, and in most of them there was a loud snapping first sound at the apex."

Mitral stenosis would be incompatible with life if there was much aortic regurgitation; blood would never get through a stenosed mitral orifice against the pressure in the left ventricle; and, where the pulse is large and collapsing, no mitral stenosis is found post mortem. The probable explanation is that the regurgitant stream from the aorta strikes against the anterior flap of the mitral valve and causes vibrations in it, which produce the presystolic murmur and thrill.—I am, etc.,

Hove. WALTER BROADBENT, M.D., F.R.C.P.

Tonsillectomy: Guillotine or Dissection?

SIR,—Mr. T. B. Jobson, in his article on tonsillectomy by guillotine and dissection, seems anxious to revive a controversy which by now must surely be on its last legs. What a pity to delay the guillotine on its journey to the scrap-metal campaign. What good can come of its reintroduction now? Mr. Jobson has a lot to say against it, but the implication of his article is that he uses it extensively himself, and would probably have other people do the same. He gives a list of reasons why satisfactory results are not obtained from its use, but the concluding note, together with his golfing analogy, implies that all its disadvantages can be successfully overcome by the expert after some hundreds or thousands of practice shots.

There is a most impressive silence in the article on the treatment of adenoids in the guillotine method. It is now universally recognized that complete removal of adenoids in children is in every way as important as the complete removal of tonsils. Who, having watched the guillotine method of tonsillectomy, with its hurried manipulations terminating in a rising tide of blood, could believe that the stage is now ideally set for the removal of the adenoids? The lightly anaesthetized patient is turned over, and against a tightening barrier of resistant palatine muscle the curette is forced into the nasopharynx and blindly swept over its posterior wall. The tonsils may have gone completely, but there is many a pad of adenoid tissue which escapes that cramped unseeing sweep and lives to infect on another day.

At the Hospital for Sick Children, Great Ormond Street, where tonsil dissection has been employed exclusively since Mr. Waugh's campaign in 1909, the registrars are carefully instructed to take as much time as necessary to perform a completely satisfactory operation when removing the adenoids. This involves a digital examination of the posterior nasopharynx in the *fully anaesthetized* patient, followed by a careful curetting of the posterior wall with a sharp curette, first in the midline and then a sweep on either side around the Eustachian cushions, and then another careful digital examination. Complete haemostasis is secured before the anaesthetic is stopped. All this can only be done if the soft palate is fully relaxed—that is to say, if the patient is fully anaesthetized and without any pharyngeal reflexes.

The adenoid tissue left behind in the guillotine method may be high up on the posterior nasopharyngeal wall or distributed on either side and overhanging the Eustachian openings. Often it hypertrophies, and, becoming infected, causes chronic sinusitis, post-nasal catarrh, Eustachian blockage, catarrhal deafness, and is the focus of infection of the neighbouring lymphatic tissue. Removal of such offending tissue was a frequent operation at Great Ormond Street, where the patient reported after a successful tonsillectomy elsewhere but still suffered the old symptoms on account of retained infected adenoid tissue. Such cases can be seen again and again at E.N.T. hospitals. The guillotine operation as practised by the majority of its exponents does not give the necessary time, the sight, or the necessary palatine relaxation for dealing with the adenoids as an important and separate problem. The adenoids become a concluding gesture in a welter of blood and confusion.

No doubt in the hands of men like Sluder results of tonsil guillotining rise to 99.6% success, but what of the unfortunate cases dealt with by the professor in his early days? Mr. Jobson points out that the guillotine takes immense experience to handle really successfully and to produce results comparable with dissection. It would seem, therefore, that whereas great numbers of patients must have unsatisfactory operations at the hands of student "guillotineers," it would not be so in dissection, where the student has plenty of time to note and correct his errors and have his professor's criticism in time for it to be of use to the patient.

Finally, it is interesting to note that Sir StClair Thomson quotes tonsil dissection as being one of the oldest operations in the world, as Celsus (53 B.C.) wrote that "tonsils that are indurated should be disengaged all round by the finger and then pulled out." Few operative techniques can have such a worthy recommendation. It would be interesting to know whether there still exists a Celsus gag and tonsil-holding forceps listed among the instrumental monuments to be found in any current catalogue of ear, nose and throat instruments.—I am, etc.,

St. Ives, Cornwall. E. C. ATKINSON.

Working for a Salary

SIR,—The relative value of work done by salaried officers and by non-salaried medical workers is being increasingly discussed at the present time, generally with little regard to any factor other than the prejudices of individual writers. My own views may be properly subject to the same criticism, but I venture to point out two aspects of the matter which are commonly overlooked, and which were, I think, misrepresented by implication in Dr. Una Westell's letter (Nov. 7, p. 561).

Where a doctor is not in receipt of a fixed salary there is a very strong inducement (even if it is entirely unconscious) to consider the financial return of any course of professional action: the economic factor must essentially be pronounced. The worker for a fixed salary, on the other hand, is entirely free from considerations of financial competition, but so far from lacking stimulus in his work he has that much more energy liberated for the performance of his duties, and is stimulated by other forms of the competitive urge to vie with his colleagues in efficiency and to achieve minor fame as a successful exponent of his particular branch of medical work.

The most complete answer to any claims that a fixed salary leads to an unprogressive spirit is surely afforded by the fact that almost all prominent research workers are salaried officers of universities, yet they, more than any other branch of the medical profession, contribute to real scientific progress.—I am, etc.,

Weston-super-Mare CYRIL G. EASTWOOD,
Medical Officer of Health

Medical Officers of Health: A Recent Circular

SIR,—I should be very interested to hear the views of your readers, especially those who, like myself, hold positions under local authorities and whose interests are, therefore, primarily affected, on the meanings and implications of a circular letter which I, in common with my colleagues, have received from my chief.

The circular states that the council have, as a wartime measure, decided that the normal hours of work for the professional, administrative, and clerical staffs shall be fixed at a minimum of 39 hours a week (exclusive of the midday break). It further states that the council have also decided that any *authorized* overtime above the 39 hours shall be paid for as set out in the South Metropolitan District Council's recommendations, which are as follows: (1) to restrict the annual leave of all officers to two weeks; (2) to approve such increase as may be necessary in the working hours of officers, subject to the payment of overtime therefor.

These recommendations are subject to the following conditions:

1. Annual leave may be taken in one period of two weeks or in broken periods as the local authority may determine.
2. For the purpose of assessing overtime payable the "normal" working hours shall be assumed to be 39 a week (exclusive of the midday break), and the difference between such working hours and the wartime working hours shall be paid for at plain time rates of salary (exclusive of war bonus).
3. Hours worked over 46 and up to 52 per week (exclusive of meal-time breaks) shall be paid for at one and a quarter plain time rates of salary, and one and a half plain time rates of salary for hours over 52 (exclusive of war bonus).
4. Officers (male and female) with a basic salary exceeding £500 per annum shall not be eligible for the payment provided in (2) and (3) above, provided that an officer whose salary (excluding bonus) exceeds £500 per annum shall not receive less than any officer who is entitled to the payment provided in (2) above.

After enumerating 5 further conditions the circular proceeds:

10. No officer shall be adversely affected by reason of the application of these recommendations.
11. Any question arising between a local authority and its staff regarding the interpretation of these recommendations or any anomalies arising as a result of the operation thereof shall be determined in the first place by local negotiations or, failing agreement, by the District Council for the area, or, failing agreement, by the National Council.

The above, Sir, are what seem to me to be the essential parts of this circular. Many points spring to my mind in regard to the provisos contained therein. Here are a few:

1. The circular obviously applies to medical staffs (among others) working under local authorities. Most of these medical officers have

definite agreements with their local authorities, but, so far as I am aware, they have not been consulted on whether they would agree to the provisos contained in the circular, one of which, for instance, alters the conditions of service in regard to annual leave which in most agreements is fixed at four weeks for every eleven months' service.

2. Many of the medical personnel of public health departments have consistently for years worked much more than the 52 hours a week mentioned in the circular. Of these, some, such as resident medical officers in municipal hospitals, whose rate of remuneration is, say, £300 per annum with emoluments valued at £140 per annum, will qualify for the payment of overtime at what would appear at first sight to be a very handsome figure. Other, and more senior, officers, who by reason of their greater responsibilities or longer service receive a salary of £500 or over, are particularly excluded from participation in the proposed award for working overtime, but are nevertheless included in the provision which curtails their annual leave by 50%. Why senior officers doing more responsible work should suffer from this discriminatory treatment is not clear, unless the reason lies in the large sums of overtime pay which they might earn. To take my own case, for instance, I am in charge of an important subdepartment, and, apart from my four-weeks annual leave, am on call and therefore on duty for the whole 24 hours every day of the week, Sundays included. Clause 4 of the conditions set out above, however, debars me from any participation in overtime benefits, but permits my assistants to benefit as their salaries are below the figure of £500 per annum. It seems a curious state of affairs.

Could anyone enlighten me as to the identity and powers of the South Metropolitan District Council and the National Council, of whose existence I have been up to now completely ignorant? None of my colleagues to whom I have spoken appears to know any more than I do. Have the members of the National Council, whoever they may be, the right to make such recommendations as the above in regard to the conditions of service of medical practitioners without affording such practitioners the opportunity to discuss, agree, or disagree with any or the whole of such recommendations?

The views and comments of your readers will be much appreciated, and for obvious reasons I sign myself,

A.M.O.H.

Rehabilitation Centres

SIR,—I am sure Mr. G. R. Girdlestone's letter and the memorandum from the British Orthopaedic Association on the question of rehabilitation centres (Oct. 31, p. 526) will be read with interest.

The letter assumes that rehabilitation is a water-tight method of therapy which concerns wounds and accidents, and extension of this service under the same administrative and surgical control is advised. Rehabilitation is, in truth, a method of treatment which concerns disease as importantly as injury. For instance, it is of the greatest interest and importance to the neurologist and to the general physician, more especially to those interested in the chronic rheumatic diseases. It would be a retrograde step if rehabilitation centres were placed under surgical control, for the viewpoint would be narrowed, and the best use would not be made of these centres. Recognition that rehabilitation is a matter which concerns the physician as much as, or more than, the surgeon would be a forward step with great possibilities both now and in time to come.—I am, etc.,

London, W.1. ERNEST FLETCHER.

Hyperostosis Frontalis Interna

SIR,—I read with great interest Dr. C. T. Andrews's article (Aug. 15, p. 185). It is an interesting subject, especially if one considers that practically women only are affected by it and men only by leontiasis ossea. It seems to me that its occurrence must be connected with the endocrines and conditioned by them, as it appears that the same glandular fault will lead to the one in men and at certain periods (pregnancy, menopause) to the other in women; or is hyperostosis frontalis interna in women merely an arrested form of leontiasis ossea?

The case observed by me between 1935 and 1941 was in a woman aged 47, who in 1918 after her second pregnancy developed severe right frontal headache, which never left her. Four months after the confinement she had her first epileptic fit (grand mal). Since then she has had 3 to 4 fits yearly, most of them at night with incontinence of bladder, etc., and since 1934 these fits could be controlled by phenobarbitone, 1 or 2 gr., but never the headache. There is no epilepsy in her family nor any other familial disease. Her periods were regular and normal until 1940, when she was operated on for carcinoma of the left ovary. In 1935 she underwent cholecystectomy for chronic cholecystitis without gall-stones, and appendicectomy.

When first seen in June, 1935, clinically nothing abnormal was found, but the liver was felt and there was slight venous congestion over the right forehead. B.P. 120/65. Urine: albumin, sugar, urobilinogen, and porphyrin negative; sp. gr. 1013. There was frequency by day and night. Blood count: Hb 88%; R.B.C., 2,640,000; W.B.C., 7,600—eosinophils 2%, monocytes 7%, lymphocytes 32%, polymorphs 59%; poikilocytosis; microcytes and megalocytes were found but no megaloblasts or normoblasts. Wassermann reaction negative. Radiograph: hyperostosis of both frontal bones; pineal gland calcified; fundi normal; small bilateral central scotoma. C.S.F. and ventriculogram normal. Electro-encephalogram: small right frontal delta focus involving nearly the whole of the upper and frontal region.

There was prompt reaction to liver treatment, but no remission of the pernicious anaemia has been observed. Mental condition: not dependent on her general condition; easily depressed, easily paranoic, at times very dull, almost demented, only at rare intervals fit for her own home duties, always fatigued, and sleeps on an average 16 hours. Besides those epileptic fits, narcoleptic fits come on at irregular times after due warning.

This case of hyperostosis frontalis interna is of special interest as it is complicated by pernicious anaemia. Or is the same glandular or hypothalamic disorder responsible for both? In this connexion one is certainly reminded of those still rarer diseases Cooley's and Jackson's anaemia, both of which show skull changes in radiographs. Dr. Andrews is to be congratulated on his successful treatment with benzedrine. But, more important still, as he shows, the condition must be recognized and appreciated in the differential diagnosis of headache associated with general indefinite symptoms.—I am, etc.,

LEO RAU, M.D., M.R.C.P.
Lieut., R.A.M.C.

A Supply of Trained Male Nurses

SIR,—My committee—an association run by naval medical officers to help in assisting sick-berth staff to find suitable employment on being discharged to pension—desires to draw attention to a source of supply of well-trained male nurses whose position appears to have been overlooked in the framing of the reports of the Athlone and Horder Committees.

Very shortly, it may be stated that naval sick-berth ratings are trained at the expense of the Admiralty, and efficiently carry out the sick nursing at Royal Naval hospitals, R.N. depots, and on H.M. ships. Their qualifications and Service examinations for promotion in no way fall short of the requirements for the certificate of the State-registered nurse. After at least twenty years' service they retire on pension, and those who wish to make use of their training find themselves unrecognized as possessing any nursing qualifications. A letter to this effect has been sent to the Minister of Health. Many medical men at present serving as temporary naval medical officers must have had experience and felt the advantages of having such reliable, capable, and experienced sick-berth ratings to assist them in the treatment of the sick and wounded.

My committee thinks that more consideration and recognition should be given to men who have served their country for at least twenty years at home and abroad and have been efficiently trained by giving them a definite status in any nursing Act that may come into force.—I am, etc.,

J. FALCONER HALL,
Surg. Rear-Admiral (ret.).
Hon. Secretary, Central Council, Royal Naval
London, N.W.6. Sick Berth Staff Associations.

G. L. Maltby and M. Rosenbaum (*Proc. Soc. exp. Biol.*, N.Y., 1942, **50**, 10) have made an electro-encephalographic study of 17 patients in whom a diagnosis of eclampsia was made because of convulsive seizures associated with the latter part of the puerperium, the patients being studied from one week to five years after their admission to hospital. The electro-encephalograms of 77% of these patients showed a cerebral dysrhythmia, and in 58% there was a family history of convulsive disorders. Maltby and Rosenbaum suggest that in patients with eclampsia there may be a primary cerebral dysrhythmia, and that the associated toxaemia may act as a trigger mechanism making manifest the convulsive tendency.

Obituary

SIR NORMAN WALKER, M.D., F.R.C.P.Ed.

We announced last week the death of Sir Norman Walker, formerly president of the General Medical Council, which took place on Nov. 7 at his home in Midlothian.

Norman Walker was born at Dysart in Fife in 1862. His father, the Rev. Dr. Norman Walker, was a well-known figure in the Free Church of Scotland for many years. The son was educated at the Edinburgh Academy and afterwards went on to the University. He graduated M.B., C.M. in 1884, and took the M.D. four years later. His first post was that of resident physician at Edinburgh Royal Infirmary in 1885. During the next five years he engaged in practice in England, though near the border, in Cumberland, and there he remained until 1890, in which year he was president of the Carlisle Medical Society. It was in Cumberland that he met his wife, Annie Trimble, whom he married in 1887, and by whom he had three sons and one daughter. One of the sons, Dr. E. R. C. Walker of Aberdeen—and now a prisoner of war—is well known in the Scottish and central affairs of the B.M.A.

[W. and E. Drummond Young, Edinburgh.

Returning to Edinburgh, Norman Walker built up a reputation as a dermatologist. He had already spent a great deal of time on the Continent, especially at Vienna and Prague, where his mind received its bent towards dermatology, in which he was to specialize for the remainder of his medical career. His appointment as assistant physician in dermatology at the Edinburgh Royal Infirmary began an unbroken connexion with that institution extending over half a century, during which he became physician to the skin department and in later years consulting physician. He was also lecturer at the University. During his visits to the Continent he had become a disciple of P. G. Unna of Hamburg, whose work, *The Histopathology of Diseases of the Skin*, he translated from the German in 1896. He accomplished his task with notable skill and a general avoidance of foreign idiom, although to translate some of the terms into English was almost an impossibility. He had, fortunately, the help of Unna himself, with whom he had been on intimate terms for some years, and Unna more than once acknowledged his good fortune in having so competent an English translator who had become familiar with his work during many visits to his clinic. It was not Walker's first essay in what may be called heavy translation. He had already translated from the Norwegian the work on *Leprosy in its Clinical and Pathological Aspects* by Hansen and Looft. In 1899 he published the first edition of his own *Introduction to Dermatology*. This was a work of 250 pages, a reproduction of lectures which he had been giving to his students in Edinburgh, but it found an appreciative public and ran into many editions, the tenth being published forty years after the first.

As time went on Norman Walker became more closely identified with the University and with academic affairs in Scotland. He had a natural aptitude for university administration. He became a member of the Court and a curator of patronage. He was also inspector of anatomy for Scotland. Of the Royal College of Physicians of Edinburgh, of which he became a Fellow in 1892, he was for many years treasurer and was elected President in 1929. He was a Corresponding Member of the American, French, and Danish Dermatological Societies, an Honorary Fellow of the American Medical Association, and an honorary member of the Association of Military Surgeons of the United States. In 1906 he was president of the Fife Medical Association. He also took a conspicuous part in the organization of medical services in Scotland. During the war of 1914-18 he was chairman and convener of the Scottish Medical Services Emergency Committee, and later chairman of the Consultative Council for Medical and Allied Services, Scottish Board of Health. Another organization in which he was interested was the Highlands and Islands Medical Service Board, established by Act of Parliament and constituted in 1913. The Board did its work very thoroughly; there was no part of the Highlands and Islands, however remote, which was not visited by more than one member, and Norman Walker was as assiduous as any. In the B.M.A. he was at one time active, and always interested and friendly, though his official position in the G.M.C. later on entailed a withdrawal from participation in Association affairs. He was chairman of the Science Committee of the Association in 1906.

The General Medical Council

Sir Norman Walker was elected a member of the General Medical Council as the direct representative for Scotland in 1907 and so remained for more than thirty years. Here he found work after his own heart. For many years before his election to the presidency in 1931 he was Chairman of Business, which means aide-de-camp to the president and whip of the Council. For about a quarter of a century he was a member of the Executive Committee, the Penal Cases Committee, the Examination Committee, the Business Committee, and the Pharmacopoeia Committee. He was also a most useful member of special committees dealing with such subjects as students' registration, the prevention of unqualified practice, and the National Health Insurance Act. On his retirement from the chair of the Council in 1939 his successor, Mr. Eason, said that there was no problem which came before them which he could not simplify by reason of his familiarity with precedent and tradition.

One of his most noteworthy achievements for the G.M.C. was his two visits to all the medical colleges and several of the numerous medical schools of India. His reports on his return and his great familiarity with the position of medical education in India enabled the Council to deal effectively with the delicate situation which arose in connexion with Indian universities and their medical degrees. It had come to the notice of the Council that there was a certain laxity in the conduct of examinations in India, and it was thought that the regulations which students in this country were required to follow were not being observed out there. Sir Norman Walker's first visit to India took place in 1922. He was asked to undertake this task by Mr. Edwin Montagu, then Secretary of State. In spite of great difficulties and some bitter feeling which he encountered, he had the satisfaction, in conference with the Indian Universities authorities, of having his recommendations accepted. His tact and judgment and his sincere desire to promote sound professional education in India were acknowledged, and a more satisfactory measure of agreement was brought about, especially as regards training in obstetrics, than had previously existed. Without his assistance and knowledge the Council might have taken a false step in a difficult situation. He enabled the Council to shape its policies to the ultimate benefit of medical education in India.

In 1931, when Sir Donald MacAlister closed his long presidency, Sir Norman Walker was his obvious successor. For many years he and Sir Donald had been in closest association and friendship. Lady MacAlister in her biography of her husband mentions Sir Norman as "tirelessly kind and helpful." It is a remarkable fact that the G.M.C. for almost half its history should have had these two Scotsmen at its head. During his eight years of office in the chair Sir Norman proved an able, businesslike president, though he had not the brilliant qualities of his predecessor. But he was invariably courteous, quietly dignified, and a mine of knowledge on the history and procedure of the Council.

He received the honour of knighthood in 1923, his name appearing in the India Office list in recognition of the success of his efforts in his visit to the Indian Universities the previous year. Among other distinctions which came to him were the honorary degrees of LL.D. of St. Andrews, Edinburgh, and Bristol, and M.D. of Dublin.

R. E. MOYES, M.D.

T. A. H. sends the following tribute supplementing the memoir published last week.

The public and the medical profession of the North of England are permanently impoverished by the sudden death of Dr. Robert Esmond Moyes. Born at Largs in 1884, where his father was a well-known and respected practitioner, Moyes took his M.B., Ch.B. at Edinburgh University in 1905 and the M.D. in 1910. Soon after qualification he went into general practice in Broomhill and remained there and in the Warkworth district during his professional life, except for two years during the last war, when he served as a captain in the R.A.M.C. in Mesopotamia and Palestine. After the war Moyes took a great interest in the British Medical Association, and was president of the North of England Branch in 1939. Up to the time of his death he was a member of the Medical Advisory Committee of the Ministry of Health. He was always very interested in the Northern Counties Medical Society and was president during the 1923-4 session. He was chairman of the Northumberland Insurance Committee, and during the present war chairman also of the Northumberland Medical Recruiting Board under the National Services (Armed Forces) Act, 1939. Whatever work Moyes undertook he did to the best of his ability, and there is no doubt that his untimely death was largely due to overwork and that he was as much a war casualty as if he had been killed in action. In addition to being a man of outstanding professional ability, who would have distinguished himself in any branch of the profession, Moyes was a man of great human understanding. Few men of his generation can have so nearly attained the standard of the perfect doctor: his patients not only came to him with their ailments but sought advice, which they knew would be invaluable, whenever they were in a difficult situation. He gave his services to all classes of the community without any thought of reward or of his personal inconvenience. The memory of his unselfish devotion to duty, and of his warm human understanding, will remain during life with a very wide circle of patients and colleagues.

J. M. writes:

Early in his professional life Moyes joined the B.M.A. and for many years he has taken a prominent place in all its work. He has with much acceptance filled the various offices in the North Northumberland Division, and was specially successful, during the period when he was secretary, in greatly increasing the membership of the Association and in promoting enthusiasm in its work. He was a member of the Northumberland Panel Committee for many years, and at the time of his death vice-chairman. A number of years ago he was appointed chairman of the Northumberland Insurance Committee and conducted its business with dignity, and at all times promoted confidence between the profession and the laity. Moyes had a logical mind and was quick to assess the points of a question before arriving at his decision, and so clear was his reasoning that he seldom failed to carry with him those with whom he was deliberating. He was an ardent student and kept himself well abreast of the times, with the result that he was the trusted adviser of a large clientele in all walks of life. In his relations with his fellows he fulfilled the precept of the Good Neighbour: he was always ready to lend a helping hand to a colleague in time of need. Our sympathy goes out to his widow and daughter in this time of sore bereavement.

E. L. GOWLLAND, D.S.O., M.B.

We regret to announce the death of Lieut.-Col. Edward Lake Gowlland, D.S.O., for many years commandant of the Star and Garter Home for Disabled Sailors and Soldiers at Richmond and Sandgate. He died on Nov. 1, at the age of 65, in the home in which he took so much pride. He was the son of Richard S. Gowlland, chief secretary to H.M. Office of Works, and was educated at Christ's Hospital, then in the City of London, and went on for his medical training to St. Mary's. He graduated M.B.Lond. in 1901, and after holding the post of resident medical officer at Haileybury College he went into general practice at Faversham in Kent, remaining there until 1914. For many years he took a close interest in military affairs; he was a member of the Territorial Association for Kent, and from 1906 until 1915 he held a combatant commission as Major, R.G.A.(T.), commanding the Kent Heavy Battery and Ammunition Column. In 1915 he was gazetted to a temporary commission in the R.A.M.C.(T.), carried out distinguished service in the last war, and was mentioned twice in dispatches, receiving the D.S.O. in 1917. Later he was promoted lieut.-colonel commanding the County of London Field Ambulance. From 1921 to 1923 he was superintendent of the Ministry of Pensions Hospital at Orpington, and afterwards he became commandant of the splendid institution on Richmond Hill established by business men after the war as a means of alleviating those whom the war had disabled. Gowlland's professional interest was in the cases of paralysis and nerve affection resulting from war injury, and in 1934 he contributed an article to this *Journal* on the treatment of paraplegia following injuries of the spine and of disseminated sclerosis. Since 1938 he had added to his responsibilities that of emergency officer for Richmond.

Gowlland was president of the Harveian Society of London in 1933, and in 1936-7 he was chairman of the Richmond Division of the British Medical Association, which he originally joined in 1902. Among his colleagues in his local division he was much esteemed both for his organizing abilities and for his helpful and kindly manner.

Dr. Joseph Squier Hinnell died at Bury St. Edmunds on Sept. 30 in his 81st year, and in him the B.M.A. loses a loyal and active supporter and his patients and colleagues a trusted friend. Hinnell was by reason of his modesty and complete sincerity of purpose a most lovable man, who gave his 48 years of service as a general practitioner with whole-hearted unselfishness and was rewarded by the affection of all who knew him. Educated at the King Edward VI School at Bury St. Edmunds, at Pembroke College, Cambridge, and at St Thomas's Hospital, he was a man of exceptional clinical ability. for as surgeon to the West Suffolk Hospital for 47 years he not only took his share of general surgery but built up a considerable ophthalmic department: he developed also an extensive private ophthalmic practice in addition to his work as a general practitioner. His family, his public work, his practice, and the hospital—these were the interests of Hinnell's life and he sought no others nor asked for any other recreation. The loss of his two eldest boys, both of whom were medical students, left him unembittered, and he was consoled in his later years by a happy partnership with his son-in-law. Hinnell was nothing if not an individualist, and he refused at the outset to have any truck with the N.H.I. Without ill feeling but with great firmness he stoutly refused to go on the panel at any time. Those of us who knew him best are glad for his sake that he is not called upon to take a share in planning the medical service of the future with the prospect of an increasing measure of State control. It was to Hinnell and one or two others that West Suffolk owes its Armistice Day dinner, which, starting in 1919, was for twenty years the most popular annual medical event and was supported by many of our colleagues from further afield. A full and happy life of great simplicity and generous service. We miss him from our circle but do not grudge him his rest.—B. E. A. B.

We regret to note the death on Aug. 16 at Shanghai of Dr. H. Couper Patrick. He was the second son of the late William Patrick, M.D., a well-known practitioner in the East End of Glasgow, and was educated in Glasgow High School and Glasgow University, where he graduated M.B., C.M. in 1895. He spent a year as house-physician and house-surgeon in the Glasgow Royal Infirmary and a winter session in Vienna, and shortly afterwards went to India to do plague and famine work in Poona. Thence he migrated to Australia, and after a few years' practice there found an opening in Shanghai, where the rest of his professional life was spent. He was resident medical superintendent of Shanghai General Hospital and surgeon to the Lester Chinese Hospital. His wife was with him at the time of his death, and it is not known whether she has succeeded in obtaining repatriation to Australia, which both she and her husband had been trying to effect in the early spring of this year. Their only daughter fortunately is safe in Melbourne. Dr. Patrick took an active part in all Scottish societies and was at one time also president of the Shanghai Medical Society. He had been a member of the B.M.A. since 1903.

Dr. William Robertson of Huddersfield died on Oct. 16 in the Royal Infirmary, where he had been taken after being knocked over by a cyclist. Dr. Robertson was born in 1878 and graduated M.B., Ch.B. at the University of Glasgow in 1902. He had been in practice at Huddersfield for some 30 years and won the Military Cross in the last war while serving with the R.A.M.C. In the present war he was medical officer of a West Riding battalion of the Home Guard. He joined the B.M.A. in 1907 and was a member of the Huddersfield Medical Society.

The New York Correspondent of the *Times* reports the death in Philadelphia at the age of 73 of Dr. Edmund Louis Gros, for many years head of the American Hospital at Neuilly, France, and in 1916 one of the chief organizers of the Lafayette Escadrille. Dr. Gros, who was a Commander of the Legion of Honour, left France when the Germans invaded the country in 1940.

Medical Notes in Parliament

A new Session of Parliament was opened on Nov. 11 by the King in person. A passage in the Speech from the Throne said:

> "My Ministers will continue to take all measures open to them to promote the health and well-being of My people in wartime by securing the better care of young children, by the prevention of disease, by the treatment of the sick, and by the alleviation wherever possible of the housing difficulties consequent upon the war."

An effort to improve the conditions of the peoples in the Colonies was also indicated. Proposals for better education in England and Wales and a review of the system of education in Scotland were mentioned.

The debate on the Address extended over the subsequent sittings of the House of Commons. It is hoped that time will be afforded for discussion of an amendment to the Address in the name of Prof. A. V. Hill, which is supported by many medical and lay Members. This proposes to add a declaration that the House, "while recognizing the constructive work done by the Government in building up and maintaining the health of the nation, regrets that further provision is not made for reducing the delay in applying the established results of scientific and medical knowledge to the betterment of public health and efficiency, particularly in regard to the prevention and treatment of venereal disease, the prevention of tuberculosis and other infections by the pasteurization of milk, and the prevention of diphtheria by immunization and through closer attention to factory hygiene and the health and nutrition of young people."

Nurses in Tuberculosis Sanatoria

On Nov. 10 Mr. Wootton-Davies asked the Minister of Health whether, in view of suggestions that girls should be compelled to take up sanatorium nursing and of the effort now being made to increase the number of nurses in sanatoria, he would investigate existing cases where nurses had contracted tuberculosis in the discharge of their duties and were now maintained either by public funds or on a sum which did not permit of adequate and proper care. He also asked what steps were taken to ensure the rehabilitation of nurses who contracted tuberculosis when nursing tuberculous patients. Mr. Ernest Brown called attention to the statement in the recent report of the Medical Research Council, that evidence from research in other countries and expert opinion in our own suggested that the risk of contracting tuberculosis from nursing tuberculosis patients in sanatoria was no greater than that involved in general hospital nursing. He added that a nurse in a tuberculosis institution who contracted the disease was customarily given every care and attention appropriate to her condition by the institution. Arrangements for care and after-care, directed to restoring working capacity, were an essential part of the tuberculosis service and applied to nurses as much as to any other person who had suffered from tuberculosis.

Anti-vaccination Activities

On Nov. 10 Prof. Hill asked the Minister of Health whether he was aware that seven anti-vivisection societies in Great Britain had between them invested capital of about £300,000 and an annual income of about £40,000 which was devoted largely to propaganda, by advertisements and otherwise, against modern scientific methods of preventive medicine; and whether, in view of the fact that eight children on the average died every day of diphtheria alone, he would take steps to counter these activities. Mr. Brown said that local authorities and his Department had for some time been taking steps to counter these societies' activities in regard to immunization against diphtheria by the use of many forms of publicity. This publicity was continuing. In addition he had asked welfare authorities to do their best to relieve health visitors of their non-urgent routine duties, so that they might devote most of their time during the next two or three months to the immunization campaign. The President of the Board of Education had also asked local education authorities and head teachers to use their influence with parents, and to help the campaign in other ways.

Vitamin B_1 of Wheat Berry

The Parliamentary Secretary to the Ministry of Food, in reply to a question by Sir E. Graham-Little, said that his attention had been drawn to remarks made by the Ministry's scientific adviser in his recent Harben Lectures. These included reference to a recent discovery that a large proportion of the vitamin B_1 of wheat germ was contained in the scutellum which formed part of the structure of the germ itself. There was no present intention to modify in any respect the existing instructions to millers regarding the manufacture of national flour.

Air Transport of Wounded

On Nov. 10 Sir Archibald Sinclair informed Mr. D. Adams that in the Middle East, as in other theatres of operations, the evacuation of wounded or sick by air from the battle areas was undertaken by the Royal Air Force. Specially fitted transport aircraft were normally used for the purpose. He was advised by the Secretary of State for War that the supply of drugs and medical equipment from this country and America for the various units of the R.A.M.C. was being fully maintained.

Report of Committee on Nursing Services.—On Nov. 10 Mr. Ernest Brown stated that he was informed by Lord Rushcliffe, chairman of the committee which was inquiring into the conditions of the nursing profession, that while he could not say with certainty when the report of the committee would be available, he hoped, in view of the considerable progress already made, that it would be possible to submit a first report early next year.

The Services

The M.C. has been awarded to Capt. J. Baron, R.A.M.C., and to Capt. A. F. Graham, R.C.A.M.C., in recognition of gallant and distinguished services in the Middle East.

CASUALTIES IN THE MEDICAL SERVICES

Capt. **Ronald Edwin Shaw Lewis**, M.C., R.A.M.C., was killed in action in the Middle East in Oct. He was born on Feb. 15, 1914, the only son of Dr. and Mrs. A. J. Lewis of Birkdale, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1939. He held a house post at Dover before entering the R.A.M.C. as temp. lieut. in Feb., 1940. He was awarded the M.C. in Aug. last in recognition of gallant and distinguished services in the Middle East. During the first three days of a tank battle he was continuously going to every tank that was hit or set on fire and extricating wounded, many of whom were incapable of helping themselves. The whole of the time he was travelling in a scout car and moving about among tanks. "His devotion to duty and absolute disregard for his own personal safety were magnificent," stated the official citation. He was a member of the B.M.A.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on Oct. 31 the degrees of M.B., B.Chir were conferred on R. M. Stuart Matthews.

During October titles of the degrees of M.B., B.Chir. were conferred on G. E. L. Cummins of Newnham College.

UNIVERSITY OF LONDON

The Senate of the University has appointed David Randall Pye, Sc.D., F.R.S., Director of Scientific Research at the Ministry of Aircraft Production, to the post of Provost of University College, London, vacant through the death of Sir Allen Mawer. Dr. Pye will enter upon his duties on Jan. 1, 1943.

UNIVERSITY OF ABERDEEN

The General Council of the University has appointed Robert Richards, M.D.Aberd., F.R.C.S.Ed., lecturer in forensic medicine, to fill a vacancy on the Business Committee.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on Nov. 3, with the President, Dr. Charles McNeil, in the chair, Dr. Wm. George Clark was introduced and took his seat as a Fellow of the College, and Dr. P. A. H. King, D.F.C., Dr. J. G. Sclater, Dr. Adam Patrick, and Dr. J. W. McNee, D.S.O., were elected Fellows. The Hill Pattison-Struthers Bursary in Anatomy and Physiology was awarded to A. Jardine Neil.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Prof. H. J. Seddon will deliver a lecture on "Recent Work on Peripheral Nerve Injuries" under the auspices of the Dr. John Burns Fund in the hall of the Faculty (242, St. Vincent Street, Glasgow) on Wednesday, Nov. 25, at 4 p.m.

No. 43

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 31.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	57	3	17	3	1	88	5	38	1	7
Deaths		—	3		—		—	3		—
Diphtheria	898	35	273	101	22	1,017	51	277	56	33
Deaths	14	1	—	2	—	31	3	6	2	1
Dysentery	290	12	52		—	139	16	95		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	6	—	—	2	—	—	—	—
Deaths		—	—				1	—		
Erysipelas		—	47	4	4		—	52	8	2
Deaths		—	—		—		—	—		—
Infective enteritis or diarrhoea under 2 years				42						
Deaths	47	5	12	29	2	56	3	16	25	4
Measles	6,812	288	292	24	16	745	52	23	50	3
Deaths	4	—	2	—	—	—	—	—	1	—
Ophthalmia neonatorum	83	3	34	3	—	77	5	20		1
Deaths										
aratyphoid fever ..	7	—	2	—		53	3	4	—	
Deaths	—	—	—	—	—	—	—		—	
Pneumonia, influenzal*	582	43	2	1	2	631	28	6	—	1
Deaths (from influenza)	11	1	2	2	—	15	22	2	—	6
Pneumonia, primary ..			156	16				160	9	
Deaths		—		10	7		—		7	—
Polio-encephalitis, acute	4	—				4	—			
Deaths		—					—			
Poliomyelitis, acute ..	27	1	1	17	—	50	5	8	—	—
Deaths		—	—				—	—		
Puerperal fever ..	—	1	16	2	2	1	1	7	2	—
Deaths		1					—			
Puerperal pyrexia ..	145	4	13		2	142	7	16		4
Deaths										
Relapsing fever ..	—	—			—	1	1			—
Deaths										
Scarlet fever	2,583	129	433	61	56	1,224	37	250	57	19
Deaths	1	1	1	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever† ..	12	—	2	5	1	23	3	3	7	9
Deaths	—	—	—	—	—	—	—			1
Typhus fever	—	—	—	3	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,015	81	38	25	3	1,985	214	67	21	3
Deaths	8	1	—	1	—	16	2	2	—	—
Deaths (0–1 year) ..	306	45	64	47	12	299	27	63	41	21
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,834	584	517	182	111	3,867	530	520	177	99
Annual death rate (per 1,000 persons living)			11 6	12·2	‡			11·3	11·8	‡
Live births	5,497	648	770	363	265	5,308	467	933	294	208
Annual rate per 1,000 persons living ..			15·9	24·2	‡			19·0	19·5	‡
Stillbirths	227	25	32			176	20	32		
Rate per 1,000 total births (including stillborn)			40					33		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the outstanding feature was the very large rise of 113 cases in the incidence of dysentery. There was a drop of 73 and 77 in the totals for diphtheria and acute pneumonia respectively.

The southern section of the country was responsible for the decline of 36 in the notifications of scarlet fever. In some of the northern counties there was a decided rise, the largest being 68 in Lancashire.

A small fall in the incidence of diphtheria was fairly general throughout the country, the principal exceptions being increases in Lancashire and Wales of 32 and 22 cases respectively.

Although there were only 9 more cases of measles, there were large variations within the counties. The biggest of the increases were those of Yorks West Riding 178, Flint 67, Glamorgan 62, Surrey 58, Durham 41; and the largest falls those of Derby 90, London 72, Lancashire 55, and Leicestershire 53.

The rise in the incidence of dysentery was accounted for by the outbreak in Caernarvon, where 151 cases were reported in the rural district of Nant Conway. Elsewhere the decline was general, although the outbreaks in the West and North Ridings remained high, with 22 and 28 cases respectively—in the former, cases occurred in six administrative areas; and in the latter all the cases were in Middlesbrough C.B. The outbreak here, which began during the week ending Sept. 19 with 8 cases, has resulted in 153 cases up to the week under review.

In *Scotland* the incidence of diphtheria and scarlet fever remained at a high level, but there were 87 fewer notifications of measles. This decrease was fairly general, the principal exceptions being in the burghs of Glasgow and Kirkcaldy with rises of 12 and 21.

In *Eire* the notifications of diphtheria rose from 76 to 101, the cases being recorded from thirty areas. The 17 cases of acute poliomyelitis constituted the lowest weekly total for seven weeks. Three further cases of typhus were reported from the rural district of Galway, Co. Galway.

Small-pox

Ten further cases of small-pox have occurred in Edinburgh during the week, bringing the total up to 18. The number of persons vaccinated is over 150,000. The danger of the "missed" or "unrecognized" cases of small-pox, arising from a very mild attack, has been stressed by the Chief Medical Officer for the Department of Health for Scotland in a Press appeal to the public.

Returns for the Week Ending November 7

The returns of infectious diseases for England and Wales during the week included: scarlet fever 2,736, whooping-cough 965, diphtheria 881, measles 7,384, acute pneumonia 543, cerebrospinal fever 65, acute poliomyelitis 18, dysentery 142, paratyphoid 6, typhoid 6.

Medical News

Dr. Alexander Edward Gow, F.R.C.P., has been appointed Honorary Physician to the Household of H.R.H. the Duchess of Kent.

Sir J. Donald Pollock, Bt., M.D., LL.D., has been re-elected Rector of Edinburgh University by a very large majority.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, Nov. 26, at 4.15 p.m., when Mr D Harcourt Kitchin will read a paper on "Some Legal Aspects of Medical Practice."

At a meeting of the London and Home Counties Region of the Child Health Planning Group on Saturday, Nov. 28, at 2.15 p.m., at 13, Hill Street, Berkeley Square, W., Dr. Margaret Wright will open a discussion on "Strong and Weak Points in the Present Feeding of Children."

The Anglo-Soviet Medical Council is holding a reception in London on Monday, Nov. 23, when Madame Maisky will be presented with *Reviews of British War Medicine* and the Hon. Ivor Montagu will speak on "Scientific and Educational Films in the U.S.S.R."

Health visitors are to be relieved of routine work and instead are to devote their time to securing that all children under 5 are immunized against diphtheria. It is estimated that by this means 80% to 100% of children between 1 and 5 will be immunized before the end of the winter.

The facilities of the Emergency Blood Transfusion Service are to be made available to welfare authorities for maternity cases, provided this does not interfere with the primary work of the service —blood transfusion in war casualties. No charge will be made for fluid given or for apparatus loaned, but welfare authorities will be expected to make their own arrangements for transport and to meet all other expenses. (Ministry of Health Circular 2712)

On Nov. 7 Sir Alexander Macgregor, Medical Officer of Health for Glasgow since 1925, was presented with his portrait in oils in recognition of the knighthood conferred upon him. Dr. R. J. Peters, deputy M.O.H., presided over a large gathering. The portrait, by Mr. W. O. Hutchison, A.R.S.A., was the gift of the members of the staff in the public health department, and it was formally handed over by Col. William C. Gunn, senior assistant M.O.H. In his acknowledgment Sir Alexander Macgregor mentioned that he had been in the department for 37 years, and since he became its head the staff had increased from 1,900 to over 6,000, while the number of hospital beds had multiplied fivefold. He hoped that after the war the department would not be subjected to excessive organization. In their work they came into contact with the daily life of citizens, and he did not want any red tape connected with it.

The Silver Thimble Fund is appealing for help in endowing a ward of ten beds in a Malta hospital; it costs £1,000 to endow and name one bed. This fund has already done much for the sick and wounded (a similarly named fund raised £60,467 in the last war), and it asks for donations and/or old silver thimbles, any broken and unwanted silver or gold trinkets, etc., which should be sent to the fund at 17, High Street, Wimbledon Common, S.W.19.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1.

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B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Reconditioning of Corks

R. B. writes: In reply to Dr. C. Heap (Oct. 31, p. 534), the following process produces corks quite fit to use. I keep an old calico bag hanging in my dispensary (a bag in which one used to buy 7 lb. of dog biscuits), and in this used corks are collected as they are handed back. When the bag is about three-quarters full a blob of soft soap, or a small lump of ordinary soap, or a handful of soap flakes or powder is put in and the neck of the bag tied with a piece of string. The corks must not be tightly packed but loose enough to allow plenty of movement and friction. The bag is then immersed in a basin of hot water and thoroughly rubbed and pounded and worked about. Dr. Heap will be surprised at the amount of dirt which comes out, for one or two fresh lots of water are needed before colour ceases to come out of the bag. The bag is then hung up to drain and the corks can later be dried on a newspaper in the sun and will be of a uniform light brown colour, fit to use. If it is desired to make the corks a little paler they can be tipped into a bowl or jar and left for some hours with some hydrogen peroxide, which is stirred up or shaken up over them occasionally to keep them moist. I dare say a stronger bleaching agent could be used, but then the corks would need washing again afterwards.

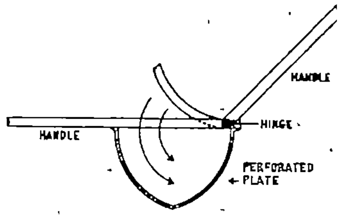
Dr. M. E. Lampard (Colchester) writes: In reply to Dr. C. Heap's inquiry, it is possible to bleach corks by soaking them in very weak hydrochloric acid.

"X. Y." writes: Greasy corks must be treated with a suitable solvent first. For corks which are not greasy the following method bleaches and cleans them satisfactorily. Soak in 10% hydrochloric acid for half an hour, then immerse for another half-hour in a solution of sodium hyposulphite acidified with hydrochloric acid. Finally wash in soda and water.

LETTERS, NOTES, ETC.

Device for Making Fomentations

Dr. Geoffrey G. Airey (Ledbury) writes: I have recently be using a device for the preparation of hot fomentations which m be of interest to some of your readers. It eliminates a great de of the trouble in preparing this type of dressing and saves time, as well as material and the nurses' hands. The material saved is, of course, the towel containing the dressing, as that nearly always gets into the flame of the gas burner. The device is nothing more romantic than the ordinary domestic potato-masher, as shov in the illustration. Where many of these dressings ha to be done daily there is a great saving of time. The li is, of course, put into the cage of the masher, which is immers in the boiling water.



Treatment of Impetigo

Dr. T. Pires writes from Burnham-on-Sea: I would like to endor Dr. Simpson Smith's findings (Nov. 7, p. 560) in the treatment impetigo with liq. ferri perchlor. fort. The application can made over scabs. The infection is arrested and the period of infe tivity considerably shortened, the normal skin being in no w affected. In the case of persistent scabs applications should renewed when a hyperaemic condition develops, "washing off the scab, as it were. In some cases where a ring of "roll edge" persists after the scab falls off, this should be paint round with liq. ferri perchlor. solution. The effectiveness of t method commends it even more than the saving of expenditure.

Roche Products Limited, Welwyn Garden City, Herts, have pu lished a second edition of their pamphlet *Vitamins in Medic Practice*. The text has been enlarged and new illustrations adde In accordance with the Paper Control Regulations a charge of 9 a copy is made; all the money collected in this way will be s aside for one or two medical charities or the Red Cross.

MEDICINE 100 YEARS AGO

Extracts from a leading article in the *Provincial Medical Journ* of November 19, 1842 (the forerunner of the *British Medic Journal*):

"The poor-law commissioners have recently published, throug the medium of their secretary, Mr. Chadwick, a very elabora report on the sanatory condition of the laboring population Great Britain. It might fairly be asked, *in limine*, how the directio of so difficult and complex an investigation was entrusted to a gentl man completely ignorant of the subject submitted to his inquir how a poor-law secretary—unacquainted with the most simple la of the human economy, and possessing not a particle of that pr liminary knowledge which is essentially necessary to every o commencing a special investigation—should take upon himself examine facts and form conclusions connected with the publ health. Such, however, has been the case; and as 'her Majesty principal Secretary of State for the Home Department' has thoug fit to select Mr. Chadwick for the purpose of inquiring into t sanatory condition of the people, we shall endeavour, as loy subjects, to regard the selection as a fitting one, and to pay all d deference to opinions which emanate from so high an authority.

"Our ideas of fitness and the promptings of common sense a indeed, wonderfully disturbed by the appearance of Mr. Chadwi as an authority on hygiene; and the necessity of noticing his repo places us in the awkward position condemned by the proverb, endeavouring to 'make a silk purse of a ——' etc.; but to th necessity we submit, because we must take Mr. Chadwick's report have no report at all. This conclusion is inevitable. The poo law commissioners have resolved, *inter alia*, on seizing by anticip tion on the duties of a board of health, on constituting themselv into a council for the regulation of all matters connected wi public hygiene; and the present report is evidently put forth as feeler upon this matter. To have entrusted the report to a medical man, or any body of medical practitioners, would not ha suited the views of the commissioners; they accordingly forced the secretary upon Lord John Russell, employed themselves diligent in the collection of a vast body of facts, and now come before t public and the government with an official report on the causes a prevention of disease amongst the laboring classes.

"The observations which we have just made are rather address to the source whence Mr. Chadwick's report has emanated than the report itself, which, on the whole, is creditable to the indust of its author."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 28 1942

THE OUTBREAK OF SMALL-POX IN GLASGOW, 1942

BY

Sir ALEXANDER MACGREGOR, M.D.
Medical Officer of Health

AND

ROBERT J. PETERS, M.D.
Senior Deputy Medical Officer of Health
Glasgow

The following is an account of the main features of the outbreak of small-pox which occurred in Glasgow during June and July. The total number of cases diagnosed as small-pox was 36, of which 8 were fatal. The outbreak consisted of two groups of cases. The first, or "ship" group, numbered 11 cases among the passengers and crew of a ship which arrived from the East at the Port of Glasgow on May 29. The second, or "city" group, consisted of 25 cases among the general population. Direct connexion between these two groups was never demonstrated. Tables I and II give details of the cases as to onset and vaccination state.

The "Ship" Cases

Of the 11 cases 8 were members of the crew, 2 were passengers, and 1 was a boarding medical officer. The ship took passengers on board at Bombay, and when it reached Glasgow on May 29 a member of the crew (Case 1), an electrical engineer, was found to have confluent small-pox. His rash had developed on May 24 and he had been treated in his cabin. The diagnosis was not made till his arrival in Glasgow, so that for at least 8 days he was infectious and not under strict isolation. The subsequent cases consisted of 7 members of the crew who developed their disease while under surveillance on the ship, 2 passengers—one a Polish officer who sickened in a billet in Fifeshire, and the other a baby of 11 months who was taken ill in Swindon, also while under surveillance—and one of the boarding medical officers who took part in the inspection and vaccination of passengers and crew on May 29. The source of Case 1 was never discovered. This patient might have been infected while ashore at Capetown or he might have been infected from a "missed" case on board.

TABLE I.—*Small-pox—Glasgow, 1942: Ship Cases*

Case No.	Age and Sex	Occupation	Date of Rash	Type* of Rash	Previous Vaccinations (showing Ages)	Recent Vaccination and Result	Remarks
1	28 M	Electrical engineer	24/5	C.	Nil ?	—	Died 2/6
2	21 M	Engineer	7/6	S.M.	Nil	29/5+	
3	23 M	Engineer	7/6	D.M.	,,	29/5+	
4	23 M	Assistant cook	9/6	C.	,,	29/5+	Died 15/6
5	17 M	A.B.	11/6	S.M.	,,	29/5+	
6	19 M	A.B.	12/6	D.M.	,,	29/5+	
7	20 M	Steward	15/6	D.	,,	29/5−	
8	23 M	Quartermaster	23/6	S.M.	,,	29/5− 11/6+	
9	23 M	Passenger	9/6	S.M.	1, 7, 14 years	29/5+	
10	11/12 M	Passenger	9/6	D.	Nil	29/5−	Swindon case
11	34 M	Medical officer	13/6	SC.	Infancy	29/5−	

* S.—Sparse; D.—Discrete; SC.—Semi-confluent; C.—Confluent; M.—Modified.

Two members of the crew died of confluent small-pox (Cases 1 and 4). The remaining cases were mostly relatively mild, the disease being considerably modified by vaccination. Indeed, 4 had only a few spots and practically no constitutional symptoms.

Measures Taken on Ship's Arrival.—When the vessel reached Glasgow, the passengers, numbering 1,039, and the crew, numbering 201, were detained on board till the following day in order to permit medical inspection and vaccination to be carried out. No other case or suspected case was discovered. Arrangements for surveillance of passengers and crew leaving the ship were made in accordance with the provisions of the Port Sanitary Regulations, and disinfection of the infected crew's quarters and other selected sections of the ship was carried out with some thoroughness. A daily medical inspection of crew remaining by the ship was instituted, and, after secondary cases began to occur, vaccination and inspection of all workmen on board were undertaken as additional precautions. During the week following arrival, several of the crew were admitted to hospital for observation for various intercurrent illnesses, including some severe vaccinial reactions. These reactions, occurring as they did at the end of the possible incubation period of small-pox, complicated the problem of diagnosis for the medical inspectors, whose duty it was to see that cases were removed at the very earliest stage of infectivity.

Transmission of Infection on Board.—The incidence of small-pox among the crew and passengers provided instances of both direct and indirect transmission of infection. The engineers, among whom the infection originated, had their own separate quarters, mess-room, and pantry on the main deck. Apart from the initial case of small-pox, ill in his cabin from May 24 to 29, there were 15 engineers, of whom 9 had been vaccinated in 1940, 1 in 1918, and 1 in 1920, while 4 were unvaccinated. Two of these (Cases 2 and 3) contracted small-pox. The infection also passed to 4 other members of the crew—namely, an assistant cook, two seamen, and a quartermaster. Two passengers—the Polish officer and the baby of 11 months—were also infected. An electrical engineer who occupied the same cabin as the original patient up to May 24, and who attended to him during his illness, had had occasion to repair a potato-peeling machine with the help of the assistant cook, an unvaccinated South Sea Islander (Case 4). The latter developed a small-pox eruption on June 9. It is probable that the other cases were infected in somewhat the same manner by an intermediary or by some infected article in common use. The facts indicated that the disease was not only severe but highly infectious. The majority of the crew had been vaccinated in 1940, but the ship had also a complement of 37 unvaccinated members recruited since then, and they alone among the ship's company were involved in the outbreak. It is also a proper inference that, had these men been vaccinated when the ship left Bombay, the outbreak of small-pox would not have occurred. It is difficult to understand why this common-sense precaution was not taken.

Incidence in Relation to Vaccination.—The secondary cases must have contracted the infection during the last few days of the voyage, when the first case was in its most infectious stage. The vaccinations performed on May 29 did not fully protect them. As regards the earlier cases, the period which elapsed between the date of successful vaccination (with good result) and the onset of the rash was as follows: 9 days in Cases 2 and 3; 11 days in Case 4 (the fatal case); 13 days in Case 5; and 14 days in Case 6. In other words, they were vaccinated on the first to the fifth days of the incubation period. This result, in so many cases, was unexpected, being contrary to the general experience that a better measure of protection should have accrued from successful vaccination performed within the first week of the incubation period, certainly within the first day or two. The vaccination of Case 7 did not take; Case 8 was also negative, but in this instance the rash appeared 12 days after a second and successful vaccination. The rash in Case 9 appeared 11 days after successful vaccination; in Case 10 (the infant) primary vaccination failed to take; the medical officer (Case 11) had been vaccinated in infancy, but his vaccination on May 29 was unsuccessful.

The Practice of Vaccination in the Outbreak.—Cases 1 and 4 showed that the infection was of a virulent type, and it was apparent in other cases that immunity from successful vaccination was not developing rapidly enough to afford complete protection. In an attempt to secure better protection the single-stroke technique was discarded and an insertion consisting of three incisions 3/8 in. long and 1/8 in. apart was adopted as the standard practice throughout the remainder of the outbreak. A single unsuccessful vaccination was not accepted as evidence of immunity in the absence of a history of recent vaccination, and therefore it was decided to re-vaccinate such cases after four days, particular care in this respect being taken in the case of close contacts, hospital staffs, and patients. In very close contacts three separate insertions as above described were made.

The "City" Cases

There were in all 25 cases of small-pox in the city group, 6 of them fatal. Two patients are included who were taken ill while away from home. The course of the outbreak is shown in the following table according to the dates when the patients were recognized to have small-pox and admitted to hospital:

	June					July							Total
	26	27	28	29	30	1	2	3	9	10	20	31	
Primary cases ..	1	4	3	5	1	2	1	1	–	1	2	–	21
Secondary cases	–	–	–	–	–	–	–	–	2	1	–	1	4

The 21 primary cases had no association with each other, nor was their infection traced to its source. The 4 secondary cases were direct contacts and had been under observation as such. As each case occurred, the close contacts were isolated for observation in a reception-house, part of two fever hospitals being used for this purpose. Work and school contacts, along with neighbours for some distance round, were offered vaccination and watched for 17 days, with the object of placing a cordon of protected persons round each new focus of infection as it showed itself. But early in the outbreak there were convincing indications that these routine precautions would in all likelihood prove insufficient to prevent the spread of the disease, which was of a virulent and infectious character. The first city case was admitted to hospital on June 26, and on the 27th 4 more were diagnosed. Four cases followed on the 28th and five on the 29th. Thus in four days 13 cases, of which 7 were confluent, came to light. They occurred in widely separated areas in the north, east, and south-east of the city, and there was no evidence whatever of connexion between them.

The position, then, on Sunday, June 28, was that cases of severe small-pox were occurring in quick succession in different parts of the city, affecting adults and children alike, without any source or sources of infection that could be traced. It was therefore felt that it would be taking too great a risk to rely solely on routine measures to prevent the disease from assuming epidemic proportions, and that a situation had arisen serious enough to justify the adoption of further precautions to meet it. It was appreciated also that the danger of wide dissemination of the infection was enhanced by free movement of the population throughout the country in time of war, and was likely to be increased further during the approaching holiday season in July. Another consideration was the injury to war production which an epidemic of small-pox would be certain to cause. The strongest argument, however, was supplied by past experience, which taught that epidemics tended to linger for long periods. Examples of this occurred in Glasgow in 1900-1 and in 1920, as well as in the epidemics of last century. Accordingly it was decided to set up, without delay, facilities for general vaccination, and to enlist the support of medical practitioners, to whom a circular letter was sent on the same day (June 28), apprising them of the facts and of the method of vaccination recommended. During the next two days 25 schools were selected as vaccination stations, and a staff of medical practitioners and medical students engaged and allocated, along with child welfare medical officers, school medical officers, and hospital residents. The assistance of nurses from among health visitors, school nurses, and sisters attached to first-aid posts was obtained. Clerical staff and helpers were supplied by volunteers from the Civil Defence Casualty Service to reinforce those of the Health Department. Supplies of lymph were obtained, publicity and posters arranged for, and instructions issued on the method of vaccination to be employed. A payment to medical practitioners of 2s. 6d. for each person vaccinated in their consulting-rooms and practices under the scheme was approved. Lymph was issued free of charge.

TABLE II.—*Small-pox—Glasgow, 1942: City Cases*

Case No.	Age and Sex	Occupation	Date of Rash	Type* of Rash	Previous Vaccinations (showing Ages)	Recent Vaccination and Result	Remarks
1	12 F	School	26/6	C.	Nil	Nil	
2	11 F	,,	23/6	C.	,,	,,	
3	37 M	Milkman	26/6	SC.	Infancy	,,	
4	49 F	Housewife	27/6	D.	1, 17, 27 years	,,	
5	29 F	Tram conductress	26/6	C.	Nil	,,	
6	37 F	Ward maid	26/6	C.H.	Infancy	2/6—	Died 6/7
7	31 F	Housewife	27/6	C.	Nil	Nil	
8	72 M	Bonded store	27/6	C.	Infancy	,,	Died 6/7
9	65 F	Housewife	25/6	C.H.	,,	,,	Died 1/7
10	40 M	Shipyard worker	25/6	D	,,	,,	
11	13 F	School	25/6	D.	,,	,,	
12	13 M	,,	27/6	D.	,,	,,	
13	35 M	Concrete worker	26/6	S.	,,	,,	
14	20 F	Factory worker	27/6	C.H	Nil	,,	Died 7/7. Visited Glasgow 13–14/6
15	16 F	Paper worker	28/6	S.	Infancy	,,	
16	65 M	Labourer	30/6	D.	40 years	,,	
17	56 F	Housewife	30/6	S.	Infancy; 34 years	,,	
18	22 M	Labourer	3/7	D.	Infancy; 9 years	,,	
19	15 M	School	9/7	D.	Nil	27/6+	Contact of No 11
20	14 F	,,	8/7	S.M.	Infancy	29/6+	Contact of No. 10
21	20 F	Housewife	10/7	C.	,,	30/6+	Contact of No. 15. Died 24/7
22	12 M	School	9/7	S.M.	Nil	28/6+	
23	40 M	Mental hospital inmate	17/7	C.	,,	Nil	Died 29/7
24	29 F	Factory worker	20/7	S.	Infancy; 7 years	7/7—	Taken ill in London
25	77 M	Mental hospital inmate	31/7	D.	Infancy	20/7+	Contact of No 23

* S.=Sparse; D=Discrete; SC.=Semi-confluent; C.=Confluent; H.=Haemorrhagic; M.=Modified.

By Wednesday, July 1, the arrangements were complete. On the first day 33,000 persons were vaccinated at the centres. During the first week 282,255 vaccinations were performed, during the second week 90,375, during the third week 5,246, and during the fourth week 439—a total of 378,315. A large number of vaccinations were performed by medical practitioners in private and by arrangement at works, factories, warehouses, and offices. It is estimated that approximately half a million persons submitted themselves to vaccination within a month.

Vaccinial rashes were unusually frequent and were of great variety. A special report is in preparation on this subject. The papular type of eruption was a source of some administrative difficulty, as it sometimes had sufficient resemblance to small-pox to justify admission of the patient to hospital for observation. Chicken-pox was very prevalent at the time, and in some cases the character and distribution of the eruption created an element of doubt as to the true diagnosis.

Vaccination History of the Patients.—There were 8 patients who had not been previously vaccinated; 2 of them died. Eleven patients had been vaccinated in infancy, and there was one who had had his primary vaccination in 1917, their ages varying from 13 to 77; 3 of these died, their ages being 20, 65, and 72 respectively. A group of 5 patients had had their primary vaccination in infancy and had been vaccinated later—one in 1910 and 1920, two in 1920, one in 1929, and one in 1940 without success. This last patient (Case 6), a woman of 37, was again revaccinated unsuccessfully on June 2; she contracted small-pox three weeks later and died. Thus the city patients who sickened of small-pox were either unvaccinated or had not been vaccinated or revaccinated successfully for upwards of 13 years prior to the present outbreak. Among these 25 cases 4 were contacts and had been vaccinated accordingly, with successful reactions. Their eruptions appeared from 9 to 12 days later, an experience similar to that already met with in those members of the crew who had been vaccinated successfully during the early days of the incubation period.

No link between the ship cases and the city cases was ever discovered in spite of the most careful search. It is possible that the city cases were infected from an independent source, such as a missed case from another ship from the East; but as there was no evidence of any such origin it must be presumed that they received their infection from the ship either directly or indirectly in some unknown manner. The occurrence of a group of cases in separate districts of the city, all infected within a few days of each other, suggests the presence of a mild unrecognized case as the most likely cause. Case 23, for example, had not been outside the mental hospital, of which he was an inmate, for some years, and he had had no visitors and no parcels during the weeks preceding his illness. All visitors to the hospital were checked up, with completely negative results.

Past Outbreaks of Small-pox

Major outbreaks of small-pox in the past have always been protracted. That of 1920 was introduced from the East in February, lasted till November, and was at its height in May, June, and July, amounting to 542 cases, with 113 deaths. The invasion of 1900 caused 397 cases between April and December, with its peak in June and July; this was followed in 1901 by a severe outbreak with 1,389 cases, which was again succeeded by a recrudescence in 1901-2, with 469 cases. Still earlier there was a large epidemic which lasted from 1871 to 1874, and sharp outbreaks occurred in Scotland and Glasgow in 1893, 1894, 1895, and 1897. In the bigger outbreaks, general vaccination was practised mostly by house-to-house visitation. In 1920, when centres were also set up, 225,000 persons were vaccinated during the several months when the outbreak was at its height. The present experience is in strong contrast; and it may be said that the people themselves, by taking timely advantage of the advice given and the facilities provided, stopped the outbreak at its start.

Lessons of the Outbreak

It is apparent from the above description that complete reliance cannot be placed upon vaccination unless performed successfully before the date of exposure. Also, immunity from vaccination diminishes after a few years. These two facts render it essential that everything possible should be done to protect ships' crews and passengers sailing from the East. Prevention of the spread of infection depends on the success of the two principal prescribed measures—vaccination and subsequent surveillance. If vaccination is not carried out promptly, surveillance becomes a matter of great importance; but adequate surveillance of contacts is more difficult to exercise in time of war because the destinations of passengers and crew are more uncertain, and may, in fact, be merely temporary or accommodation addresses. Had the case on board been accurately diagnosed and precautions taken, the subsequent story would have been very different. It would have been still better had vaccination of the susceptible members of the crew and passengers been carried out when the ship left Bombay, a port known to be infected. Attention to the vaccination of all who sail from Eastern ports, both passengers and crews, should be enforced as a routine precaution; otherwise there is grave danger of small-pox being introduced into this country. In the case of passengers, this would mean vaccination of those who had not been recently protected, as a condition of travel. In the case of crews, it would require the co-operation of members of the Merchant Navy, the great majority of whom would no doubt be willing to be vaccinated from time to time if the need for such a precaution were made clear to them. Even the most careful attention to the provisions of the Port Sanitary Regulations, including conscientious surveillance of crew and passengers after arrival in this country, leaves loopholes for the entry of small-pox. Therefore adequate vaccination of all who travel from infected places is the only true safeguard.

WAR SURGERY OF THE EYE

REMOVAL OF MAGNETIC INTRA-OCULAR FOREIGN BODIES BY THE POSTERIOR ROUTE

BY

H. B. STALLARD, M.B.E., M.A., M.D., F.R.C.S.

Assistant Eye Surgeon, St. Bartholomew's Hospital; Major, R.A.M.C.(T.A.)

Intra-ocular foreign bodies possessing magnetic properties may be removed by one of two routes: (1) The anterior route, in which the foreign body is attracted forwards by a giant electro-magnet, through the suspensory ligament into the posterior chamber, then, by changing the direction of the magnetic force, is drawn between the iris and lens into the pupil and anterior chamber, whence it is extracted from the eye through a keratome section by a small electro-magnet guided by the operator's hand. (2) The posterior route, which necessitates exposure of the sclera by turning back a conjunctival flap either at some site of election or over the penetrating wound in this structure, if such is obvious or unclosed. An incision is made through the sclera, and the entry wound is enlarged to a size just adequate for the extraction of the foreign body. A magnet terminal is placed into the lips of the scleral wound.

Advantages of the Posterior Route

The advantages of this method of extracting intra-ocular foreign bodies, caused by the fragmentation of war missiles, are several. These bodies are rough irregular pieces, which if drawn forward by the giant electro-magnet in the anterior-route technique of extraction would inevitably damage the ciliary body and iris and might also injure the lens. The metals which compose the casing of shells, grenades, mines, and booby-traps are alloys with either low magnetic properties or none at all. In many instances it is essential to place the giant magnet terminal as near to the foreign body as possible on account of its low magnetic properties.

It happened by chance that all the penetrating wounds of the eye treated at the Scottish General Hospital during the Western Desert battles from Nov., 1941, to Aug., 1942, associated with a metallic magnetic intra-ocular foreign body, had the wound of entry through the sclera, and 80% of these were in the lower temporal quadrant in front of the equator, the lens being undamaged. The point of this is that exploration of the entry wound, its toilet, and closure are generally necessary, and it seems reasonable to save further surgical intervention by using the entry wound for the exit of the foreign body. However, in some cases, particularly high-velocity fragments of 2.5 mm. diameter and under from aerial bombs, the scleral wound had healed without complication during delayed transit through a field ambulance and casualty clearing station. In such cases a scleral incision of appropriate length was made at a site of election.

Another advantage of the posterior route is that in cases in which the foreign body proves to be non-magnetic the opening may be used for the passage of an instrument such as a thin pair of straight iris forceps or a fine wire snare placed in the lumen of a hypodermic needle (Brigadier C. W. Graham's technique), with which, under ophthalmoscopic view, the foreign body is seized and extracted. This was done successfully in the case of Corporal B., in which a 2 by 2 by 1 mm. rectangular fragment of a Breda shell detonator cap had penetrated the sclera in the lower nasal quadrant about 2 mm. in front of the equator, and after tearing a ragged hole in the retina lay in the vitreous in the upper nasal quadrant behind the equator. It seems that the posterior-route operation disturbs an eye less than the anterior-route procedure does. After the former operation the eye regains its normal appearance more quickly, and ciliary injection is certainly not increased, as is sometimes the case after the anterior-route extraction.

Procedure in the Western Desert

The foreign bodies were ragged-shaped pieces of metal with rough granular surfaces. Their size varied from 3.5 by 2 by 0.5 mm. to 1.5 by 1 by 1 mm. Some were cubes 2.5 by 2.5 by 2.5 mm. or slightly less than this, but the majority were rectangular flakes, with an average thickness of 1 mm. They consisted of fragments of shells, air-cannon shells, and bombs in equal incidence. In no case was there any associated gross intra-ocular infection, and in only one was there a clot of opaque yellow fibrin adherent to the foreign body on extraction. It is doubtful whether the administration of sulphonamides at irregular intervals during evacuation from the forward areas could have played an appreciable part in the prevention of infection during the 6 to 14 days taken in evacuating men in the 8th Army's advance to Benghazi in Nov. and Dec., 1941. In the withdrawal into Egypt in June, 1942, as the enemy advanced, the wounded arrived at progressively shorter intervals of time after being hit, and at one period they came straight from the battlefield, circumventing field ambulances and casualty clearing stations, and were operated upon within 12 hours of being wounded. The delay of 6 to 14 days in giving appropriate surgical treatment to those hit in the early phases of the campaign did not seem to have jeopardized the future safety of the eye.

In a few instances the battalion and field ambulance medical officers, aware of the dangers of vitreous loss, had ordered the evacuation of these wounded lying on stretchers. The majority walked to aid posts and were then transported as sitting cases. Two of these sitting cases arrived with a vitreous herniation through the wound. The bead of vitreous was 2.5 mm. in diameter in wounds about 3.5 mm. long, and it was covered with conjunctiva and surrounded by adhesions to Tenon's capsule and the episcleral tissues.

It is difficult to assess the protective value, if any, of the British steel helmet so far as the eyes are concerned. Some men were wearing their steel helmets when hit and others were not. No useful deduction could be made from these data in relation to the possible direction of the missile which struck the eye. Major P. B. Ascroft (O.C. Mobile Neurosurgical Unit) has prepared a composite photograph based on a radiograph of a soldier's skull when wearing in turn a British and an Italian steel helmet. On this radiograph he marked the sites of 150 penetrating wounds of the skull. Of these, 65 fell below the level of the British helmet but were covered by the Italian helmet. From this radiograph it seemed likely that the Italian helmet would protect the eyes from metal splinters flying from an angle of 90 degrees over on either side. There was a remarkable concentration of wounds about the frontal area.

Investigation of Cases

The soldier is asked about the position of his head when wounded and the direction from which the missile came. Information about this latter is often unreliable. When there is an associated head injury the soldier generally has no recollection of being hit. In a few cases such facts as the above are helpful in tracing the probable course of the missile. The position of lid injuries may assist in this respect but is sometimes deceptive.

The nature of the missile is important. Fragments of shells and bombs are generally magnetic, some in low degree. Italian hand grenades, booby-traps, and land mines are composed of non-magnetic alloys the fragments of which are about 1 mm. thick. Some booby-traps are made of bakelite, which is not radio-opaque and is non-magnetic. Such a fragment was extracted from an eye with forceps under direct view. In the case of land-mine, hand-grenade, and booby-trap explosions the wounds are generally multiple and, except for such serious injuries as traumatic amputation of one hand and multiple penetrating wounds of one or both eyes, are superficial. Fragments of metal may readily be taken from the skin and tested for radio-opaque and magnetic properties.

In all cases except one—that of a sepoy with both eyes penetrated by aerial-bomb fragments—the entry wound was evident. The conjunctival wound showed localized hyperaemia, and in all cases of over one day from the time of wounding it was closed and the conjunctiva was adherent to the episcleral tissues and sclera around the site of the wound. In 50% the intra-ocular foreign body was seen with the ophthalmoscope, but in the remainder vitreous haemorrhage obscured its position. In the latter, *x*-ray location was done.

Location of Foreign Body by X Rays

Brigadier C. W. Graham has introduced a simple technique which, in the absence of elaborate *x*-ray apparatus, is of practical value. It is as follows: The eye is anaesthetized with cocaine, and when much inflamed 2 or 3 minims of novutox is injected into the episcleral tissues at the limbus at 12, 9, and 3 o'clock. A silver ring of a size to fit exactly the corneo-scleral junction is stitched in position by sutures of 000 silk passing through the conjunctiva at 12, 9, and 3 o'clock respectively. A drop of paroleine is instilled into the eye, and a pad moistened in the oil is applied to the closed lids and bandaged in position. When possible the patient sits during *x*-ray examination. In some cases other wounds prevent this. During the first exposure he is directed to look with his uncovered eye forwards and for the second to look downwards. For this purpose conspicuous marks such as red disks or lights 5 cm. in diameter are placed on the wall for sitting cases and on the ceiling for lying cases at the two points in which fixation of the eyes is necessary during exposure. Each exposure is half the normal. To obtain a postero-anterior view of the orbit free from the dense shadow of the petrous part of the temporal bone the head is tilted slightly so that the occiput is down and the face up; the petrous shadow then falls over the antra. In an accurate postero-anterior radiograph the silver ring shows as a perfect circle, and in the lateral as a linear shadow.

Interpretation of Radiographs

The diameter of the silver ring is known and its measurement is checked on the *x*-ray film. Any radiographic magnification is noted. This has never been more than 1 mm., and, when present, allowance must be made for this fact. When an anode film distance of 30 in. or more is used, parallactic magnification of the ring is negligible and a schematic eye of 24 mm. drawn on the film is accurate enough. In the lateral view a line is drawn posteriorly from the centre of the ring and at right angles to it for about 22 mm. The upper and lower limits of the ring are used in turn as the centre of a circle whose radius is 12 mm. (e.g., half the average length of an eye—24 mm.); with a pair of dividers set at 12 mm. the horizontal line is intersected by arcs described from the above centres. The point of intersection on the horizontal line is now taken as the centre of a circle with 12 mm. radius, and this is described on the radiograph. A similar procedure may be carried out with the silver ring in the second position—that is, looking down. Likewise in the postero-anterior view, a circle of 12 mm. radius is described round the centre of the silver ring. The ring is known to be at the limbus, and so measurements may be taken from this on both the postero-anterior and the lateral radiographs.

Movement of the foreign body is the essential diagnostic feature. If the relation of the silver-ring image to the foreign body is unaltered in the first and second positions it may be presumed that the foreign body is moving with the eye. The radiographs with the schematic eye marked upon them will indicate also the position of the object with regard to the centre of rotation. If the foreign body is in front of this it will apparently move with the ring; if behind, against it—that is, a foreign body in the posterior half of the eye will lie at a higher level in the second position where the ring has rotated downwards.

The shadow of the foreign body might fall within the circles described and yet be outside the eye. This point is settled by the movement of the foreign body, which is absent when it is extra-ocular. There is, however, an exception to this in the case of a foreign body in Tenon's capsule, where slight movement may take place, but this is rarely as great as in the case of an intra-ocular foreign body. In such cases, therefore, if the foreign body shows a new relation to the ring in the second position it is probably outside the eye. When the foreign body is clearly outside the limit of the circles described it is certainly extra-ocular. The size of the foreign body is carefully measured on the radiograph. This will determine the length of the scleral incision necessary for its extraction.

Operation

Anaesthesia.—(1) Surface. Cocaine 4%, 4 drops (the only suitable anaesthetic available). (2) Infiltration. 0.5 c.cm. of novutox 3% with 3 minims of 1 in 1,000 adrenaline may also be injected into the bellies of adjacent rectus muscles when traction is likely to be made on these. In cases of considerable ocular injection 1 c.cm. is also injected into the region of the ciliary ganglion. Anaesthesia has been adequate in all cases.

Incision.—With spring scissors a curved incision is made in the conjunctiva anterior to the area of sclera to be exposed, so as to fashion a flap with its convexity forwards. This is undermined down to the sclera so that it consists of conjunctiva, Tenon's capsule, and episcleral tissue. Two sutures of 000 silk are inserted 2 mm. behind the free edge of the flap, which is now reflected posteriorly and secured thus by clamping the sutures to the head-drapings. Care must be taken in separating adhesions around the site of a scleral wound. The overlying conjunctival wound is generally healed, and in most cases the conjunctiva can be dissected off intact. In two cases there was a prolapse of intra-ocular contents, making a knuckle about 2.5 mm. high by 2.5 mm. at its base. In such cases the covering of episcleral tissue and adhesions was left untouched until after diathermy had been applied and a scleral suture inserted. Then the prolapse and its coverings were cut off flush with the sclera.

After reflecting the conjunctival flap the sclera is swabbed and any bleeding-point arrested by touching it with a fine probe heated in a flame. Traction on the globe may be effected either by a scleral hook or by passing sutures of No. 1 white silk through the tendon of a rectus muscle or by seizing the tendon with fixation forceps (Fig. 1). If the scleral wound is either over the posterior part of the pars plana of the ciliary body or between the ora serrata and the equator one or two applications of surface diathermy, 70 to 80 mA for 5 seconds, are made over the wound so as to extend just beyond its limits. This effects contraction and hardening of the sclera and incidentally reduces the size of the wound. Its purpose is to produce haemostasis in the sclera and underlying uveal tract and to ensure subsequent choroidal retinal adhesions where the foreign body tears these membranes on leaving the eye. Then a mattress suture is passed through the thickness of the outer half of the sclera, which it traverses 1.5 mm. from and parallel to the edges of the wound for a distance of 2 mm. (Fig. 2). For this purpose Merson (Edinburgh) made for me a small eyeless needle threaded with 000 silk. Generally one suture is sufficient, but two may be necessary in larger wounds. The loop and ends are placed clear of the scleral wound.

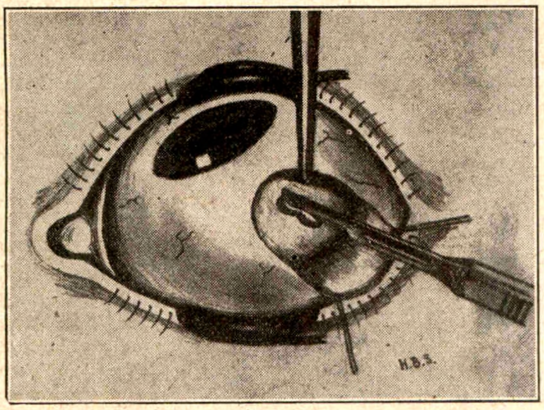


FIG. 1.—A flap of conjunctiva, episcleral tissue, and Tenon's capsule is reflected in the lower temporal quadrant. Fixation forceps are applied to the tendon of the external rectus muscle. A No. 15 Bard-Parker knife incises the sclera where two applications of surface diathermy have been made.

The wound is now enlarged to a size 1 mm. greater than the maximum diameter of the foreign body as measured on the radiograph. This is done by cutting the sclera with a No. 15 Bard-Parker blade kept on the sclera and run gently to and fro for 2 to 4 mm. as required. All but the deepest layers of the sclera are divided in this manner. The head and eye are then turned so that the scleral wound lies uppermost, thus by gravity minimizing the risk of vitreous loss. Fine hooks are now inserted into the edges of the scleral wound and are drawn apart. The uvea shows through the remaining layers of the sclera, which are now cut with the point of a cataract knife (Fig. 2).

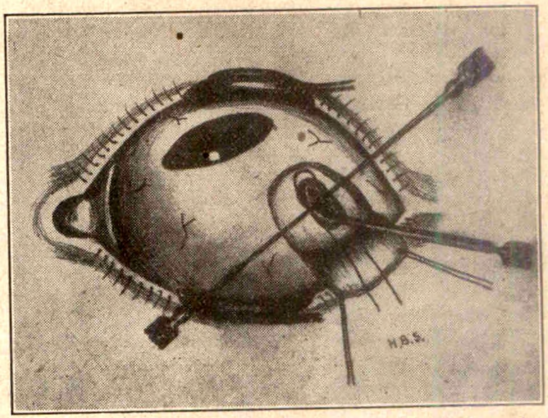


FIG. 2.—A mattress suture has been inserted through the superficial layers of the sclera. Fine hooks retract the edges of the scleral wound, whilst a cataract knife completes the incision through the deeper layers of the sclera to expose the uveal tract.

The procedure is similar in cases in which the scleral wound has healed or is not evident, the scleral incision being made at some site of election. The only difference is that the incision is made through about half the thickness of the sclera and then the mattress suture is inserted. With effective diathermy there is no bleeding.

The Mellinger giant electro-magnet is now swung into position, and the terminal introduced into the lips of the wound. A "click" is heard as the foreign body strikes the terminal, which is then removed. The mattress suture is now seized with Arruga's capsule forceps and drawn upon, thus closing the lips of the scleral wound. It is then tied. Any traction sutures in the rectus muscles are now cut and removed. The conjunctival flap is replaced and the conjunctival incision closed by a continuous key-pattern suture of 000 black silk. Ung. atropin. 1% is inserted on a glass rod swept beneath the upper lid at the outer canthus. A pad moistened with paroleine is applied over the closed lids and secured by a bandage.

To date, vitreous loss has never occurred and the eyes have shown no post-operative exacerbation of inflammation.

Summary

The reasons for removing by the posterior route intra-ocular magnetic foreign bodies due to war missiles are discussed. The investigation of a case, a simple method of x-ray location of intra-ocular foreign bodies, and the operative technique of extraction are described.

Major W. H. Milligan, x-ray specialist (Scottish) General Hospital, has devoted much skill, care, and patience to the location of intra-ocular foreign bodies. I thank him for his admirable work and invaluable help and advice in this respect. I also thank Brigadier C. W. Graham, Consulting Ophthalmologist, M.E., and Colonel H. D. F. Brand, O.C. Scottish General Hospital, for permission to publish this paper.

There have been numerous reports in the American medical press during the past year on the formation of sulphonamide crystals in the renal tubules. In one of these (*J. Urol.*, 1942, **47**, 258), H. R. Newman and I. H. Shleser point out that there is the less-recognized risk of the formation of putty-like renal calculi. They record a case where, two years after the administration of sulphapyridine and prontylin, renal calculi were found on x-ray examination to be in the pelvis of the right kidney, and were removed. They crumbled easily on slight pressure, and chemical analysis showed the presence of large quantities of sulphonamide intermixed with protein and some magnesium, ammonium phosphate, and a trace of calcium carbonate.

LONG SURVIVAL AFTER TOTAL GASTRECTOMY

A BRIEF REVIEW, WITH A REPORT OF TWO CASES

BY

CECIL A. JOLL, M.S., F.R.C.S.

Senior Surgeon, Royal Free Hospital, Royal Cancer Hospital, and Miller General Hospital

AND

D. I. ADLER, F.R.C.S.Ed.

Lately Surgical Registrar, Royal Free Hospital

Despite the frequency of carcinoma of the stomach the number of recorded total gastrectomies is still insignificant, and few in relation to the large number of partial gastrectomies. Thus Livingston and Pack (1939), in their admirable monograph on carcinoma of the stomach covering over 14,000 partial gastrectomies, make no mention of total gastrectomy in the treatment of carcinoma ventriculi, and at the Mayo Clinic (Walters, Gray, and Priestley, 1940) between the years 1907 and 1938 out of 11,000 carcinomas of the stomach there were 2,840 resections, of which only 27 were total.

According to Kronlein (quoted from Finney and Rienhoff, 1929), total gastrectomy is defined as removal of the whole stomach so that in the specimen is found a portion of oesophagus at one end and of duodenum at the other. Billroth (quoted from Finney and Rienhoff, 1929) defined as a total gastrectomy resection of the body followed by anastomosis of the pylorus to the cardia—these we prefer to term subtotal gastrectomy. Finney and Rienhoff in 1929 traced 110 of the reported cases, of which only 67 were in the first group; it is solely with this latter category of complete (total) gastrectomies that we shall deal.

History

Phineas Conner (1884) of Cincinnati performed the first total gastrectomy on a moribund patient, who did not survive the operation. Carl Schlatter (quoted from Finney and Rienhoff, 1929) in 1897 recorded the first successful case, which survived the operation 14 months. In 1898 MacDonald and Brigham each recorded successful cases, and, following these, reports of sporadic cases continued to appear, chiefly in America and on the Continent.

The first annotation in this country is by Chavasse (1899), who was unable to follow the gastrectomy by an anastomosis and, having closed the oesophagus, brought the duodenum out on to the skin surface, the patient dying soon after. In 1903 Moynihan published the first full report of a case in this country, the patient dying from shock 36 hours after operation. His second case (Moynihan, 1907), operated upon for linitis plastica in 1907, developed a profound anaemia three years later, but survived for a further period of 8 months. Necropsy showed no evidence of recurrence. In 1928 Flint of Leeds reported a successful case operated upon for diffuse encephaloid carcinoma. This patient, aged 44, was alive and well 18 months later. According to Rodney Maingot (1941), Walton had reported 6 cases, Gordon-Taylor 6, Maingot 6, and Joll 12,* but these appear not to have been fully recorded, which seems to us to justify publication of the present review.

In 1929 Finney and Rienhoff collected 67 cases of total gastrectomy, and in 1933 Roeder added another 21, making altogether 88 cases. Since those two excellent papers, with very complete bibliographies, a number of cases have been reported upon, but chiefly as examples of successful technique, and they were often recorded within a month of the actual operation:

Author	*Remarks*
Clute and Mason (1930) ..	Survived 3 years 6 months
Morrison (1933)	Aged 53. Alive and well after 6 months
Atkinson and Masson (1934) ..	Aged 62. Successful case
Percy (1934)	Aged 59. Survived 19 months
"	Aged 64. Survived 5 months
Streicher (1934)	Aged 45. Alive and well 10 months later
Jennings (1936)	Aged 35. Successful case
Walton (1936)	6 total gastrectomies out of 173 resections in 461 cases of carcinoma ventriculi
Clute and Albright (1937) ..	Quote Bull and Stang's case: 13 months
" " " (1937) ..	Quote Clute and Mason's case, above
Walters and Horton (1937) ..	Aged 61. Alive and well 6 months later
Allen (1938)	16 cases. One alive and well after 4½ years. 8 survivals
Lahey (1938)	9 cases—5 survivals. One, aged 36, worked 3 years and lived 3 years 4 months
Neel and Waugh (1939) ..	Aged 43. Alive and well after 8 months
" " " ..	Aged 68. Alive and well after 6 weeks
" " (1940) ..	Aged 45. Alive and well after 5 months
Lemmon and Paschal (1940) ..	Aged 63. Alive and well after 7 months
Graham (1940)	19 cases—5 survivals: one alive and well after 19 months
Priestley and Randall (1941) ..	Aged 31. Alive and well after 8 months
Donald (1941)	Aged 44. Successful case
Waugh and Giffin (1941) ..	Aged 72. Successful total gastrectomy and partial oesophagectomy
Jackson (1941)	Aged 69. Alive and well after 26 months
Jordan (1941)	Total gastrectomy for leiomyosarcoma. Alive and well after 2 years 9 months
Morrison (1941)	2 cases. One alive and well after 26 months
Lynch and Priestley (1941) ..	Aged 55. Alive and well after 3 months
Baker (1941)	Aged 60. Successful case
Jones (1941)	Aged 44. Fit for 16 months

Technique

Most authors stress the value of spinal or local anaesthesia followed by gas-and-oxygen, and ascribe the technical difficulty of the operation not to the oesophago-jejunal anastomosis but rather in mobilizing the stomach, fixed as it may be by perigastric adhesions or neoplastic infiltration. Stress is laid on the principle, first introduced by Moynihan (1907), of utilizing the stomach as a retractor. An interrupted anchor layer of sutures and a second continuous layer of sero-muscular sutures having been inserted, small openings are made into the left extremities of oesophagus and jejunum, and only when these small openings have been approximated by a through-and-through layer are the incisions extended. Certain surgeons advocate oesophago-duodenostomy, but most prefer an end-to-side oesophago-jejunostomy. An entero-anastomosis is added by some, while Finney and Rienhoff (1929) advocate using the Levine duodenal tube. This is swallowed before operation and manipulated through the new stoma into the jejunum at the operation in the hope of minimizing the risk of early leakage from the suture line. If a short oesophagus is exposed it may be necessary to cut the left triangular ligament of the liver to allow of a more adequate exposure. Lahey (1938) and others advocate the use of flaps of diaphragmatic peritoneum to cover the anastomosis. Priestley and Randall (1941) suggest anchoring the jejunum posteriorly to the pancreas and anteriorly to the liver to prevent traction, and use jejunal feeding to prevent leakage.

As some of the recorded cases show, provided the patient's general condition is good, age is no barrier to the operation. Thus Jackson (1941) reports the case of a patient aged 69 who was alive and well 26 months after total gastrectomy for linitis plastica. Waugh and Giffin (1941) had a success in a man aged 72—the oldest recorded case. To justify the operation the lesion should, however, be confined to the stomach, together with, at most, the immediate regional lymph glands; and the oesophagus should be mobile enough for anastomosis (Neel and Waugh, 1939). If possible, 4 cm. proximal to the growth should be removed for fear of intramural extension, according to Adrian Verbrugghen (1931), but this must be considered a counsel of perfection.

Complications and Prognosis

Finney and Rienhoff (1929) give the immediate mortality of the 67 cases recorded as 53.8%, of which peritonitis accounted for 58% and shock 8%, the remaining deaths being due to intestinal obstruction, enteritis, duodenal fistula, oesophageal fistula, haemorrhage, cardiac failure, or cerebral haemorrhage. They point out that oesophago-duodenostomy was followed by a 67% mortality due to peritonitis, in comparison with 50% of those on whom oesophago-jejunostomy was performed. According to Roeder (1933) the first 88 recorded total gastrectomies had an immediate post-operative mortality of 50%, due chiefly to shock, peritoneal or pulmonary infections, and haemorrhage.

The most common immediate post-operative cause of death is not leakage from faulty suture but rather the extent and duration of the operation in a gravely debilitated patient. Whether post-operative shock and pulmonary infections can be reduced, by adequate pre-operative treatment directed towards increasing the patient's resistance combined with blood transfusions and prophylactic oral and local sulphonamides, is still uncertain. The figures from the Mayo Clinic (Lynch and Priestley, 1941) are, however, encouraging: during 1907-38 there were only 9 survivals out of 27 total gastrectomies, whereas in 1940 there was only 1 death out of 8 cases.

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* This figure now stands at 22.

Post-operative vomiting is rare in the uncomplicated case. Some develop a mild glossitis and stomatitis, though diarrhoea seldom occurs. The development of a moderate degree of secondary anaemia is fairly common. In Moynihan's successful case death occurred 3 years 8 months after operation—not from recurrence but from anaemia.

The development of megalocytic anaemia is questionable. Chester Jones (1940), in a very excellent review of the problem of gastrectomy and the anaemias, says: "It is apparent that major gastric surgery—subtotal or total—may be performed without any great fear of undue consequences as far as the factor of normal haematopoiesis is concerned. Despite the fact that relative or absolute achlorhydria develops, and secretory cells of importance to normal blood physiology are removed, the development of serious anaemias is not to be feared. An occasional microcytic or macrocytic anaemia ensues in the course of months." He concludes that extragastric lesions must coexist for the production of Addisonian anaemia—possibly due to the destruction of argentaffin cells in the duodenum, small intestine, colon, and appendix, those in the stomach having been already removed—and that an adequate and well-balanced diet should suffice to prevent its occurrence.

Karl Meyer (1941) suggests that pernicious anaemia does not occur after total gastrectomy only because the patients do not often survive long enough. He reports a case of total gastrectomy performed in Oct., 1933, for chronic non-specific linitis plastica in which the pre-operative haemoglobin was 80% and erythrocytes 4,220,000. In 1938 the latter were 5,000,000; but in 1939—6 years after operation—the patient developed the typical haematological picture of pernicious anaemia.

Rowlands and Levy Simpson (1932) collected 17 cases of Addisonian anaemia following gastric operations, of which 5 occurred after total, 8 after partial gastrectomy, and 4 after gastro-enterostomy: considering the rarity of total gastrectomy this is a high incidence.

Prognosis

From the standpoint of the restoration of health the results of the operation are, however, distinctly favourable. The patients have good appetites and enjoy life; many return to work and can lead a normal existence. Roeder (1933), moreover, makes the interesting observation that in his surviving case the patient experienced normal sensations of hunger despite the absence of the stomach, which has hitherto been considered as the exclusive somatic site for hunger.

The immediate post-operative mortality is, however, high (53.8% according to Finney and Rienhoff, 50% according to Roeder), though among 8 cases of total gastrectomy performed at the Mayo Clinic during 1940 (Gray, Walters, and Priestley, 1941) there was only one death—a mortality of 12½%. The ultimate prognosis as regards survival after operation is disappointing, the average duration of life being well under two years—almost all dying of metastases. The survival period of 20 cases from the Mayo Clinic (Eusterman and Balfour, 1935) is as follows: One case lived 3 years 9 months; two cases lived 2 years 8 months; one case lived 2 years 3 months; 16 cases lived for less than a year after operation.

The following are the longest recorded periods of survival from a careful study of the literature available in the English language:

(1)	Moynihan	3 years 8 months. Died of secondary anaemia
(2)	Zikoff	4 years 8 months
(3)	Mayo, W. J.	2 years 11 months (3 years 9 months). Died from ? pernicious type of anaemia
(4)	Brun	4 years
	(The above four are quoted from Finney and Rienhoff, 1929.)	
(5)	Allen (1938)	4 years 6 months. Alive and well at time of report
(6)	Lahey (1938)	3 years 4 months. Died of recurrence
(7)	Jordan (1941)	2 years 9 months. Total gastrectomy for leiomyosarcoma. Alive and well

Two Personal Cases

To the above list we wish to add the following 2 cases—the first surviving for 3 years 2 months and the second for 3 years 6 months after total gastrectomy.

Case E. A.

The first patient, a man aged 45, presented himself at the Royal Free Hospital on Dec. 9, 1932, with a history of vague indigestion of some years' duration. Following a haematemesis in April of that year he had complained of attacks of abdominal pain half an hour after food, relieved by vomiting. Despite melaena he felt fit, his appetite remained unimpaired, and there had been no loss of weight.

Clinical examination showed a thin but otherwise healthy individual. A blood count showed R.B.C. 3,030,000; Hb 49%; C.I. 0.81; W.B.C. 11,500. Operation on Dec. 12, 1932, disclosed on the posterior wall of the stomach a large ulcer with a raised red indurated edge extending up to the cardiac orifice. A total gastrectomy with retrocolic oesophago-jejunostomy was performed, and after an uneventful convalescence the patient was discharged a month later. He resumed work immediately for economic reasons. Section revealed an "ulcer-cancer." The glands showed chronic inflammatory changes and the effects of lymphatic obstruction only.

Two years later, in Jan., 1935, he was readmitted with pain in the left hypochondrium which had been present for 6 months and was aggravated by food. In addition he occasionally vomited yellowish watery fluid and this was associated with black stools. A blood count showed a marked hypochromic normocytic anaemia with R.B.C. 3,790,000, Hb 39%, C.I. 0.5, and W.B.C. 14,500, and the stools contained occult blood. Barium passed normally down the oesophagus and there was no demonstrable abnormality of either the afferent or efferent loop or at the anastomosis.

In Oct., 1935—34 months after operation—he was readmitted on account of burning pain in the epigastrium and difficulty in keeping solid food down. Clinical examination revealed no evidence of recurrence; barium, however, was held up at the lower end of the oesophagus, which was constantly craggy, and was convulsively regurgitated into the upper part. There was no sign of any fistula into the colon. He returned home a month later to a lighter form of work and died on Feb. 12, 1936—3 years 2 months after his operation.

Case J. K.

The second patient, a woman aged 42, was admitted into the medical wards on July 25, 1938, complaining of epigastric discomfort and pain of two months' duration. This pain appeared 2 to 3 hours after food and was relieved by alkaline powders and by light diet. Her initial nausea had been followed by attacks of retching, during which she vomited small amounts of watery fluid which was occasionally blood-stained. Her bowels had been costive, and on two occasions her stools had been dark and tarry. Her appetite was poor and she had lost 12 lb. in the preceding two months. She stated that she had had indigestion for years, and two months previously had undergone an operation for acute appendicitis.

Clinical examination showed a pale emaciated patient. There was visible epigastric peristalsis and a hard irregular mobile ovoid mass in the epigastrium. Investigations were as follows:

June 16, 1938.—Barium meal. Immediate: Projection on posterior surface in middle third. Peristalsis quiet. Pylorus relaxes at once. Duodenal cap normal. (Fig. 3.)

July 20.—Barium meal. Immediate: Irregular projection on greater curvature coincides with the mass palpable half an hour after the meal. Appearance strongly in favour of rapidly advancing neoplasm. (Both meals before admission.)

July 25.—Blood count: Hb 68%, R.B.C. 4,340,000, C.I. 0.79; W.B.C. 7,750 (polymorphs 74%, lymphocytes 21%, monocytes 4.5%, basophils 0.5%). Red cells show anisocytosis, hypochromasia, and polychromasia.

July 26.—Stool: Test for occult blood positive.

July 27.—Histamine test meal: Volume of resting juice 25 c.cm. Some red blood cells and debris; pus cells. Raised normal curve.

Aug. 8.—Hb 70%, R.B.C. 4,860,000.

Operation.—Pre-operative medical treatment was given. Operation was performed on Aug. 8 by one of us (C. A. J.), cyclopropane anaesthesia being administered by Dr. Morris. The findings were: carcinomatous leather-bottle stomach extending to within an inch of oesophageal opening and to within 1 in. of the pylorus; enlargement of glands along the greater curvature; no evidence of metastases. The procedure was as follows. The pylorus and first part of the duodenum were mobilized; the latter was divided between crushing clamps and the distal end closed. The greater omentum was completely dissected from the colon. The lesser omentum was divided, and stomach and as much of the intrathoracic oesophagus as possible were mobilized. Through the transverse mesocolon a loop of jejunum was brought up to the oesophagus and, following Moynihan's technique, an oesophago-jejunostomy was performed. Failing to cover the suture line with omentum, the abdomen was closed.

The operation took 1 hour 10 minutes; the patient returned to the ward in good condition. She was given rectal salines 4-hourly, and on the next day was taking 1 oz. of water hourly by mouth. This was gradually increased, and by the third day she was having small amounts of milk. Subsequently a diet of high caloric value was added, so that within a week she was taking a fair quantity of food at 2-hourly intervals. A fortnight later the patient was up and about, taking 2-hourly feeds of chicken, potatoes, eggs, fish, etc. She was allowed home 22 days after operation.

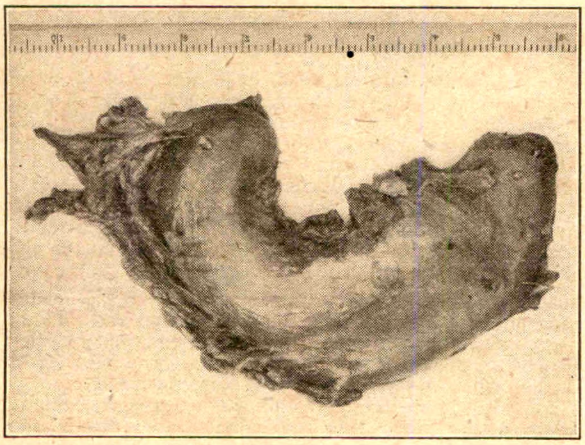

FIG. 1.—Case J. K. Stomach and great omentum after removal, showing widespread carcinomatous infiltration from cardia to pylorus.

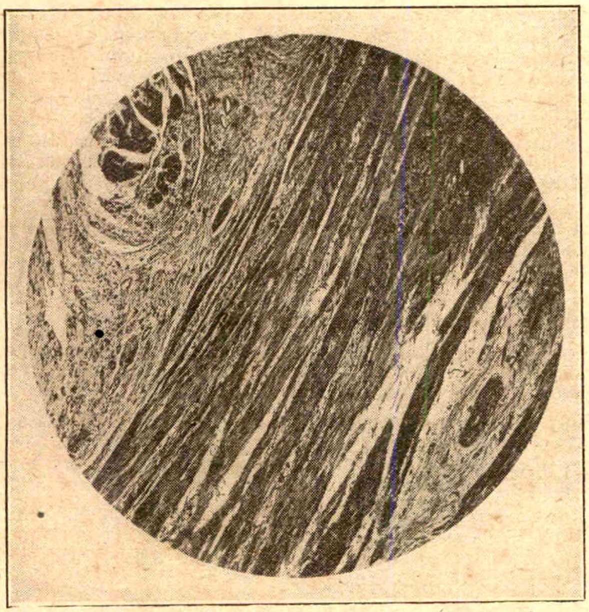

FIG. 2.—Case J. K. Photomicrograph from section of gastric wall to show muscular hypertrophy and focus of adenocarcinoma.

Pathological Report.—" A ' leather-bottle ' or diffuse type of carcinoma of the stomach extending from the oesophagus to the pylorus and involving the whole of the lesser curvature and portion of the greater curvature. The wall of the stomach is considerably thickened and all the coats are invaded by tumour cells in the region of the lesser curvature, producing ulceration of the surface mucosa; elsewhere the normal mucosa is intact. Microscopically, the malignant cells are irregularly scattered through the stomach wall and associated with a generalized fibrosis. An occasional irregular acinus is formed, and some of the cells contain mucous globules. Lymph glands along both curvatures are not enlarged, but several contain microscopic growth." (Figs. 1 and 2.)

Subsequent Progress.—The patient a year later was enjoying life and her food—four square meals a day. In March, 1941, one of us (C. A. J.) removed bilateral Krukenberg tumours, section of which showed adenocarcinoma with low mucus-secreting columnar cells suggesting secondary carcinoma from stomach. She was readmitted for investigation on Oct. 19, 1941, 3 years 2 months after her gastrectomy, during which period she had been doing all her housework, including the

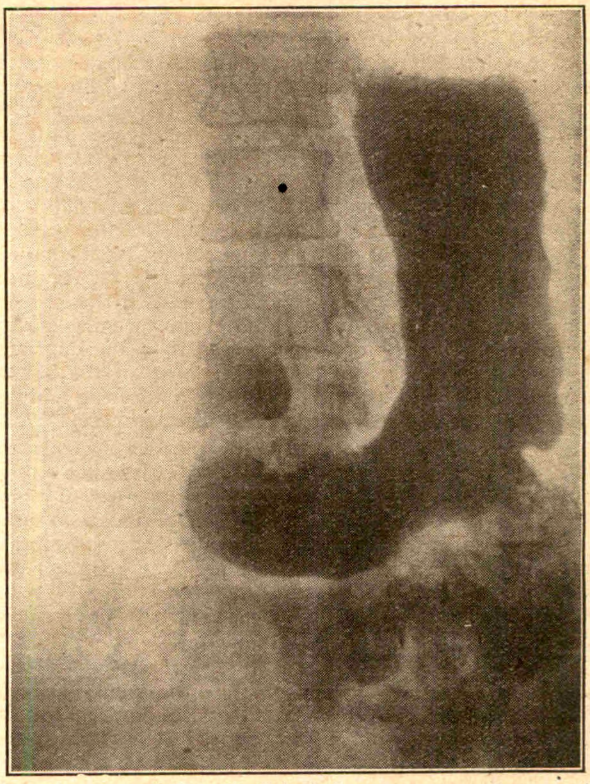

FIG. 3.—Case J. K. Radiological appearance of stomach immediately after barium meal (erect).

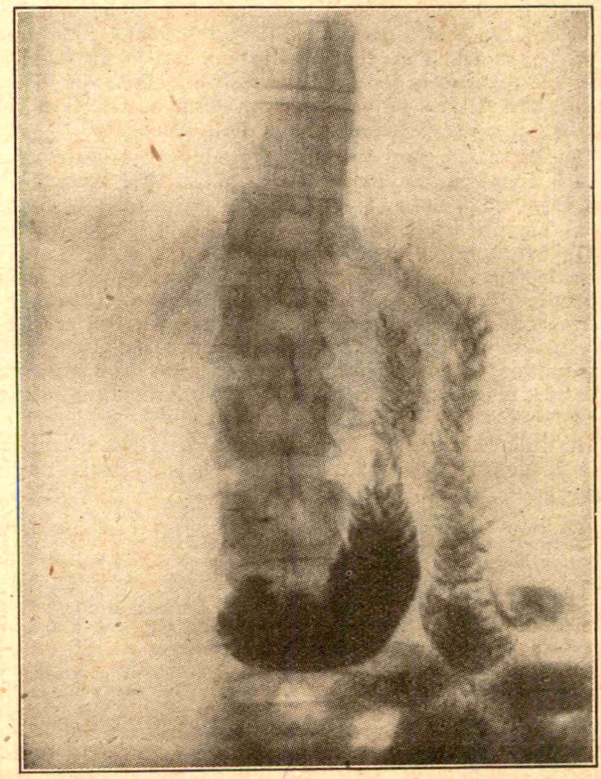

FIG. 4.—Case J. K. Post-operative radiograph showing barium passing direct from oesophagus to jejunum.

laundry and looking after her two children. A blood count showed Hb 58%, R.B.C. 2,960,000, C.I. 0.98, W.B.C. 11,400. The red cells were normal in size, shape, and staining. The white cells were of normal adult type. A radiograph of the chest revealed no abnormality. A barium meal showed total gastrectomy, with a filling defect in the transverse colon. (Fig. 4.)

She was discharged home a few days later and died on Feb. 5, 1942—3 years 6 months after total gastrectomy. No necropsy was performed, though she must certainly have died of abdominal metastases.

Summary

A brief review of total gastrectomy shows that the operation is indicated for patients in good condition when the carcinoma is operable and the anastomosis can be performed without tension.

Life after total gastrectomy is on the whole short, though those that survive may enjoy reasonably good health without any serious dietetic restriction.

A further 47 successful cases have been collected from the available English literature since Roeder's article in 1933, making a total of 135 reported cases of total gastrectomy.

In addition two personal cases surviving the operation by 3 years 2 months and 3 years 6 months, respectively, are described.

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The annual general meeting of the British Social Hygiene Council, the first since it became an independent voluntary body with no financial or other control by the Ministry of Health, was held at B.M.A. House with the president, Sir Walter Langdon-Brown, in the chair. The council is now devoting its energies to the promotion of social biology, including the social implications of venereal disease, and the president took as the subject of his address "The Place of Social Biology in the Sciences." He stressed the interdependence of all life, pointing out that all living organisms, from the lowest to the highest, were governed by the same natural "laws." After showing that the kinetic energy of animals was derived from the potential energy stored in plants, he traced the progressive stages in animals from reflex action to instinct, from instinct to intelligence, and from this to the still higher values of life. The annual report of the council was adopted, and on the motion of Mr. McAdam Eccles the officers were re-elected, as also was the executive committee, which was strengthened in the field of social biology by the addition (*ex officio*) of the chairmen of the newly appointed committees, including Prof. F. A. E. Crew, F.R.S., and Sir Francis Fremantle.

PREPARATION OF THE HANDS FOR OPERATION

BY

W. A. COCHRANE, F.R.C.S.Ed.

Surgeon, Princess Margaret Rose Hospital, Edinburgh; Associate Assistant Surgeon in Orthopaedics, Royal Infirmary, Edinburgh; Lecturer in Orthopaedic Surgery, University of Edinburgh

If the shortage of gloves continues we may, as a war necessity, have to operate without them. In point of fact, the use of rubber gloves in surgery is comparatively recent: they were introduced in the early years of this century. I have it on the good authority of a surgeon who operated before that time that the cases did well. I operated without gloves for some years as assistant to Sir Harold Stiles, who did not use them in clean cases. I have no recollection of a single case becoming infected. The following method, which I was taught to use and which I habitually employed, may prove of interest and value to surgeons and nurses. It is reliable. It takes a little time and trouble, but safe hands are worth it. As one becomes expert the time taken can be shortened.

The Procedure

Three washings are carried out. The first is for 10 minutes in a sterile basin half full of very warm water, to which soap spirit has been added. It is whipped up into a good lather. A soft but firm sterile nail-brush is used to scrub the fingers and palms, particularly in the line of the skin folds—i.e., across the hand. The scrubbing should not be strenuous on the backs of the hands, the wrists, forearms, and elbows, as the skin in these situations is thin. Special attention is paid to the tips, sides, and clefts of each finger, with the hands in the lather. A test of one's efficiency is to cover the hands with lamp-black in oil and wash them off in the dark or blindfold. Any parts still black will show what areas are being inadequately scrubbed.

For the second washing, the basin is filled with a change of warm water. Soap spirit is added as before, and a tablespoonful of cresol. The process of washing and scrubbing is repeated for 5 minutes.

A final wash of 3 minutes in a fresh sterile basin, with another sterile brush, rather softer than the other, and using water and cresol only, is given. The hands, wrists, and forearms are then rinsed in warm sterile saline.

During the operation the surgeon uses two lotion-basins: one contains warm sterile water and cresol, the other sterile saline. The former is for washing blood from his hands, which are then passed through the saline. Cresol and water are ideal for clearing the hands of blood. Somebody may say that cresol, lysol, or antiseptol used in the manner indicated will irritate the skin. If one obtains a good antiseptic of this type, this is not likely to happen, especially if on completing the operation a point is made of washing the hands and arms with soap under the running tap. This is an important point to remember.

An operation begins with the preparation of the hands. Whichever plan is adopted, it should be thorough and unhurried, whether gloves are used or not. It must stand up to the test of producing good results. For those who have never tried to operate without gloves I can give the assurance that there need be no alarm on that score if the above method is carefully employed. I think that an antiseptic is required. It is for this reason that I prefer use of the sterile basins rather than washing-up beneath the running tap with soap and water only.

The best way to scrub the finger-tips and the backs of the fingers is by holding the brush steady beneath the lather, bristles uppermost, and moving the fingers of the other hand rapidly to and fro across it. Between operations, the final washing described above is repeated for about 2 minutes. If a very pure cresol is used it can be in surprising concentration actually without irritating the skin: the surgeon soon learns by experience how much to use. In the first wash-up the soap spirit is poured in from a bottle; the soap spirit and the cresol in sterile dishes are placed at the surgeon's side.

Medical Memoranda

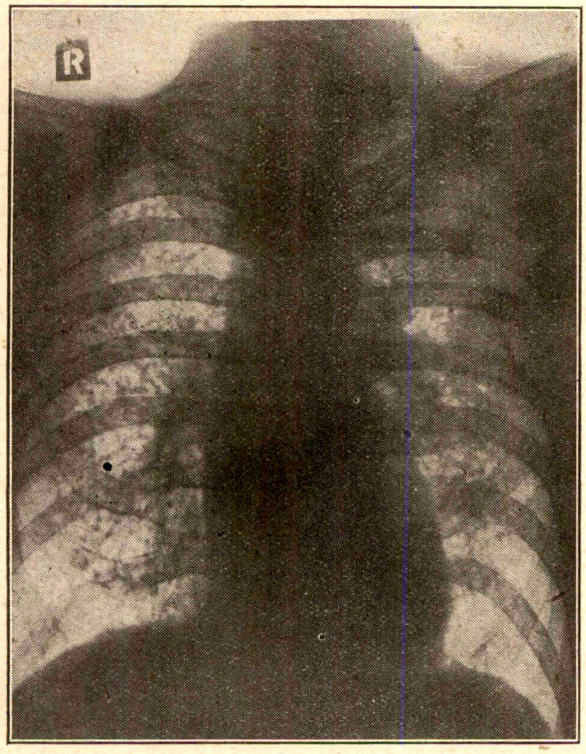
Silicosis in a Chert-miner

The following case seems to be worthy of record in that it is, so far as I am aware, the first case of silicosis occurring in a chert-miner to be definitely acknowledged by the Silicosis Board, and in fact the only undisputed case of silicosis due to chert yet reported—a recent case having proved negative on post-mortem findings although compensation was paid during life.

Chert, or petrosilex as it was formerly called, is a very hard rock or flint stone. It can be of various colours—blue, black, or white. In some cases chert is solid all the way through; in others it is in layers with the limestone, and is called roof chert. It is a compound of silica and limestone, and 80% is mined in Bakewell, Derbyshire. The proportion of silica varies in different specimens, being within the wide ranges of 30% and 90%. Chert is used for grinding all pottery materials, and in glazing; it is ground into paste in the Potteries. Before this war it was constantly being exported.

Case History

I first sent this man in Jan., 1934, to see Dr. P. Heffernan, who was unable to find any signs of tuberculosis in his chest. Although periodical radiographs have been taken regularly and the sputum has been examined for the tubercle bacillus the results have always been negative. The first, taken in 1934, showed a most perfect picture of silicosis—just like a snowstorm; and plates have been taken at regular intervals for the past 9 years. The radiograph here reproduced was kindly taken for me by Dr. Grout of Sheffield in 1939. (It is only owing to absence on war service that I have not published the case before.) It shows nodular fibrosis in each lung. The chief symptoms in this case were shortness of breath, cough with some sputum, and a feeling of weakness and tiredness. The man's history is particularly important in view of the hand labour, subsequently replaced by machine labour.



Radiograph of the case, showing nodular fibrosis in each lung.

The patient was born in 1886 and started work in 1898 at mine A, working below ground as a drill-turner with the striker beside him. The men worked unprotected, and dust flew about. In 1899 hand work was done away with and machinery was introduced in the limestone. Subsequently he was a poker-holder on the boring machines for 2 years; then a machine driver for 4 years. He subsequently worked for about 14 years in the chert—all hand striking and hand boring. He left Mine A and went to Mine B, where he worked for 11 years in the chert—all underground work, all machine boring. In all, he worked about 31 years in chert. He left work in 1935. Full compensation has been agreed to, and paid since 1936. One fact should be mentioned in all fairness. In 1918 he left chert for 3 weeks and was employed in sandstone, but he was only cleaning up, and did not actually work in sandstone himself, so I feel that this period of 3 weeks can be overlooked. At one time he drank a fair amount of alcohol after work, and the fact that he did so may have been a contributory cause of his sensitivity to absorption of silica dust. He also had some degree of cirrhosis of the liver and has had more than one attack of delirium tremens. The radiograph in this case is diagnostic and conclusive.

My thanks are due to Dr. P. Heffernan for his great help in the diagnosis of this case.

C. W. Evans, M.R.C.S.,
Bakewell. Late Capt., R.A.M.C.

Acute Benign Dermatomyositis

A mild type of myositis or myalgia has been described from time to time under the heading of Bornholm disease. The pain is upper abdominal or thoracic, of abrupt onset and severe, and accompanied by fever and sweating. It has been regarded as a toxic myositis due to a specific infection, since on occasion it appears as a small epidemic. Hypersensitivity of the skin does not form part of this syndrome, but a combination of myositis with tender skin and peripheral neuritis has been recognized and described under the term dermatoneuromyositis. Such cases are usually grave, since a residual fibrosis of muscle and skin leads to the condition of sclerodermia, which has only recently been recognized as the sequela of an acute dermatomyositis. Intermediate forms are probably not uncommon. Williams (1941) described 5 cases of benign dermatoneuromyositis occurring shortly after inoculation with typhoid vaccine. There were meningeal symptoms, and the spinal fluid showed an increase of cells but was sterile. He gave reasons for considering allergy not the essential cause, and attributed the illness to a virus infection. The isolated case described below would seem to be another variant of the same syndrome.

Case Report

A farmer aged 32 was admitted to the Royal Northern Infirmary on April 21, 1942, as an emergency case. On April 11 he had felt tired and rather stiff after working late mixing pig food. This slight stiffness and tiredness persisted for the next 3 days, when he had a bout of sneezing, and on the following day, April 16, he had frontal headache and a general increase in the feeling of stiffness. Seen by his doctor on the 18th, he had a temperature of 101° F. and a pulse of 68, and on this day developed retention of urine and vomited repeatedly. He described severe headache, both frontal and occipital, and epigastric pain. He now began to find his skin very tender, and noticed that any little effort made him sweat profusely. He was catheterized twice by his doctor before admission to hospital.

He was afebrile after reaching hospital. Any movement, except of the hands, gave him acute agony. He preferred to remain in a half-sitting position, and could not bear to feel the bedclothes touch his skin; but over certain parts—e.g., in the left leg and the right thigh—there were areas of reduced sensibility to superficial stimuli. No reduction in appreciation of temperature was present, but cold objects were felt as painful. Sense of position and localization and vibration were all intact. Over the trunk and the greater part of the limbs light touch felt to him as if he were being rubbed with sandpaper. Photophobia was present. He was catheterized without any difficulty, and retention appeared to be due to the extreme pain occasioned by efforts at voluntary micturition. No physical signs apart from those described were found in the nervous system or any other system. His spinal fluid on April 23 was completely normal, and the white cell count on the same day was 5,200 per c.mm. (polymorphs 49%, lymphocytes 46%, monocytes 4%, eosinophils 1%). Within 3 days of admission he was able to move about quite freely and there was no further retention of urine. At the end of a week all his symptoms had disappeared except for a feeling of numbness and altered sensation to light touch in the legs. He was discharged from hospital after a fortnight and was seen again a month later; he was then in perfect health except that he still complained of a slight sensation of numbness in his feet.

Duncan Leys, M.D., F.R.C.P.,
Consulting Physician, Highlands and Islands Medical Service.

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Reviews

MACHINERY OF A MEDICAL ORGANIZATION

The Political Life of the American Medical Association. By Oliver Garceau. (Pp. 186. 14s.) Massachusetts: Harvard University Press; London: Oxford University Press. 1942.

This is a sociological study of the machinery of a medical organization by a lay expert whose basic interest is in the influence on the State of the "group," which he describes as representing a point of view "which cannot be expressed in ordinary politics by the individual voter." Groups are "not only wholesalers but manufacturers of opinion." The community judges a group largely by the way in which it conducts its affairs. Mr. Garceau chose the A.M.A. for his study because of its size and importance and because it is a professional group. A profession he describes as a group whose code of ethics is potentially powerful enough to "raise individual conduct above the level it would otherwise attain." By the light of this high standard he examines the political record of the A.M.A. in what appears to be a scientifically objective way.

He finds it defective in its power or its willingness to provide for the effective outlet of minority opinion. As an example, he accuses it of deliberate suppression in its journal of information on the burning question of State insurance coming from authoritative quarters in countries where the experiment has been made. Examining its ethical machinery, he is of opinion that co-called medical ethical questions are mostly matters of economics. He thinks that the machinery of the A.M.A. has "borrowed from its surroundings the powerful myths of oligarchy, a little tyranny, an elaborate democracy, and a strain of aristocracy." He sharply criticizes the absence of real control by the House of Delegates (the opposite number of our Representative Body) over its administrative officers and its budget.

He makes full allowance for the difficulties of organization over such a wide area, comprising 48 States with differing legislations, but he thinks that the leadership of the Association is very astute and has little to learn from the professional politicians at Washington. In spite of its great efforts at centralization he thinks it is on the whole still rather a federation than a centralized national organization. He observes signs that an influential minority movement may be developing, headed by "the Committee of Physicians," a small central body containing many influential men whose avowed object is to act as "the nucleus of liberal and progressive thought inside the A.M.A." He makes some interesting remarks on the familiar point that the average medical man has no use for medical politics. Indeed, he offers the plausible excuse for him that, contrary to the average citizen, he can find in the practice of his profession all the mental stimulation he requires, whereas the general body of citizens need some form of "extra-mural" activity, of which politics is one of the most obvious. He is strongly of opinion, however, that in neglecting the politics of his group the indifferent doctor is wrong. Skill in politics, he says, is as necessary to successful social life as the development of surgical skill or the control of disease. Holding this deal of politics he pleads that what the medical profession needs is more medical politicians of the right kind and not fewer. To the criticism that laymen are not fit to have an opinion on medical matters, he opposes his view that that does not apply to the politics and economics of the profession, which are of the same order in all spheres of life. He ends by saying: "It would be a tragedy for the whole community if the A.M.A. fails to elicit public respect. The answer lies in the political ife within the A.M.A. itself."

The book is of great interest to all who believe that the medical profession is destined to play an increasing part in national affairs; and though the problems of the American profession differ in many ways from those of other countries, hey are the same in essence. This study can be cordially ecommended to all who believe it to be a duty to see that a medical organization should exist, not only for the support and protection of its members, but in order to bring the egitimate and special influence of the profession to bear on he affairs of their country.

A. C.

CANCER OF THE UTERUS

Cancer of the Uterus. By Elizabeth Hurdon, C.B.E., M.D. Oxford Medical Publications. (Pp. 188. 17s. 6d.) London: Oxford University Press. 1942.

The incidence and mortality of carcinoma of the cervix present to obstetricians and gynaecologists the greatest problem they have yet had to solve. The great work of Wertheim in Vienna and Bonney in this country resulted in the development of a superb technique for the radical abdominal treatment of operable cases. Meanwhile Schauta was perfecting the radical vaginal operation which now has many supporters in Continental clinics. The best results obtained by either technique were encouraging rather than satisfying. With the advent of modern methods of intracavity radiation supplemented by external radiation new methods of treatment were developed, and with them came new hope for the future. The time is opportune for a wide survey of the problems involved, and for this reason an enthusiastic reception is assured for *Cancer of the Uterus* by Dr. Elizabeth Hurdon. The book is a masterly production written by one who had a wide and intimate knowledge of her subject. She had worked as an associate in gynaecology at Johns Hopkins University, where with Dr. Howard Kelly she first studied the pathology of uterine cancer and the modern methods of radiation treatment. Later Dr. Hurdon was largely responsible for establishing a unit for the radium treatment of cancer in women at the Marie Curie Hospital, London, where she held the post of medical director until 1938. Following her resignation Dr. Hurdon devoted the last years of her life to writing this book. She did not live to see its publication, but in its pages she has made a contribution to the common cause possibly even greater than that which was made by the outstanding work of her lifetime. The book gives a comprehensive and statesmanlike review of the whole subject and points the way to future progress.

The claim is made that with early diagnosis and adequate treatment 60 to 70% of cases of cervical carcinoma and 80 to 90% of cases of carcinoma of the corpus might be cured. That these figures are not idle ones is shown by the fact that in the results published from the Marie Curie Clinic the absolute 5-year survival rate in Stage 1 and Stage 2 cases was 80% and 61.5%, and the 10-year absolute survival rate was 63.6% and 41.9%.

The book opens with a general survey of the carcinoma problem in which such subjects as the incidence, nature, and ultimate cause and predisposing factors are discussed. An excellent account of the clinical pathology in all its aspects is then given. One minor criticism concerns the reference to superficial curettage as a means of obtaining biopsy material, for no warning is given of the very real danger of missing an underlying infiltrating growth. The treatment of cervical cancer is then discussed in great detail and the position as it now stands is reviewed impartially and clearly. An excellent chapter is devoted to the treatment of the operative complications, such as tumour infection, pyometria, anaemia, and pelvic sepsis. The post-operative complications are discussed with equal thoroughness and clarity. The important problem of carcinoma of the cervical stump following subtotal hysterectomy receives the attention it merits. There were 27 of these cases in a total of 1,296 cases reviewed, with an additional 7 cases in which the cervix was the seat of carcinoma at the time the subtotal hysterectomy was performed. One chapter is devoted to the subject of carcinoma of cervix and pregnancy, and includes a most interesting review of the literature, in which are recorded 15 cases of pregnancy following irradiation for carcinoma of the cervix. Carcinoma of the corpus, vagina, and vulva, and sarcoma of the uterus are all separately considered. Endometriosis is discussed, but not very fully, and the chapter on this could well be omitted from subsequent editions or else revised to give a broader survey of the problem of treatment of this not uncommon condition. A final section deals with radiation therapy for uterine haemorrhage in non-malignant disease.

The book has been very carefully produced, is well illustrated, and should have a place of honour near the desk of every gynaecologist. If every general practitioner also had a copy and gave heed to its teaching the day of 60 to 90% cures for carcinoma of the uterus might dawn sooner than we at present dare hope.

MEDICAL JURISPRUDENCE

Medical Jurisprudence and Toxicology. By John Glaister, M.D., D.Sc. Seventh edition. (Pp. 671; illustrated. 28s.) Edinburgh: E. and S. Livingstone.

Since its first appearance in 1902 Glaister's *Medical Jurisprudence* has gathered very many devoted readers, for whom it is the trusted arbiter in every medico-legal doubt. They will welcome the appearance of the seventh edition. Among the improvements which Prof. Glaister has made are the elimination of small type, and the collection of bibliographical references at the end of each section. He has completely recast the book and almost entirely rewritten it. He has brought up to date his references to legislation and has included notes of many recent legal decisions, and most of the medical cases cited for illustration are new. The section on toxicology, the subject with which the author's reputation is more particularly associated, has been drastically revised, and he has included descriptions of additional poisons. He has wisely excluded most of the earlier accounts of methods of quantitative estimation, judging that such matters are for the analyst and are outside the scope of the medical practitioner. He, however, gives adequate reference to authoritative works on the interpretation of the results of analysis, and describes qualitative tests. He has omitted emergency legislation—very little of which, in any event, bears on medical jurisprudence—except for an appendix on the procedure when death follows an air raid and is therefore outside the duty of the coroner. His last chapter deals with war gases and the effects of blast, but not with the interesting effects on the kidney of crush injuries, which has attracted so much attention during the last two years. His account of the law of forensic medicine is very condensed but adequate for most everyday purposes of the practitioner, and includes the law both of England and of Scotland. The photographs are as good as ever, and the paper shortage has made no difference to the excellence of the presentation.

Notes on Books

War Gases and Foodstuffs, by W. R. Wooldridge, Ph.D., M.Sc., contains a discussion of the properties of war gases and of their effects on various kinds of food, and is directed chiefly to the consideration of the possibility of salvage of contaminated foods. The subject is treated from manifold aspects, regard being paid to the many different problems arising from different conditions and circumstances. The book provides useful reading, but may appear more academical than helpful to the reader seeking practical guidance. It is published in London by Leonard Hill Ltd., of 17, Stratford Place, W., price 2s. 8d. post free.

Preparations and Appliances

THE "RAILED" SPLINT

Drs. G. A. Pollock and George Brooks, of the Wilkie Surgical Research Laboratory, University of Edinburgh, write:

The rate and extent of recovery of joint function after operative procedures on the articular structures or injuries to the related bones depend largely on the patient's ability and willingness to co-operate in his post-operative care. In our experience pain is one of the most important factors in delaying recovery. The muscle spasm caused by the pain of an early unsupported movement or provoked by a clumsy post-operative manipulation may delay recovery for weeks by rendering the patient afraid to continue with his exercises. Subsequent unsympathetic treatment directed towards breaking down "joint adhesions" by force makes matters worse by increasing muscle spasm and antagonizing the patient. This is particularly true after the operations of synovectomy or arthroplasty, but it also occurs after fractures of the femur or over-enthusiastic manipulations of an arthritic knee- or hip-joint.

To lessen the pain of early post-operative joint function, and so secure the enthusiastic co-operation of the patient in the performance of his exercises, we have devised the "railed splint." This apparatus (Fig. 1, A) resembles roughly a Thomas splint hinged at the knee and hip. Proximally it is attached to a U-shaped support (B), from the base of which a single rail (C) runs distally, serving the double purpose of base-piece and rail. D is a clamp to secure the splint to the foot of the bed; E is a grooved wheel which runs along the rail C and can be locked at F; G is a metal loop with a rope-and-pulley attachment to a Balkan frame and a handle (H).

By pulling on H the patient can produce flexion of his knee- and hip-joints (Fig. 2). The range of movement can be gauged accurately by the patient, so that it is practically painless, and as he is in control of his movements he soon gains complete confidence in the apparatus. The wheel (E) reduces friction to a minimum and permits of free and easy motion. Genu recurvatum is prevented by the metal catch (I) placed just proximal to the lateral pulleys (J). In a short time the patient can obtain good range of painless movement, and as he can check th degree of flexion daily by noting the position of a coloure section of the pulley rope he is encouraged to proceed to sti greater effort in mobilizing the affected joints.

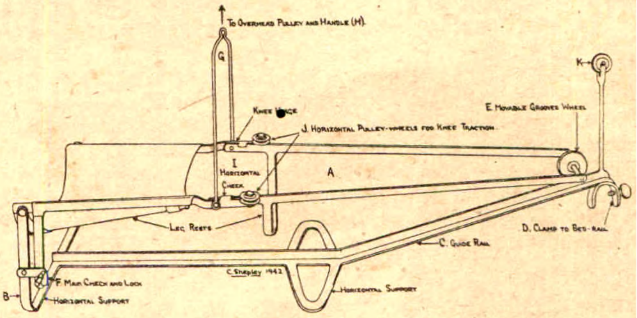

Fig. 1.—The railed splint.

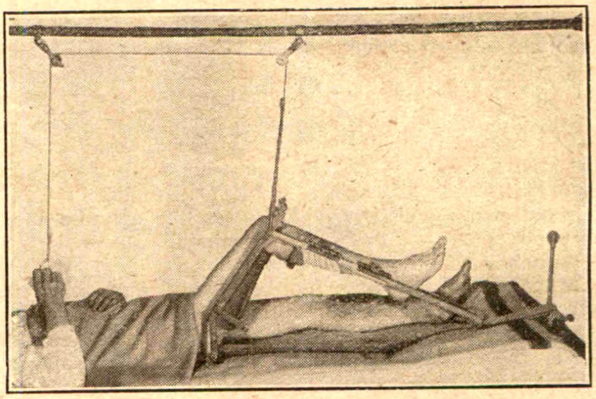

Fig. 2

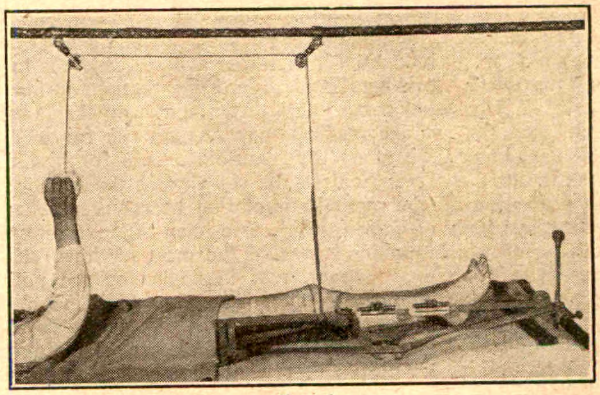

Fig. 3

When locked at F the splint is converted into a modifie Thomas knee-splint (Fig. 3). In this form it can be used i the early treatment of fracture of the femur by weight-and pulley extension over K. Countertraction is produced by th weight of the patient's body. Once a satisfactory position i obtained traction on a fractured femur can be maintained b means of the laterally placed pulleys at J, while the knee an hip are kept mobile. This is of importance in the later stage of treatment of most fractures of the femur or following th insertion of a Smith-Petersen pin for fracture of the femora neck, but it is of prime concern in the treatment of fracture of this bone in elderly arthritics.

The apparatus has been made for us by Messrs. Archibal Young and Son, Ltd., of Edinburgh.

BRITISH MEDICAL JOURNAL

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SATURDAY NOVEMBER 28 1942

THE KENNY TREATMENT OF POLIOMYELITIS

If it were not for the more pressing medical problems of the war it is probable that much greater interest would have been aroused in this country by reports coming from the U.S.A. of the work of Miss Elizabeth Kenny. An earlier phase of Sister Kenny's work will be remembered by many readers of this *Journal*, for in 1938 we commented upon the report of a committee which had studied it.[1] This investigation was carried out at Carshalton under the auspices of the L.C.C., who had decided that Miss Kenny's claim to be able to prevent permanent paralysis should receive every opportunity of demonstration. Her work was sympathetically supported and considered. In those days little was heard of any revolutionary ideas about the pathology of poliomyelitis. The main points in her treatment of the acute stage were, and still are, the use of fomentations and hydrotherapy for the relief of pain, early passive movements, the avoidance of all splints, and a finely graded system of re-education. The committee of experts, while appreciating the value of hydrotherapy as practised by Miss Kenny, considered that very early movements, though harmless, were of unproved value. They agreed that, while it was possible under certain conditions to dispense with splints in the early stages of the disease, they did not approve of their entire abolition, and found that the mechanical methods substituted were inadequate. The committee certainly deprecated unintelligent use of prolonged immobilization, which was not regarded as good "orthodox treatment." In emphasizing the benefit of mobility Miss Kenny had done useful work.

Miss Kenny, who was apparently very pleased with her reception by the L.C.C., returned to Australia in August, 1938. In 1939 Starr[2] gave a report to the Minister of Health for New South Wales which did not appreciably differ from that of the Carshalton study. In March, 1940, Miss Kenny appeared in the U.S.A., and in the following June began work in the University of Minnesota, which later had the support of the National Foundation for Infantile Paralysis. As the result of the investigation of 50 patients treated in the early stage of the disease, workers in the University of Minnesota were satisfied that the length of time during which pain, tenderness, and spasm were present was greatly reduced, and that contractures caused by muscle-shortening during this period were prevented. There was an improvement in the general condition of the patient as compared with other methods of treatment during a comparable time. The National Foundation was advised to press for wide dissemination of training in the Kenny methods. In December, 1941, the *Journal of the American Medical Association*[3] made this cautious statement: "Adoption of the Kenny technique represents an elaboration of well-recognized principles," and, "If there is any revolutionary element it consists in its abandonment of early rigid splinting and the adoption of continuous and meticulous hydrotherapy and physical therapy to maintain the function of muscles, at the same time producing increased comfort to the patient."

There has been much that is confusing and uncritical in the writings of those who have taken up Sister Kenny's work: a "new pathology" is emerging which rationalizes[4] her theories on muscle spasm, mental alienation, and muscular incoordination, the fundamental features in which she is considered to differ from "orthodoxy." Dr. John Pohl[5] of Minneapolis, who was one of the first in the U.S.A. to interest himself in Miss Kenny's work, states that her principles were "designed for the management of specific findings which had never been previously recognized. Other methods have been aimed at the prevention of deformities, usually by splinting and immobilization rather than by treating the condition affecting the muscles which ultimately causes the deformities." "Miss Kenny treats the disease, while other methods only deal with the after-effects." Treatment based upon the three cardinal attributes mentioned above "can have nothing in common with the treatment designed for a disease exhibiting flaccidity of muscles and in which there is no recognition of incoordination." According to Pohl, Miss Kenny has shown that the primary lesion is spasm and that this causes contractures. Opposing muscles are reflexly removed from voluntary control ("mental alienation"), with resultant pseudo-paralysis. Spasm plus mental alienation results in further damage by causing incoordination. Pohl does not deny that paralysis depending upon involvement of the motor cells of the spinal cord may be present, but little is said about it, for he regards spasm as the most common and most damaging element in the involved muscles.

While not denying that there is room for improvement in the treatment of poliomyelitis and for further study of its underlying pathology, we believe that understanding will be enhanced by critical inquiry upon strictly neurological lines. So far this does not seem to have been done in the U.S.A. In the textbooks it is recognized that in poliomyelitis there is gross disorganization of muscular function with over-action (which is another way of saying spasm) of unparalysed muscles and incoordination, and that fibrillation takes place in partially paralysed muscles. The study of action potentials[6] is not, therefore, we feel, a very conclusive piece of work in support of Miss Kenny's theories. Also well recognized in the pre-Kenny literature is the fact that the disease affects more than the anterior horn cells of the spinal cord. Lesions have been reported in the posterior root ganglia, as well as in tissues other than muscle throughout the body. It is not true, as Pohl suggests, that other methods have been aimed only at the prevention of deformity rather than at the condition affecting the muscles, or that Miss Kenny differs from other people in "treating the disease." That mental alienation is no new idea is well shown by the following sentences from Jones and Lovett[7]: "Muscle training is fundamentally an attempt to restore a cerebral motor impulse to a muscle, an impulse which has been either impaired or lost during the acute stage of poliomyelitis. . . . If a muscle is apparently without any power, the patient should concentrate his attention on the attempt to accomplish the movement while it is performed passively." They knew all about incoordination, over-action or spasm of muscles, cerebral impulses, and the scrupulous care required for their protection and re-education. (A manual has now been produced by Drs. Cole, Pohl, and Knapp,[8] which in the U.S.A. is likely to be a standard guide for American workers in poliomyelitis. Their discussion of muscle physiology is incomplete and credits Miss Kenny with views about muscle action which at times are heterodox and at others are not Miss Kenny's at all, but those of well-known workers in kinesiology.)

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[1] *British Medical Journal*, 1938, **2**, 841, 852.
[2] Ibid., 1939, **2**, 862.
[3] *J. Amer. med. Ass.*, 1941, **117**, 2171.
[4] *J. Amer. med. Ass.*, 1942, **119**, 989.
[5] Ibid., 1942, **118**, 1428.
[6] Ibid., 1942, **119**, 923.
[7] *Orthopaedic Surgery*. By Jones and Lovett. 1st and 2nd editions
[8] *Arch. phys. Therap.*, 1942, **23**, 399.

That absolutely rigid splinting for acute poliomyelitis has not in the past been the orthodox procedure in the United States is shown by a study of the American literature and by at least one English commentator[9] on American practice. The emphasis, however, has been on rest, and that this has been overdone by some people has recently been demonstrated in a paper from Oxford in connexion with the allied problem of peripheral nerve injuries.[10] Nevertheless, we can scarcely agree with Dr. Lewin's statement in a recent paper[11] "that the Kenny treatment is evidently the last word in the management of the acute stage of infantile paralysis." We do feel, however, that Miss Kenny has contributed something which has stimulated many of our American friends to fever heat, and that with the wonderful opportunities they possess they themselves will, by modification and development, make an important contribution to our understanding of infantile paralysis. In this regard we feel bound to comment particularly upon a report from Dr. Steindler's clinic,[12] in which a more critical note appears. These workers suggest that the pathological concept must be changed from the old idea of a purely motor deficiency originating in a lesion of the anterior horn cells, but they believe that it would be a mistake to relinquish all methods and devices which customary treatment instituted for the preservation of muscles, for the control of pain, and for the avoidance of fatigue; they do not believe that all fixation should be abandoned. The final sentence of this article one suspects is by Steindler himself; it is certainly characteristic: "I believe that when we are convinced of the soundness of the newer clinical observations in infantile paralysis, the application of common sense and of general biologic principles will make apparent the proper road of conduct, free from orthodoxy and from radicalism."

In spite of the invention of new names for old ideas, in spite of the benefits of Sister Kenny's painstaking attention to detail, which differs not in principle but possibly in emphasis, we believe that some American workers are giving extravagant credit to her work and are detracting from traditional American orthopaedics, to which sufferers from infantile paralysis the whole world over owe so much.

WANTED: A NUTRITION POLICY

Complacency is a much overused word nowadays, but how else are we to describe the attitude of some members of the profession and of our Administration to the question of Britain's wartime nutrition? The recent statement[13] of Prof. Sydenstricker of the University of Georgia, U.S.A., has been taken to imply that there is ground for complete satisfaction. "Wherever he had been he had been agreeably impressed by the general appearance of well-being. So far he had seen no evidence of anything that should cause alarm. 'My outstanding impression is of the amazing and efficient job done by the Ministries of Food and Health in handling the situation.'" Prof. Sydenstricker is an eminent expert in this field and has considerable experience in the diagnosis of nutritional deficiency disease. We are fortunate indeed in having a man of his outstanding knowledge with us at the present time. But—and we ask this with the greatest deference—would it not be fairer to say that what Prof. Sydenstricker has demonstrated is that severe deficiency, of the type frequently seen in his native State of Georgia, is rare in England? He himself would be the first to admit that his observations are not intended to present a complete picture of nutritional status but referred mainly to the absence of signs of deficiency of vitamins of the B group, on which he is a recognized authority. More important, it is not possible to relate his findings to conditions before the war, because tests similar to those discovered and used by Sydenstricker are of only very recent origin. If, for example, we assume that only 5% of the population showed very mild signs of a specific deficiency, we might consider this as quite satisfactory; but if the incidence of this same mild deficiency before the war was 1%, the position is certainly far from satisfactory. It is of course equally true that if the incidence had previously been 20% we should, with justification, be highly gratified.

The point we wish to emphasize is that the effect of the wartime dietary on the health of the people can be judged only by a comparison of the present-day nutritional condition with that before the war. What emerges from a study of the few investigations in which such a comparison has been made certainly leaves no cause for complacency. Let us consider first the question of anaemia. Dr. Helen Mackay and her collaborators[14] have shown a disturbing fall in haemoglobin in women and children since the war, and at a recent meeting of the Nutrition Society Prof. Stanley Davidson[15] reported similar results among pregnant women and adolescents in Scotland. Medical students at Leeds show, according to Dr. Murray Scott,[16] a fall of haemoglobin of between 5% and 10% compared with pre-war levels. Nor is the increase in nutritional deficiency seen only in an increase of anaemia. There are several indications, for example, that the incidence of vitamin C deficiency is rising. Widdowson and Alington[17] have calculated that there has been an appreciable fall in the average intake of vitamin C. Saturation tests have confirmed this,[18] and there is also evidence that the increase in gingivitis, especially in the Services, is associated with a deficiency of vitamin C. Another indication that this deficiency is becoming commoner is the report by Dyke and his co-workers[19] that many cases of pernicious anaemia have recently been found to show a decreased response to liver therapy, which could be rectified by the simultaneous administration of vitamin C.

The nutrition of the child is probably of greater importance than that of any other section of the people. A mild deficiency for a year of, say, vitamin B_1 or vitamin C may produce in an adult suboptimal health or even frank deficiency disease; when a normal diet is resumed, however, there will almost certainly be complete recovery. But in a child there will be a failure of growth which nothing can completely restore. Medical men will therefore read with much concern the report of Dr. Milligan and Mr. Lewis-Faning on the physical and nutritional condition of children in wartime.[20] Continuing the excellent studies of the former worker on Glossop school children, these authors find that, between late 1940 and the end of 1941, there is in 11-year-old boys a diminished growth rate as measured by the increase of either height or weight, compared with the pre-war rate of children of the same age. They also determined endurance by measuring the time a child could support himself from a bar or could support a weight equal to his own on a pulley block. Both of these tests showed that the endurance was appreciably reduced during the period of observation. These results are certainly disconcerting and make it impossible to continue in our attitude of "all's well on the nutrition front."

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[9] *J. Michigan St. med. Soc.*, March, 1932.
[10] *Lancet*, 1942, **1**, 555.
[11] *Illinois med. J.*, April, 1942, p. 281.
[12] *Arch. phys. Therap.*, 1942, **23**, 325.
[13] *Times*, Aug. 13, 1942.
[14] *Lancet*, 1942, **2**, 32.
[15] *British Medical Journal*, 1942, **2**, 405.
[16] *Lancet*, 1942, **1**, 680.
[17] Ibid., 1941, **2**, 361.
[18] Ibid., 1942, **1**, 642, 647.
[19] Ibid., 1942, **2**, 278.
[20] *Med. Off.*, 1942, **67**, 77, 85, 93, 101, 109, 117.

The policy of the Ministry of Food has received praise from most nutritional experts. In particular, school children appear to be well provided for in their allowance of school milk, in their full ration of cheese and, in older children, of meat. On theoretical grounds there is little reason for criticism, except perhaps that the special physiological requirements of adolescents have not received the consideration they deserve. But as the *Times* has so well said recently, a food policy, however adequate on theoretical grounds, must be checked by its effect on nutrition; it cannot be thought satisfactory unless it is correlated with an effective nutrition policy. The proposed Nutrition Council, which we discussed fully in a leading article in the *Journal* of Sept. 26, would be able to organize and correlate nutritional surveys regularly throughout the country. As Milligan and Lewis-Faning say: "There is an urgent need for studies of this nature to be carried out elsewhere, especially to find out if growth is being retarded generally and if children are becoming prone to fatigue, as a situation of that kind can hardly be left undealt with."

A RARE CAUSE OF SUDDEN DEATH IN EARLY LIFE

Xanthoma tuberosum is characterized by nodules, tumours, and plaques situated particularly on the elbows, knees, and buttocks, and over the tendo Achillis and the tendons of the hands and feet. The cholesterol content of the blood is increased. Sudden death from cardiovascular involvement may occur. The hereditary nature of the condition was first noted by Wilks in 1868. Inheritance appears to be dominant, though incompletely so, for the disease not infrequently skips a generation, being transmitted, for example, from an affected grandparent through an apparently normal parent to an affected child. Hypercholesteraemia has, however, sometimes been noted in such apparently normal transmitters. The condition is rare, and, this being so, the absence of any undue frequency of consanguineous marriages among the parents of those affected is alone sufficient to rule out recessive inheritance. Bloom, Kaufman, and Stevens[1] have described in detail a family exhibiting a striking incidence of early deaths from associated heart lesions. They lived at Philadelphia, though of Syrian origin. The father and mother were outwardly normal. Of their 13 children 3 had died shortly after birth and 1 was an infant. Five of the remaining 9 had developed the syndrome at the age of 3 or 4 years; no fewer than 4 of them had died of cardiovascular disease. Another child, aged 8 years, had an abnormally high level of blood cholesterol, together with unmistakable evidence of a cardiac lesion, though without cutaneous involvement. Yet another, aged 4½, had hypercholesteraemia, though he was apparently normal in other respects. The father, though outwardly normal, also had hypercholesteraemia.

This family history emphasizes the point that it is possible for a gross outward manifestation to behave as an irregular dominant, while a less obvious but more fundamental underlying anomaly is directly and simply transmitted. In this case it may be that the hypercholesteraemia rarely if ever skips a generation, though the full syndrome does not always develop. This particular pedigree may, but probably does not, point to something more than simple dominant inheritance, for father and mother were second cousins; and, though the mother's blood was normal, 5 of her 7 step-sibs, blood relatives of the father also, had an abnormally high blood cholesterol. In the absence of a knowledge of other families, this pedigree would be puzzling; but, although it is possible that it does indicate something more than simple dominance, it is unnecessary to assume this. The authors have been led astray in supposing that 7 affected out of 9 probably means a real departure from the 1 : 1 ratio characteristic of simple dominance. Actually a discrepancy as great as 7 of one kind and 2 of another would arise purely by chance 92 times out of 512 on the average, or once in about 5.6 families. Without calculating the chances, however, the authors might have reflected that, in the case of another expected ratio of 1 : 1, the only surprising thing about a family of 7 boys and 2 girls or 7 girls and 2 boys would be the Victorian abandon of the total number.

The cutaneous manifestations are disfiguring and may be painful and disabling, but the most serious complication is the possible involvement of the cardiovascular system. One of this family at the age of 23 walked a mile and a half to church; fifteen minutes later she fell and died. At post-mortem myocardial degeneration and coronary sclerosis were found, death being attributed to the latter. There were orange-yellow deposits in the aorta and, in fact, in all the arteries of the body. A sister had a heart attack at the age of 8. When she was 14 she awoke one night complaining of slight pain. After sleeping till the morning she still complained of the pain. The mother left her for 15 minutes and found the child dead on her return. Another sister, aged 6½, awoke complaining of severe epigastric pain; she died in little more than an hour. A brother was taken ill at the age of 18. He was shocked and apparently in pain, and died in 2½ hours. The sole surviving child with cutaneous lesions was 11½; he presented signs of cardiac involvement. One of the other children with hypercholesteraemia also had an organic heart lesion. The authors suggest that attempts could be made to reduce the blood cholesterol by a suitable diet or by the administration of pancreatic extract, and that this might possibly control the tendency to cutaneous and vascular complications.

DIETHYLSTILBOESTROL FOR PROSTATIC CANCER

The treatment of prostatic enlargement with hormones has proved disappointing. The discovery that an oestrogen produced hyperplasia of the prostate and vesicles in male mice submitted to its action for a considerable time, and that they could be protected from this hyperplasia by simultaneous administration of male hormone, aroused hopes that prostatic enlargement in man would react favourably to injections of testosterone propionate. This hope has not been realized. Testosterone propionate has no effect on the enlarged human prostate, and we are now looking in another direction for help in dealing with this common trouble. In 1940 Kahle and Maltry[1] reported that they had obtained favourable results by treating with diethylstilboestrol patients suffering from innocent enlargement of the prostate. Since then this treatment has been extended to cases of malignant prostate, and two interesting papers[2] on this subject have appeared recently. The first, which deals mainly with clinical observations, is by P. J. Kahle, H. D. Ogden, and P. L. Getzoff, and the second, describing cytologic changes in the growths, is by J. R. Schenken, E. L. Burns, and P. J. Kahle. Although the number of cases treated with diethylstilboestrol is small—namely, 7—the results have been striking. In every instance this treatment brought about prompt relief of pain and urinary symptoms and a general improvement in the patient's health. Two of the cases were very advanced, and even bedridden. Both these patients were restored to activity in 4 and 6 weeks respectively after the beginning of treatment. The size and consistency of the primary growth were favourably affected, and a regression was witnessed in metastatic lesions. In 6 out of the 7 cases biopsy specimens were obtained by means of a resectotome, for microscopical examination before and after treatment. The changes in the carcinomatous tissues are described in the second paper, with excellent photomicrographs. In all 6 cases treatment was followed by regressive changes in the nucleus and in the cytoplasm of the malignant cells.

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[1] *Arch. Derm. Syph.*, Chicago, 1942, **46**, 1.

[1] *New Orleans med. surg. J.*, 1942, **93**, 121.

[2] *J. Urol.*, 1942, **48**, 83, 89.

It is difficult to explain why oestrogenic substances should produce this effect on carcinoma of the prostate, or to decide whether they have a direct action on the malignant cells or work indirectly through the pituitary. The observations made by C. Huggins on the beneficial effect of castration in cases of malignant prostate are of interest in this connexion. It has even been suggested that, when benefit is obtained from deep *x*-ray therapy, it is due to accidental irradiation of the testes, with a resulting diminution in the secretion of male hormones. (R. D. Herrold has also reported an improvement in the clinical condition of patients suffering from carcinoma of the prostate, after the oral administration of diethylstilboestrol.) The authors of the paper under review prefer the intramuscular route as being more certain. One of their patients received as much as 503 mg. of diethylstilboestrol in 70 intramuscular injections of 5 mg. each and 153 injections of 1 mg. each. No ill effects were observed from the treatment, with the exception of a transient gynecomastia in 1 case. Although it is not claimed that a complete cure has been obtained by this treatment, the results have been gratifying. Carcinoma of the prostate has so far defied the best efforts of surgeons and radiologists alike, and any new form of treatment that brings even only alleviation of symptoms is to be welcomed. The follow-up study of these cases will be eagerly awaited.

ELECTRICAL RESISTANCE OF FACIAL SKIN

Measurements of the electrical resistance of the skin afford a simple means of defining the areas affected by sympathectomy, for slight heating in a hot-air bath greatly reduces the resistance of normal areas but not that of denervated areas; the line of demarcation is a sharp one. The latter areas correspond with those which do not sweat (shown by the starch-iodine test) at ordinary room temperature. Normal people show a high skin resistance in all parts of the body, except in well-defined areas on the face, in the axillae, antecubital fossae, and on the palms and soles. The electrical resistance is studied by means of two electrodes wired up with two 4½-volt dry batteries, a potential divider, and a micro-ammeter. One electrode—a half-inch disk of zinc sheeting covered with a paste of kaolin moistened with saturated zinc sulphate solution—is clipped to the ear; the other, movable, electrode is a zinc rod, held in the hand, terminating in a quarter-inch zinc disk which is applied to the skin. Before fastening the ear electrode in position a puncture is made in the skin there with a needle; this lowers the resistance to nothing, for it depends entirely on the skin. The electrical resistance shown by the ammeter depends, then, wholly on that part of the skin to which the movable electrode is applied. The apparatus is so arranged that when areas of high resistance are touched the pointer moves only a few degrees on the scale, while it moves right across the scale whe
low resistance are touched by the electrode.

Facial patterns of electrical resistance hav
studied recently by C. P. Richter and B. G. W
the Johns Hopkins Hospital psychological labor
results of much interest. At ordinary room t
an oval or shield-shaped area of low resistance
one-fifth of that of high-resistance areas, was fou
marked out in 42 young adults; the area incl
and eyebrows, nose, contiguous parts of both
lips, and part of the skin below the lower lip
remained the same from day to day. In inf
awake the area was of the same kind, but contra
to one around the mouth only, when asleep.
tests could be made in adults without their awak
low-resistance area of the face corresponds to
facial area of the gorilla, chimpanzee, gibbon,
langur. In bald men it extended up almost t
of the hair under the influence of slight excite
slightly raised external temperature. In warr
temperature the facial area of low resistanc
widely, while in low external temperature it co
it includes only the lips. During sleep, be it
sympathetic nervous system becomes inactive, an
then becomes restricted to the lips. Warm su
cause vasodilatation and sweating, signs of s
activity, and the area enlarges. The patterns o
trical resistance show a close correlation with th
of remaining pain and temperature sensitivity
patients with syringomyelia and syringobulb
apparently depend upon the affected segmen
descending spinal nucleus of the trigeminal n
low-resistance areas are ones of high metabol
and show the highest incidence of skin cancer.

THE "CLINICAL JOURNAL'S" JUB

Our contemporary the *Clinical Journal* celebrates
with a well-stocked number dated Nov.-Dec.,
began publication on Nov. 2, 1892, to provi
teaching by means of lectures, articles, and
cases; and that it supplied a want is shown by t
of the profession and of the teachers who have c
Through a period of great change the *Clinical J*
done good work in keeping practitioners inforn
progress of medicine, and has promoted the study
at the bedside. The jubilee number, which refl
on the editor (Dr. Conner) and on the publish
Lewis and Co.), opens with some medical aph
Sir Arthur Hurst, and with a paper on trial an
endocrinology by Sir Walter Langdon-Brown, v
that modern endocrine therapy was born just a y
the *Clinical Journal*. Dr. E. M. Brockbank
irregularities of cardiac rhythm and briefly r
march of knowledge of the cardiovascular syst
past 50 years. Mr. V. Zachary Cope discusses
peptic ulcer, for which the first successful ope
performed in 1892. Prof. John Ryle, in conc
Gilchrist lecture on the progress and present
medical science, pays a well-deserved tribute
honest and helpful periodical, which goes on it
ruffled by swift change or novel methods or the
of a specialist age." Prof. D. M. Lyon contribut
headed "What do we Mean by Normal'?";
Palmer writes on bleeding after the menop
W. F. T. Haultain on the importance of early
in cancer of the cervix, and Mr. Alex Roche
genito-urinary conditions.

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[1] *Johns Hopk. Hosp. Bull.*, 1942, 70, 442.

War Medicine Series

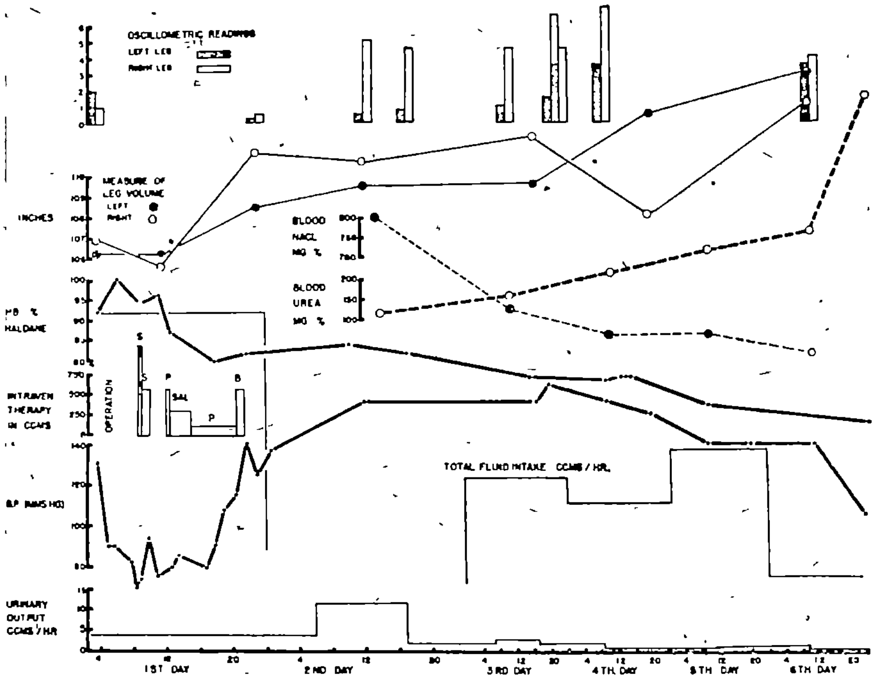
The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

CRUSHING INJURY

BY

E. G. L. BYWATERS,* M.B., M.R.C.P.

In the heavy air raids on London in the autumn of 1940 we attended some patients who had been pinned for several hours underneath the debris of their own bombed houses. Shock was present, which responded adequately to transfusion: the limb which had been compressed was found to be swollen and sometimes pulseless. To our surprise these patients developed renal failure with casts in the scanty urine and died in uraemia about the seventh day. This appeared to us at that time a new entity: it was described as such under the title of "Crush Injuries with Renal Impairment" (Beall *et al.*, 1941; Bywaters and Beall, 1941; Mayon-White and Solandt, 1941). Since then, however, we have discovered descriptions of it by German authors from the war of 1914-18. During that war Frankenthal (1916) and others directed attention to the local muscle damage, and it was not until later that the renal lesion was adequately emphasized (Minami, 1923). The condition had actually occurred in 1909 in people buried beneath the debris of the Messina earthquake, but as the relief expedition arrived on the scene a fortnight after the eruption, only the survivors with gangrene of soft parts were seen (von Colmers, 1909).



CLINICAL COURSE OF A CRUSHING INJURY CASE

Buried 6 hours. Note from above down:

(1) Return of circulation to legs as measured by oscillometer readings.
(2) Increase in leg volume measured by spiral bandage.
(3) Haemoconcentration and later haemodilution shown by haemoglobin level.
(4) Blood-pressure fall and restoration after transfusion.
(5) Decreased urine output with rising blood urea. Urine contained pigment granules and casts and failed to concentrate urea above 670 mg./100 c.cm.

Necropsy showed blanching and necrosis of muscle in both legs and a typical swollen kidney.

Apart from German books on military surgery, we have found no other references to it and no further records of cases. This is curious, since, even apart from the almost continuous warfare since 1918 somewhere in the world, such accidents do occur in the mining industry and have recently been described (McClelland, 1941). Since the first few cases in air-raid casualties were published the condition has been generally recognized here. Hospitals in the Emergency Hospitals Scheme of the Ministry of Health have been asked to notify cases to the Medical Research Council, which now has records of over 70 cases. It is on this group, through the kindness of the M.R.C. and its observers throughout the country, that the following observations are based. About 5% of air-raid casualties in an urban area may be of this type.

Clinical Description

The patient has usually been pinned by the limbs beneath heavy beams or pieces of masonry for a period of several hours. If seen soon after release from this compression he generally appears comparatively well, apart from other coincidental wounds, fractures, etc. Soon, however, he enters the first phase of shock, due to loss of plasma through the damaged capillary walls into the extravascular tissue spaces of the affected limb, which becomes swollen (see Chart). As a consequence, the haemoglobin and corpuscular content of the blood rises relative to the plasma, and vasoconstriction occurs to compensate for the decrease in circulating blood volume. During this first phase the skin is pale, cold, and moist, but the blood pressure is maintained at a nearly normal level. Later, however, vasoconstriction may become unable further to compensate for this leakage of plasma into the damaged area; the blood pressure then falls rapidly. This is the second phase of shock. If fluids such as serum, citrated plasma (plain or recalcified), and blood are given intravenously at this stage in adequate amounts the blood pressure can be restored to normal levels. This is the phase of recovery from shock. There may, however, be failure to respond to intravenous protein-containing fluids if the blood pressure has been allowed to remain at too low a level — below 80 mm. Hg—for too long a time.

Thereafter the general condition of the patient causes no anxiety until the first or second urine passed is noted to be bloody and to contain a pigment in solution similar in many ways to haemoglobin and giving a positive reaction to the benzidine peroxidase test. The urine also contains albumin, creatine, pigmented granular casts, and sometimes pigmented granules somewhat resembling erythrocytes; it is highly acid (pH 4.6 to 6.0) The daily output of urine may become very small despite an adequate fluid intake, but the pigment disappears as a rule after the second day.

Meanwhile, however, the damaged limb has swollen, is hard, tense, and cannot be indented. This swelling is usually progressive for the first four or five days, except possibly in cases associated with blood-vessel damage. The skin shows small petechial haemorrhages, erythematous wheals, and large blisters, related to the areas of direct contact pressure. These blisters are often thought to be the result of burns. They are not. They may occur in crops, related in time to the return of circulation to the damaged part. There is anaesthesia of the limb, often of a patchy distribution due to damage of the terminal nerve fibres, and sometimes of a nerve-trunk distribution. Paralysis, which may be of any severity, is usually present; in many cases arterial pulsation in the peripheral part of the limb is absent, the limb is cold and pale, and the onset of gangrene is to be feared. It is important to record the state of the circulation, which can be followed from time to time with the oscillometer. Sometimes Art and sometimes Nature will restore the circulation; often then the pulsation is greater on the damaged than on the sound side. Whether gangrene sets in or not, the severely damaged patient will continue in a peculiar state of mental apathy, alternating with phases of anxious and apprehensive awareness of his condition, until the end of the first week. During this time vomiting is a prominent symptom, and the blood pressure gradually rises to a level much in excess of the normal. The blood urea, potassium, and phosphate concentrations rise progressively, and the CO_2-combining power of the plasma falls. The urine flow is greatly diminished and, despite the high blood urea, there is failure of the tubules to concentrate urea and other solids, and also failure to reabsorb chloride, even though the blood chloride concentration is low: tubular dysfunction is therefore indicated. Pain in the loins (possibly evidence of stretching of the renal capsule) occurs not infrequently about the fourth or fifth day. Some patients have had severe abdominal pain and rigidity, and have been opened without anything definite being found. This symptom may be related to the kidneys.

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*Beit Memorial Fellow.

The end of the first week is the critical period: in those patients who recover a sudden diuresis is seen, and thereafter the urinary output will rise gradually to very high levels. At the same time the blood urea level falls; the urea-clearance test (of van Slyke) may show improvement of tubular function, although this may not reach the normal level until several months after the injury. During recovery granular and epithelial casts may be noted from time to time in the urine. In the damaged areas skin and muscle may slough away; infection may occur. This is the "pressure necrosis" observed in base hospitals when the initial phases of the syndrome have passed unnoticed. Restitution fibrosis may occur if the damage is slight, a condition resembling Volkmann's ischaemic contracture.

In more severely damaged patients at this critical period some cardiac irregularity may be noticed, and electrocardiograms taken at this time show changes not unlike those seen in experimental potassium poisoning. The serum potassium level may be greatly increased, but it is difficult to say whether it is high enough to cause symptoms (as in the recent work on dogs by Hoff *et al.*, 1941). Too little is known about the balance between intra- and extra-cellular potassium at increased blood levels to be dogmatic on this point. However, we know that potassium is very soon and very easily lost from damaged muscle (Baetjer, 1935) and that it cannot be adequately excreted if there is severe renal impairment. Hoff *et al.* (1941) are of the opinion that, in man, death in uraemia from ordinary causes associated with a high terminal potassium is not a "potassium death," because the kidney can excrete this substance even in extreme oliguria. If, however, there is an increased flow of potassium into the blood stream from intracellular sources (and, in general, intracellular potassium is about 10 times as concentrated as extracellular potassium) it seems possible that this substance may be exerting toxic effects. Measures, such as insulin injection, directed towards the storage of circulating potassium might be found of value in cases in which there are indications of recovery of renal function.

Death occurs very suddenly: the patient may call out in great alarm, and be found pale and sweating, with dilated alae nasi. He may die within one or two minutes, or recover until a similar episode an hour or so later finally terminates his life.

Pathology

Changes are seen in the adrenals, muscle, vessels, and skin, and in the kidneys. There may be other traumatic lesions, such as fat embolism, contusion, or blast-lung. The muscles show one or more of the following types of change (Bywaters, Belsey, *et al.*, 1942):

1. Part of the muscle is blanched, unduly friable and necrotic, resembling fish flesh. The sharp demarcation line corresponds to the skin-pressure areas. This type is due to direct-pressure ischaemia.
2. The whole of the muscle is white and necrotic. This is usually seen in those muscles contained within tight fascial compartments, and it is thought that this necrosis may be due to rise of pressure within the compartment, with subsequent necrosis. It is for this type that fascia-splitting operations have been proposed.
3. The muscle may appear grossly normal, without pallor, but patchy necrosis of isolated fibres may be seen microscopically. It is this type that is associated with arterial spasm, due perhaps to periarterial haemorrhage or direct arterial damage, and sometimes associated with rupture of a main limb vessel without any prolonged crush. This type is thought to be due not to direct-pressure ischaemia but to vasogenic ischaemia. These changes depend upon the survival time and upon the extent of circulatory return.

The kidneys (Bywaters and Dible, 1942) are enlarged and swollen (except in patients dying early); they may show a white zone in the cortex, which is wet and glistening. Microscopically, the collecting tubules and the distal convoluted tubules contain a brown pigment material even in patients dying within one or two days of the injury: the proximal convoluted tubules show cloudy swelling and desquamation. In cases surviving for 3 to 4 days further changes are seen, consisting of areas of necrosis in the boundary zone and in the neighbourhood of distal convoluted tubules in the cortex. These are usually pronounced in the typical case ending fatally at the end of the first week from renal failure: there is oedema and cellular proliferation surrounding the large hyaline casts which are protruded into the interstitial tissue in these regions. Some polymorph infiltration may be seen within the collecting and distal convoluted tubules. The glomerular capsule may show cuboidal epithelium. This appearance is not entirely specific, since it occurs in certain other conditions. For instance, such casts, composed of haem pigment, occur after intravascular haemolysis if the plasma haemoglobin exceeds the renal threshold of 135 mg. per 100 c.cm. (Gilligan *et al.*, 1941). One of the most common causes of haemoglobinuria nowadays is mismatched transfusion. Not only is the morphologic lesion similar, with pigmented casts and, in certain cases, areas of focal necrosis, but the clinical course is also similar, with anuria and death in uraemia.

Pathogenesis

At first it seemed we might be dealing with some such haemolytic reaction, since our first cases had had serum and blood transfusion, but there were three reasons why this appeared improbable. First, the blood used was Group O; secondly, there was no clinical evidence such as chill, rigor, headaches, limb pains, vomiting, or jaundice following transfusion, nor was there any increased colour in the plasma, such as one would expect if any serious haemolysis had occurred. Thirdly—and this seemed the most cogent argument—no such reactions had occurred in any of our shocked and transfused casualties other than buried cases. Later we were to learn that this syndrome developed without any therapy other than "rest and quiet." Extravascular haemolysis, as in a haematoma, has been invoked to explain certain cases (Longland and Murray, 1941). In general, however, following extensive bruising of soft parts, the uptake of freed haem pigment is so slow that there is no rise above the renal threshold, and seldom even jaundice (except locally) unless there is associated liver dysfunction.

Discarding this theory, we were struck by the pallor of the damaged muscle at necropsy. Normal muscle owes its colour to a pigment called "myohaemoglobin," which differs from haemoglobin in several ways, since, although the iron-containing porphyrin group is the same, the globin portion is smaller. For instance, the spectral bands are 30 A.U. nearer the red, and the carbon monoxide span is 30 and not 60 A.U. There are three conditions in which myohaemoglobinuria occurs: perhaps the best known is paralytic equine myohaemoglobinuria. Five cases have been recorded in man, and we have seen a case recently, probably falling into this group: muscle necrosis is associated with myohaemoglobinuria, renal damage, and an increased blood potassium after exercise. In this disease, in the Haff disease, and in epizootic myohaemoglobinuria the muscles are blanched and are the seat of degenerative changes. The next step was therefore to identify this pigment in the urine (Bywaters, Delory, *et al.*, 1941). We were able to do this, using the Hartridge reversion spectroscope and comparing the pigment with myohaemoglobin extracted from perfused human muscle. Dr. Rimington confirmed our findings, and in addition demonstrated another important characteristic. As the molecule is one-quarter the size of that of haemoglobin, it will filter through smaller pores of semi-permeable membranes, and it will also sediment more slowly in the ultracentrifuge. Both of these things occurred, and they are of some clinical importance because they explain the curious fact that no pigment is seen in the blood stream: as the renal threshold is so much lower than that for haemoglobin, there is prompt excretion and no such accumulation in the blood stream as occurs with the latter pigment.

We regarded this identification of myohaemoglobin (Bywaters, Delory, *et al.*) as important not because it might be the cause of the renal failure (although that is possible) but because, like the creatinuria it was associated with, it definitely incriminated muscle damage. Cases had been cited (often, however, poorly investigated) in which there was no evidence of tissue damage other than lacerations. Since then we have found that crush lesions of trunk muscles often go unnoticed except for this indirect evidence of myohaemoglobinuria. Cases do occur, however, in which muscle necrosis follows not direct compression ischaemia but ischaemia due to arterial spasm or rupture of main arteries, and these cases may also develop renal failure (Bywaters, Belsey, *et al.*, 1942).

Was this pigment responsible for the renal failure? In the similar case of haemoglobinuria with renal failure following intravascular haemolysis the simplest theory is that the pigment blocks the tubules. Baker and Dodds (1925) demonstrated that in acid urine with high salt content the pigment changes to the less soluble acid haematin and is precipitated: with large and repeated doses under these conditions renal failure could be induced. Hence alkalinization of the urine (Bushby *et al.*, 1940) became the practice with all patients in whom a haemolytic reaction was to be feared.

Certainly, in these crush cases, oliguria, due to shock, and an acid urine are seen, and myohaemoglobin behaves similarly to haemoglobin under these conditions. Animal experiment has shown that in the rabbit, whose muscles contain no myohaemoglobin, muscle necrosis reproduces all the signs and symptoms of crushing injury except myohaemoglobinuria and renal failure. When myohaemoglobin in a quantity comparable to that excreted in human crush cases was injected into the rabbit acidified with ammonium chloride, we were able to produce death from renal failure. It seemed possible that partial blockage brought about a rise of intrarenal pressure, and this in turn led to irreversible renal failure.

The proof of this theory will lie in the prevention of renal failure in man by administration of alkali. As yet the validity of the theory is undecided, and the exact mechanism by which muscle necrosis produces renal failure has not been fully explained.

Associated Features

Crushing injury is often associated with other lesions which complicate both the clinical picture and the treatment. Of these the most common is haemorrhage, which may be internal or external. Haemodilution occurs after a variable number of hours, and if haemoconcentration due to plasma loss occurs at the same time the net change in haemoglobin may be *nil*. Fat embolism (Robb-Smith, 1941), often associated with fractures, may occur. The lung symptoms are manifest a few hours up to a day after the injury, and consist of pain in the chest, dyspnoea, pallor or cyanosis, and congestion. Systemic embolization occurs later, on the second or third day, with fat globules in the urine, petechiae, and a surly stupor or delirium. Thus uraemia has seldom an opportunity to develop unless the fat embolism is of a minor grade producing a delayed pneumonic process. Blast or concussion injury of lung is less common (Zuckerman, 1941): it may be present as slight dyspnoea with frothy blood-stained sputum and a ruptured drum or, later, lobar pneumonia. Another condition sometimes met with is carbon monoxide poisoning.

Differential Diagnosis

Oliguria may be due to oligaemic shock alone, to dehydration from vomiting or inadequate intake, to blockage by acetylsulphapyridine crystals, or to a mismatched transfusion: examination of the urine and blood, investigation of the blood pressure, and an intake chart are necessary to differentiate these conditions. Cortical necrosis has occurred after traumatic injury to the liver with necrosis. This is very rare. There is often a temporary retention of urine, disclosed as such by the passage of a catheter.

Haematuria from direct injury and haemoglobinuria from exposure to cold are differentiated by examination of the urine and the use of the spectroscope.

Limb-swelling may be due to a haematoma: the skin wheals are absent and there is no doughy feel to the muscle. Skin wheals may be mistaken for burns.

Prognosis

The prognosis depends on many factors—first, on the amount of muscle necrosis. If compression is for a shorter period than one hour the muscle survives unless arterial spasm prolongs the ischaemia. If longer than 4 hours, necrosis ensues. For periods between, tissue survival may depend on temperature. Curiously, periods of burial longer than 12 hours seem less serious than shorter periods, perhaps because only the least-hurt patients survive, perhaps because of a natural self-amputation and failure of the circulation to return to the part. The amount of necrosis in our animal experiments determined the height and duration of the haemoconcentration. Once the patient has recovered from shock, renal damage decides the outcome. Arm crushes have a better prognosis than those of the leg, perhaps owing to the smaller amount of muscle. The presence of other injuries adversely affects the result; the rapidity with which treatment can be started probably also does. About one-third of 70 cases have recovered; these were mostly minor cases without severe shock or uraemia—a class of case that is being increasingly recognized. However, a case has been seen (Bywaters, Belsey, *et al.*, 1942) in which the blood urea rose to 470 mg., and yet, without any treatment at all, on the critical seventh day a diuresis occurred and was followed by recovery. Claims of successful treatment have therefore to be very fully substantiated.

Summarizing, extent of injury, degree of haemoconcentration, oliguria, and blood urea rise constitute the four chief determining factors of prognosis.

Finally, one patient whom I saw through the kindness of Dr. Grant, whose patient he was, had drunk four pints of beer just before the establishment was demolished. They dug him out 11 hours later with both legs broken. In spite of a fairly high blood potassium level he recovered, but showed little haemoconcentration or uraemia. The possible protective action of this beverage might be worth investigating.

Treatment

The natural tendency under emergency conditions is to treat shock first, then the local limb condition, and lastly the renal failure on or about the third or fourth day, when signs of renal damage are obvious. Since it is possible that the renal damage occurs soon after the re-establishment of an adequate blood supply to the damaged limb, these three aspects should be considered in the reverse order.

1. Ample alkaline fluid (3 litres daily), by mouth preferably, or by rectum, intramuscularly or intravenously, must be given rapidly at the earliest possible moment, to produce an alkaline diuresis. If possible, this should be done while the patient is still trapped under the wreckage. We favour for ingestion an alkaline fluid flavoured with citrus juice or peppermint and glucose, containing sodium citrate and sodium bicarbonate, 3 g. of each to the ounce. Coffee or tea is also useful, and morphine should be given if required. For intravenous injection, isotonic sodium citrate (3.8%) or sodium lactate (M/6) should be used. Enough alkali should be given to make the urine alkaline: this will mean probably 30 to 40 g. daily or more by mouth, or a lesser quantity by intravenous injection. If tetany is induced, calcium gluconate should be given intramuscularly. Potassium salts must not be used. Sodium sulphate (2%) may also be injected intravenously in combination with the above measures to maintain urine output.

2. With the kidneys thus protected, it is safe to restore the circulation by combating shock, if this is present. Plasma or serum should be given, or, if there has been much haemorrhage, blood. A large quantity may have to be administered: so long as the arterial blood pressure remains low no harm need be feared. Saline is of no value. Overheating the patient is dangerous.

3. Local treatment to excise wounds and set fractures may now be undertaken. The limb may have to be amputated: if this possibility is considered on the first day it should be done soon, to prevent the absorption of autolytic products. A tourniquet may be useful. Amputation later may not save life, and should be done only if the limb is non-viable. Active measures to restore circulation in the damaged limb (only permissible once it is assured that there is an adequate alkaline diuresis) include elevation of the leg, incision of fascial sheaths, stripping of a damaged artery, or the use of alternate positive and negative pressure. Vasodilatation is best assured by giving alcohol and warming the body. The limb should be kept cool rather than hot, perhaps with bags of ice. This delays autolysis and decreases local metabolic needs in ischaemic tissue (Allen, 1938). Whether limitation of swelling by plaster-of-Paris (Trueta), tight binding, or inflatable rubber bags (Patey and Robertson, 1942) will do more than limit plasma loss into the leg (Duncan and Blalock, 1942) is uncertain. There is as yet no evidence that it will prevent renal damage.

It must be remembered that we are treating not only an injured limb but a human being who has passed through an exhausting and terrifying ordeal. Pain must be relieved and steps taken to see that the patient is comfortable in body and mind.

If by these means a fatal outcome, either from shock on the first day or from renal failure on the seventh, can be avoided, we have left a patient with severe muscle damage. These muscles may remain paralysed or may shorten, giving rise to Volkmann's contracture. They should be adequately splinted and exercised. If sloughing and gangrene occur, infection should be controlled.

In conclusion, this was until recently a little-known type of injury: we still know very little about its exact mechanism and how to treat it. Further observations on the effects of controlled and adequately followed treatment are needed.

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CANCER RESEARCH IN YORKSHIRE

The Yorkshire Council of the British Empire Cancer Campaign, according to its sixteenth annual report, has carried through its last year's work without any further curtailment of research, and the programme has been about half that of a normal year. Apart from research, the Council continues to support the services of the radium officer and physicist in the radium department of Leeds General Infirmary, where a new deep-therapy apparatus has lately been installed, towards the cost of which the Council has granted £1,000.

The report embodies an account by Prof. E. D. Passey of some continuing work on experimental carcinogenesis in the department of experimental pathology and cancer research in Leeds University. The induction of pulmonary cancer in mice by intranasal administration of carcinogenic hydrocarbons has produced an unexpected result in the appearance of breast tumours in several experimental animals, suggesting that the genetic constitution of an animal is not a determinative factor in the occurrence of mammary cancer when some of the highly potent carcinogenic compounds are concerned. Another piece of work in this department has been an inquiry into the part played by heredity in the production of mammary cancer. The inquiry so far, which has included the investigation of the family history of 600 women in Leeds with cancer of the breast with a view to finding the incidence of cancer in their relatives, lends little support to the suggestion that heredity plays an important part in breast cancer in this country. Breast cancer does not appear to stand out as a family disease. Only in four of the 600 families was breast cancer reported as occurring in more than two relatives of the basal patient.

In the department of pathology and the field laboratory of the University of Sheffield Prof. H. N. Green reports attempts to correlate the results of investigations on bacterial growth and on the abnormal tissue growth of cancer. One aspect of this work, which is still proceeding, is the testing of chemical carcinogens, in view of their growth-inhibiting action on the whole animal, for a possible inhibitory action on bacterial growth. It is pointed out that if the mode of action of a carcinogen can be studied on bacteria the rate of progress in such studies may be speeded up enormously. Moreover, it is conceivable that there is no fundamental difference between the bacterial cell which has developed resistance to a cancer-producing agent and the tissue cell which in developing resistance displays, in relation to other types of tissue cell, the properties recognized as cancerous. A report from the same department describes two experiments designed to discover whether the epithelial proliferation induced by oestrogens in the breast and uterus and in the accessory sex glands would render them more susceptible to the action of a carcinogen which has no specific effect on these tissues. It appears that, provided the amount of carcinogen is sufficiently high to produce tumours with certainty in all the animals treated, or if the tissue is not susceptible to the carcinogen used, the effect of possible auxiliary or complementary factors in carcinogenesis is completely hidden.

VENEREAL DISEASE: APPLICATION TO SCOTLAND OF REGULATION 33B

The Department of Health announces that in the application to Scotland of the Defence Regulation dealing with venereal disease "special practitioner" is defined as a registered medical practitioner who provides treatment under a local authority's venereal disease scheme approved by the Secretary of State for Scotland; or a specialist in venereal disease in H.M Forces or Dominions Forces; or any other practitioner designated for the purpose by the Secretary of State for Scotland

The Secretary of State has made arrangements similar to those made by the Minister of Health (*British Medical Journal*, Nov. 21, 1942, p. 616), and copies of the general directions, forms, and notes may be obtained from the Secretary, Department of Health for Scotland, St. Andrew's House, Edinburgh, 1, or from the medical officer of health of any county or large burgh.

EFFECTS OF RADIATION ON X-RAY WORKERS

The Minister of Health has issued a circular (No. 2718) bringing to the notice of local authorities and voluntary hospitals a service which the National Physical Laboratory is prepared to render for testing the amount of radiation received by workers in *x*-ray departments. Although the service is intended primarily for hospitals, it is open to any person who uses *x*-ray apparatus or to any institution which employs workers who use *x*-ray apparatus.

The initial test (which should normally suffice) consists of each worker carrying a dental film in the breast or waistcoat pocket for a week. These films (one film per person) can be obtained on request from the Director, National Physical Laboratory, Teddington, Middlesex, together with a record card and instructions for use. On receipt of the exposed film and the record card, and a remittance of two shillings per film, the Laboratory will furnish a report. If the results are satisfactory, the test should be repeated, and fresh application made to the Laboratory, at three-monthly intervals. If the initial test shows unsatisfactory results, the Laboratory will be prepared on request to undertake the more elaborate investigations required The fee for any such investigation will be of the order of £5, together with any travelling or subsistence expenses incurred.

C. L. Prince and S. A. Vest (*J. Urol.*, 1941, **46**, 1129), who record the fifteenth genuine case of leiosarcoma originating in the prostate in a man aged 52, state that leiosarcomas form a definite entity and differ pathologically and clinically from other sarcomas of the prostate. They are of a somewhat lower degree of malignancy in the adult than other types of sarcoma of the prostate. The average duration of life in leiosarcoma of the prostate is 3.2 years in patients over 20 and 2¼ months in patients under 20. The authors' case is the first in which a pre-operative diagnosis was made and complete removal of the prostate carried out. The patient was completely well and free from metastases one year after the operation.

Correspondence

The Sulphonamide Problem

SIR,—Your correspondents Col. L. W. Harrison and Dr. P. W. Hamond (Oct. 31) have undoubtedly raised an important question with regard to the dangers of haphazard administration of sulphonamides in the treatment of gonorrhoea. There seems little doubt, however, that inadequate dosage and the consequent risk of the production of drug-resistant strains of organisms represent merely one feature of a wide and serious problem.

Surely the time has come for both the medical profession and the general public to recognize that the sulphonamides are, without exception, a potentially dangerous group of drugs: a group, moreover, which from being the boon of our age bids fair to become our curse. I include the general public because these drugs have been widely publicized and have a popular appeal. It is by no means unusual in these days to meet the question, "Aren't you going to give me M & B, doctor?" It would appear to be a matter of no little urgency that sulphonamide therapy be put on a really scientific basis, with due regard both to adequate dosage and to the risks involved. Anuria, haematuria, jaundice, agranulocytosis, leucopenia, and skin eruptions represent merely some of the more obvious side-effects one may be liable to encounter unless adequate precautions are taken, and some of them, moreover, despite every precaution.

I venture to suggest that the following rules should be applied in every case:

1. An established diagnosis; a raised temperature, of itself, being no indication for sulphonamide therapy, though it is, unfortunately, only too often considered as such in these days.
2. The appropriate member of the group to be chosen—i.e., sulphanilamide in haemolytic streptococcal infections, sulphapyridine or sulphathiazole in pneumonia, gonorrhoea, or meningitis, and so on.
3. Dosage should be adequate, our aim being to obtain an optimum blood concentration of the drug as soon as possible, total amount in any one course, however, not to exceed 25 grammes.
4. A high fluid intake with a careful check of both intake and output.
5. Routine administration of alkalis. Methylene blue is also useful.
6. Regular urine testing and blood counts.
7. The patient should be kept strictly in bed. This point is, perhaps, controversial, but it forms a natural corollary to Rule 3.—I am, etc.,

E. A. GERRARD, M.D., M.R.C.O.G.,
Royal Naval Auxiliary Hospital. Surg. Cmdr., R.N.V.R.

Child Health

SIR,—We have read with great interest Capt. Eric Townsend's letter (Nov. 7, p. 558) on child health, and are indeed glad that he has allowed himself "the expression of views that have long struggled for opportunity of outlet," and would assure him that the British Paediatric Association is in cordial agreement with his views and is engaged in taking steps which, it is hoped, will ensure their realization. Recently several subcommittees were set up by the association "to collect, collate, and co-ordinate" some of "the knowledge we already possess" of child health; some of the reports of these committees have already been made public and others will follow. Actually one of these reports was the subject of an annotation in the *Journal* of Nov. 14 (p. 582) under the heading "How much Vitamin D?" Other reports deal with neonatal morbidity and mortality, the pasteurization of milk and prevalence of milk-borne diseases, the effect of female labour on breast-feeding, day nurseries, child delinquency, the incidence of rickets, immunization against infectious diseases, and tuberculosis in childhood. In the necessary investigations the association has received valuable help and co-operation from medical officers of local authorities—some of whom have served as members of the subcommittees—help which is a happy augury for work in the future.

The British Paediatric Association has also drawn the attention of universities, medical schools, and examining bodies to the importance of adequate instruction and examination of medical students in paediatrics. In the view of the association, paediatrics should take the same place in the final examination in the United Kingdom that it does in America and Canada —i.e., it should form one of what would then be the four major subjects in the final examination.

The picture which Capt. Townsend draws of the future of the infant welfare clinic, in which the general-practitioner paediatrician takes a large share in association with the medical officers of the public health service, health visitors, etc., and a consultant paediatrician, is one which the association will strive with all its influence to bring to realization. Such an arrangement has, of course, also been envisaged by the Medical Planning Commission of the B.M.A., and we are convinced that only by some such scheme can the best welfare of the child be achieved.—We are, etc.,

LEONARD PARSONS,
President, British Paediatric Association
DONALD PATERSON,
Locum Secretary, British Paediatric Association

Proposed L.C.C. Medical School

SIR,—In your issue of Nov. 7 (p. 554) a summary is given of a report presented to the L.C.C. by its General Purposes Committee, and it is stated that the report is in favour of a statement of evidence to be given by the Council to the Interdepartmental Committee on Medical Schools, etc. The outstanding feature of the report, and, therefore, the one which is likely to cause most discussion and difference of opinion, is the proposed establishment of an undergraduate medical school founded upon the hospital services of the L.C.C.

I hope it will not be thought unbecoming for a former chief medical officer of the Council to express both disappointment and disagreement with this particular proposal. I do so because I am convinced from long experience of municipal and voluntary hospital work in London, including membership of the committees of two of the largest medical school hospitals, and also as one of the founders of the British Postgraduate Medical School, that the Council would be well advised to concentrate all its activities in connexion with medical education upon: (*a*) the further development of postgraduate medical education in London, and (*b*) the provision of still further facilities for undergraduate medical education in L.C.C. hospitals by closer and more intimate co-operation with *existing* medical school hospitals, particularly from the point of view of teaching.

This was the clearly defined policy of the Council for many years before war broke out, and in so far as co-operation with the teaching staff of the medical schools is concerned, I feel sure that all the deans of the medical schools in London will agree that the facilities referred to under (*b*) were developing most satisfactorily in a great variety of directions. Likewise the foundations of a first-class postgraduate medical school were well and truly laid, and only time for further developments was required when unfortunately war broke out. Moreover—and it is by no means an unimportant fact—the relationship between the Council hospitals and the voluntary hospitals of London was gradually growing into a practical working partnership and mutual understanding of each other's problems. The next desirable step would have been a scheme which we had in mind, whereby the teaching staff of the medical school hospitals would, wherever possible and desirable, be appointed to the consultant staff of the linked-up L.C.C. hospitals, thus overcoming certain practical difficulties in connexion with bedside teaching which were apparent to all of us. Unfortunately the outbreak of war prevented the development of this and many other desirable developments in connexion with (*a*) and (*b*).

More than three years have passed since my retirement from the Council's service, and therefore one cannot claim the same intimate touch with problems of medical education, etc., as in pre-war days. Nevertheless, I am still very strongly of the opinion that there is such an immense field for the development of postgraduate medical education in London, the metropolis of the Empire, that it seems to me to be a thousand pities for the L.C.C. to embark upon an entirely new policy, such as the creation of a municipal undergraduate medical school, instead of concentrating on postgraduate medical education and additional facilities in the Council's hospitals for undergraduates from existing medical schools. In both of these directions the Council can claim to have made a great contribution and to have rendered notable service to medical education, and, therefore, personally I deeply regret the proposed departure from the policy which characterized pre-war years.—I am, etc.,

Criccieth FREDERICK MENZIES.

X-ray Department at Health Centre

SIR,—Dr. J. V. Sparks (*Supplement*, Nov. 7, p. 57) makes the following comment on the proposal for "a small x-ray department" in a medical health centre: "This wording, which may be misleading, suggests to me either (1) that the department would be small or (2) that it would be equipped with apparatus of small power." Has he not missed the most important implication—i.e., that being a small department it would be equipped with a small-powered unit with which only simple examinations would be made, which would not require the services of an experienced radiologist? Surely there will be no question about the adequacy of the size of the department, but his opinion about the size of the unit may be challenged. The unit supplied is hardly likely to be less than the 30 mA unit. Now, in the hands of the expert this is a very efficient machine and would be adequate to do all the reasonable investigations at such a centre. But it is not the power or size of the unit which matters so much as the ability of the person using it, in both technique and interpretation. Generally speaking, the less efficient the unit the greater the ability necessary to use it, and not as suggested, for he admits that "the small-powered plant might give sufficient indication of the need for a further examination, but this might not be true for those cases where the initial findings were negative or presumed to be normal. Many examples could be cited of the dangers of an inadequate or incomplete examination." Surely it is only the person with experience and knowledge—the expert—who will know whether the examination has been adequate. Yet Dr. Sparks in a following paragraph sees no inconsistency in advocating miniature mass radiography as "a *new means* of detecting chest disease and possibly at an earlier stage," though the miniature photograph of the screen image for the detection of the early lesions is very inferior to the direct radiograph which can be taken with the 30 mA unit.—I am, etc.,

Birmingham JAMES F. BRAILSFORD.

Shock Treatment in Psychiatry

SIR,—In principle Dr. Jonathan Gould and his colleagues (Oct. 31, p. 530) are, of course, right to try to find out for themselves the merits of convulsion therapy in various types of schizophrenia. Statistically, however, we have already been shown that such investigations may be very unfortunate for a definite percentage of the recoverably schizophrenic patients treated in this way if the patients are thus deprived of insulin treatment at the earliest possible moment. There is a reasonable literature on this subject, and clinicians can already base their therapy on "prolonged and careful observation" over some years, as Dr. Gould wishes. For instance, the New York State Hospitals have treated over 1,000 patients suffering from all types of schizophrenia with insulin, have treated more than another 1,000 with convulsions, and have used over 1,000 controls. It was found that the patients treated with insulin did, as a group, three times as well as the controls, and that the controls did even better than the convulsion-treated patients. The ratio between the insulin recovery rate and that of the convulsion group was nearly seven to one (*Amer. J. Psychiat.*, 1939, **96**, 297). In England, Hemphill (*Lancet*, 1942, **2**, 152) has reported the poor results of electrical convulsion therapy in schizophrenia (only four of his seventeen early cases even did well). Another article is noteworthy in this connexion: 100 patients, mostly schizophrenics, who had failed to respond to convulsion therapy were subsequently treated with insulin. It was found that no less than 81% of those who could still be treated with insulin in the first six months of their illness recovered, despite the failure of convulsions, but this figure dropped to 25% of those who were not treated until six months to a year after the onset of the illness (*J. nerv. ment. Dis.*, 1942, **95**, 597). The danger of using convulsion therapy, whether chemically or electrically induced, in schizophrenia as a routine measure is that it may give a false sense of temporary relief by its ameliorating effect on the patient's mood, and consequently the use of insulin may in some cases be delayed until it is too late. Convulsion therapy should preferably be used in schizophrenia to get rid of depression, stupor, and inhibition, which may not be responding as well as the more fundamental thought disorder during the course of insulin therapy. Also, in certain cases of depression with a schizophrenic flavour a few fits may be all that is necessary to produce a quick remission. Such cases have not been classed as schizophrenia either in the American figures quoted above or in those of Hemphill, but it is conceivable that some of Dr. Gould's successful cases may fall into such a category.

Dr. Graf's letter (Oct. 24, p. 496) omitted an important point in discussing factors that would lead one to expect a favourable outcome for insulin treatment in schizophrenia. The essential thing is to have the patient early for treatment; given that, the personal skill of the therapist may, as in surgery, be the deciding factor. A reliable American clinic from 1936 to 1938 experimented with insulin treatment in schizophrenia, but the experiments were carried out by a variety of doctors who were taking no risks. Even then, 46% of the patients remitted when treated within the first year of illness. It became obviously worth while to employ a skilled therapist and give deep comas where necessary. The figures of immediate remission in this clinic have now risen to 79% in the same time-group (*Amer. J. Psychiat.*, 1941, **98**, 382).—I am, etc.,

Sutton, Surrey. WILLIAM SARGANT.

Treatment of Gonorrhoea

SIR,—Further to correspondence by Col. L. W. Harrison and Dr. P. W. Hamond (Oct. 31, pp. 528, 529), I would make a plea for local treatment of gonorrhoea by efficient urethral irrigations as an additional therapeutic measure, even though the efficacy of the sulphonamides has proved such a great advance in the treatment of this infection. The exigencies of wartime have not permitted an investigation to obtain statistics for cases treated by chemotherapy alone and by this means plus irrigation; but the impression is inescapable that relapses are more common if local treatment is omitted.

In the V.D. clinic at St. Bartholomew's Hospital we have treated during the past 3 years many cases of chronic urethritis—in the region of 100—which have resulted either from inadequate chemotherapy or even, in a considerable percentage of cases, from what is considered adequate chemotherapy but without irrigations. A large number of these cases were first infections—the greater number, in fact—and not complicated by local abnormalities such as meatal stenosis, hypospadias, etc., which might render efficient irrigation difficult.

The explanation of these relapses may be either that the natural immunity is given time to develop before chemotherapy is instituted—our practice being to irrigate for 4 or 5 days before giving a sulphonamide—or that the resultant disappearance of urethral discharge within 48 hours or so of the start of chemotherapy causes the patient to cease attendance and treatment, thinking, wrongly in the majority of cases, that he is cured. The future of such a patient is to act as a reservoir of infection, as in the case of the female, and as one who is open to all the later complications of gonorrhoea such as stricture, etc.,—I am, etc.,

St. Bartholomew's Hospital V D Clinic. K. R. OGILVIE.

Subcutaneous Ligature of Varicose Veins

SIR,—It is important, at a time when both the written and spoken word are being twisted all over the world for propaganda purposes, that we in our scientific literature should take extra care to check our statements. Dr. H. S. Russell (Oct. 31, p. 529) claims to be the first to use the subcutaneous ligature for the treatment of varicose veins. On April 26, 1941, Dr. Russell in an article stated that "the first case was treated [by this method] 18 months ago." His article led to a good deal of correspondence.

On July 12, 1941, I wrote that I had been using the method for several years, and drew attention to the advantages of using the hypodermic needle method of suturing, which, I said, was to the best of my belief first described by Dickson Wright. In the same issue of the *Journal* Dr. Norbet Schick stated that "subcutaneous ligature of varicose veins was first described by Velpeau and Schede and was soon given up. It was reintroduced and strongly favoured by Kocher (1916), who, in the case of widespread varicose veins, inserted 100 and sometimes more subcutaneous ligatures. Soon after Linser introduced the treatment of varicose veins by injection with sclerosing fluid; a combination of ligature and injection was employed by many surgeons." I therefore feel that Dr. Russell should not claim to be the originator of this method, nor of the use of the Dickson Wright method of suturing, since the correspondence which his article started, and to part of which he replied, brought out quite clearly that he could lay no claim to originality in the matter.

Nevertheless, I do agree with him that the method is a very good one, though by a more extended use of the empty vein technique I find it less necessary. A further refinement is the use of hollow-ended needles into which one can clamp a piece of kal-dermic or other suture material, so as to make it an eyeless suture needle. I obtained both the needles and the clamp from Thackray, and as the needle is curved this makes it easier to dip under the vein without enclosing much tissue or injuring the veins. Though I dispute his claim to originality in regard to the method, I do think that Dr. Russell has done a great deal to bring the method before the British medical profession, which is thereby considerably indebted to him.—I am, etc.,

Hove. H. J. McCurrich.

Palpation of the Spleen

Sir,—In his concluding article on malaria in wartime (Oct. 24, p. 489) Sir P. H. Manson-Bahr says: "There are various ways of performing palpation of the spleen, and new-comers have to learn the correct technique." As Sir Philip does not give details as to what ways he would recommend I may perhaps be permitted to describe a technique (called "Schuster's *Fechterstellung*" in the German-speaking countries) which is superior for detecting minor splenic enlargements to the ways one sees palpation usually performed. The patient lies flat, without a head-pillow, and half turned over to his right side; his left arm is raised with the forearm resting on the top of his head and his left leg is slightly flexed at hip and knee. The examiner, standing or sitting on the right side of the bed, facing the patient, puts his right hand, flat, on the left hypochondrium, the fingers just touching the costal margin, and he increases pressure gradually with the palm of the hand during the patient's deep expiration. The left hand lies centred about the posterior axillary line over the costo-lumbar region, at right angles to and pressing towards the palpating right hand. An attempt to palpate the spleen, as is so often done, with the fingers pressed in under the costal margin stimulates a guarding response of the abdominal wall which prevents perception of any but a markedly enlarged spleen; furthermore, exertion of pressure by the finger-tips blunts greatly the tactile sense of the finger-pads. This point is, of course, also of significance in the palpation of other abdominal organs. Finally, in severely ill patients a deep respiration can sometimes be evoked by letting the patient first hold his breath for a while. —I am, etc.,

Lambeth Hospital, S.E.11 Herbert Levy.

Purpura in Fulminating Meningococcal Septicaemia

Sir,—Dr. A. J. Watson's letter (Nov. 7, p. 558) referring to an earlier letter about the same subject by Dr. E. H. M. Milligan (Oct. 3, p. 405) and to Dr. I. S. Fox's memorandum (Aug. 22, p. 218) interested me as a haematologist very much. I can fully confirm Dr. Watson's findings on blood films. In 1933 a woman of about 60 years was admitted to the 1st Czech Medical Clinic of Prof. Hynek in Prague. She was unconscious, severely cyanosed, and her skin almost all over her body was covered with a purpuric rash and smaller and larger ecchymoses of deep red-blue colour. The white cell count showed a leucocytosis of 85,000, mostly neutrophilic with a strong shift to the left and fairly numerous monocytes, some plasma cells, and a few endothelial cells. Apart from very heavy toxic changes of the neutrophils and monocytes, I saw *intracellular* diplococci in monocytes and in some neutrophils. Platelets were present in fairly normal numbers. The patient, who fell suddenly ill the previous day, died one hour after my investigations. The post-mortem examination showed no special meningeal lesions, but bacteriologically the findings were conclusive for a meningococcal septicaemia. The purpuric rash and ecchymoses were conditioned by bacterial emboli causing numerous infarctions, the base of which was corresponding to the skin haemorrhages. A perpendicular section through these haemorrhages showed the typical triangular shape of an infarction.

As it is evident from this case—see also Naegeli and others—the haemorrhagic diathesis in meningococcal septicaemia is caused by bacterial emboli, and it is very unlikely that these severe fulminating cases with already developed bacterial embolisms could be influenced by sulphapyridine therapy as Dr. Watson suggests. The reverse would be the proof of the highest efficiency of chemotherapy.—I am, etc.,

Warwick Hospital. S. Varadi.

Anaesthesia for Tonsillectomy

Sir,—With reference to Mr. T. B. Jobson's article (Oct. 31, p. 512) on the question of the methods of removing tonsils, and confining myself to operations on children, it would seem to me that the essential point is not whether it should be done by guillotine or dissection, but whether one should use an anaesthetic which permits one to do all that one wants to do. Ethyl chloride is certainly not such an anaesthetic. With its use one is strictly limited as to the time at one's disposal, the surgeon being in effect told: "You have a few moments in which to get these tonsils and adenoids out, and to satisfy yourself that it has been adequately done. If you can't do this by the time the patient is coming round then it must remain undone." Such a state of affairs would not be tolerated by surgeons in any other branch of surgery where adequate alternatives were available.—I am, etc.,

Shrewsbury. E. Gordon Laurence.

Sedimentation Rate

Sir,—The letter of "Rural Practitioner" (Oct. 24, p. 497) rather puzzles me. He says that the sedimentin index estimated weekly or monthly reveals the patient's rate of progress, how long it will take him to get well, and whether treatment is making any difference, in addition to showing how ill the disease is making him. This is, in point of fact, the very information that we have been obtaining from the standard Westergren technique for the last twelve years or more in a large rheumatism clinic, so where the advantage of the sedimentin index comes in is a little hard to see. But perhaps I am misunderstanding him.

With regard to the technique that he employs, may I say that the back of a car on a morning round is not the place to ensure that the tubes are constantly maintained exactly vertical, and that, while I have made no experiments on the effect of vibration myself, one of the pioneers of the method who tried doing the tests in the train on the way home said that he could tell from his results whether he had gone home on a fast or a slow train.—I am, etc.,

Hayward's Heath J. W. Shackle.

Sir,—Mention of the blood sedimentation test seems invariably to invite a storm of criticism. That this should be is an index of the lack of agreement that exists on its clinical value. It is obvious that the position should not remain thus, and organization and publication of the recent researches on the subject are long overdue. The *British Medical Journal* is perhaps the most widely read medical journal in this country, yet since the introduction of the blood sedimentation test in 1917 barely half a dozen papers on it have appeared in its pages (and few of these were edifying). A survey of the literature in British, American, and Continental medical journals discloses that much of it is devoted to technicalities involved in performing and interpreting the test (sedimentin index, etc.), while its clinical side has been neglected. A comprehensive survey of the clinical value of the test would be generally appreciated. Probably the best such study is that of A. Rees Walton (*Quarterly Journal of Medicine*, Jan., 1933, p. 79).

"Rural Practitioner" carries a rack of bloods for the sedimentation test on the floor of his car. What effect does he think the jolting and vibration of the car will have on the readings, not to mention the inclination of the tubes when the car is going uphill or down? It is well recognized that even slight deviations of the tube from the strictly vertical give errors in readings as much as 40%.

The test has, however, its value in rural practice, where other laboratory and *x*-ray facilities are not available, so long as its limitations are fully appreciated. A normal sedimentation rate in a patient with back pain who is elderly and might have metastatic cancer is reassuring to the doctor. The rate is normal in subarachnoid haemorrhage and all stages of acute anterior poliomyelitis, which aids in the differential diagnosis from cerebrospinal fever, in which there is a sharp rise in rate within 6 hours of the onset. Instances of the value of the test are many, but unfortunately are little known or taught outside sanatoria.—I am, etc.,

Ballycarry, Co. Antrim WILLIAM CALWELL.

Control of Tuberculosis in the Home

SIR,—The Principal Medical Officer of the Ministry of Health has foreshadowed a drive in the direction of eliminating the scourge of tuberculosis in this country. The enormous benefit of mass radiography in detecting early cases should not blind us to the greater advantage of getting at the disease further back—namely, at the source of infection. There are still many patients seen at the tuberculosis clinics who cough without covering their mouths, still too many sufferers who live in undue intimacy with their families, still too little fresh air and sunlight in the homes of the afflicted, still great lack of nourishment in the homes of sufferers thereby lessening the resistance of those in contact with the disease.

And what of the psychological attitude of the companions of the patient in his home? The healthy contacts will have their resistance lowered by fear of catching the disease, and yet they must be warned as well as made to realize that if reasonable precautions are taken in the light of modern hygiene the risk to themselves is slight. Clement Dukes stated that "tuberculosis is more a *house* disease than an infectious disease," and this is probably a clue to control.

It has been said that the two most important factors in life are "courage and interest," and this would appear to be of tremendous value in arranging the life of the tuberculosis sufferer and his contacts.—I am, etc.,

London, N.W.11 L. S. WOOLF.

Sending Assistance to Bombed Towns

SIR,—We have read with much interest Mr. F. W. Willway's article (Nov. 7, p. 552) on sending assistance to bombed towns. As we are a hospital which has received outside assistance after an air raid we should like to mention some of the difficulties we encountered.

A detached point of view may be useful, but much more is required before any improvements can be achieved, as each raid will produce its own problems depending on the size and character of the town involved. It is obviously necessary to have some scheme prepared, but common sense at the time is much more important than the most meticulous paper organization. In a small and crowded town disorganization easily occurs, and matters such as communications, food supply, laundry, drugs, etc., can become a much more complicated problem than in a large city, the whole area of which is unlikely to be involved to the same extent in a single raid. Both of us have been working in the casualty services of the City of London throughout all the raids and are not entirely unacquainted with the effects of sustained raids on a large city.

We fully agree that a system of dispatch riders should be available from the onset of the incident, but we entirely disagree with Mr. Willway's "shock troops team." We feel that the sudden invasion of a hospital busy admitting large numbers of casualties by an unspecified number of helpers entirely unacquainted with the local conditions and resources will only add tenfold to any existing difficulties. We found that it was impossible to operate while the bombing was still in progress, and in our view it would be much better that the relieving team should arrive a few hours after the cessation of the raid, in order that preparations may be made to deal smoothly and efficiently with the casualties. It would be of great assistance if the hospital could know beforehand the number and composition of the relieving team in order that arrangements may be made for their temporary feeding and accommodation, and therefore we suggest that the number and composition of the relieving team should be made known and could be expected to arrive, even without notification.

It should be unnecessary to mention that one's temper after a raid is bound to be somewhat frayed, and a display of tact and courtesy by the relieving team would be much appreciated and would do much towards avoiding petty irritations, which may later become magnified out of all proportion. We agree with Mr. Willway that the relieving team should be replaced after 8 to 10 hours, and furthermore suggest that it should be practicable for them to return to their own home; this would make it unnecessary to provide sleeping accommodation as in our case, where a large number of people had to be fitted into small residential quarters. Mr. Willway mentions in his article about the medical staff retiring to bed on the arrival of the relieving team. We were not so fortunate, for besides air-raid casualties we had to deal with other matters which could not be done by strangers, and when, after 36 hours without rest, we wished to go to bed, we had first to evict some of the senior members of the relieving team from our beds, who had decided upon the same "sensible manœuvre"!—We are, etc.,

F. KOHN.
St Martin's Hospital, Bath M. H. HALL.

R.M.B.F. Christmas Gifts

SIR,—On Oct. 17 you very kindly published my appeal to your readers for the Christmas Gifts Fund. I sincerely thank those who have already responded, but I hope many more contributions will be sent as soon as possible. The sum required is over £1,000 and has to be raised early to ensure that the recipients have the gift by Christmas Day.

As I write this letter we are feeling cheered by the recent good war news; may I suggest that we should provide the means of cheerfulness and encouragement for our beneficiaries on Christmas Day. Please send what you can and soon.—I am, etc.,

1, Balliol House, Manorfields, THOMAS BARLOW,
Putney, S.W.15. President, Royal Medical Benevolent Fund.

Obituary

DONALD STEWART MIDDLETON, F.R.C.S.

The medical profession in Scotland has suffered a grievous loss in the death of Brigadier Donald Stewart Middleton, A.M.S., which took place on active service in England last month. Middleton, who was only 43 years of age, was one of the most promising of the younger surgeons in Edinburgh. He was actually born in Natal, South Africa, but his father was an Edinburgh man, and it was to Edinburgh Academy and afterwards to the University that Donald was sent for his education. He graduated M.B., Ch.B. in 1921, and adopted surgery, for which he had a special aptitude, as his branch of practice. Four or five years after qualifying he became Fellow of the Royal Colleges of Surgeons both of Edinburgh and of England. In 1932 he was appointed assistant surgeon to the Edinburgh Royal Infirmary, where his work was highly regarded, and much was expected of his future achievements. At a meeting of the managers of the Royal Infirmary on the day that the news of his death was received a warm tribute was paid to his memory by Mr. W. J. Stuart, convener of the Medical Committee, who said that by his death the Infirmary had lost one who was more than a safe surgeon, and who by his future distinction would have added to its prestige. Other appointments which he held were those of assistant surgeon to the Royal Hospital for Sick Children and surgeon to the Deaconess Hospital, Edinburgh. He was also gifted as a teacher and did excellent work as lecturer on surgery in the School of Medicine of the Edinburgh Royal Colleges. In more than one of the surgical textbooks he was responsible for sections on branches of surgery in which he was interested.

From 1936 onwards Donald Middleton had served in a medical unit of the Territorial Army, and when war loomed ahead he was made A.D.M.S. with the rank of colonel in October, 1938. His administrative ability was such that promotion was rapid, and in the month in which he died he was gazetted as a recipient of the Efficiency Decoration. His three brothers were all killed in the last war, in which he was himself too young to serve. The memorial service in St. Giles' on November 4 testified to the great wealth of friendship which in his relatively short life he had accumulated. Many tributes have been paid to his engaging personality, his exceptional charm of manner, his unselfishness and love of simple things, and his unusual endowment of common sense. He was fond of several outdoor sports, especially riding, and he was a keen angler.

Donald Middleton married in 1930 Sheila, the only daughter of Dr. J. R. Currie, lately Professor of Public Health in the University of Glasgow, and had a son and a daughter.

Joseph Stanley Kellett Smith, who died recently in Cheltenham after an operation, was born in Liverpool in 1870, and studied medicine at Liverpool University, qualifying M.R.C.S., L.R.C.P. in 1891, and taking his F.R.C.S.Eng. in 1895. After two years as demonstrator of anatomy at the University, he accompanied the British expedition of 1895-7 to Central Africa, whence he returned to take on his father's practice in Liverpool. In 1911 he practised electrotherapeutics at Eastbourne, and in the R.A.M.C. during the last war he was in charge of electrotherapeutics at Summerdown Camp. After the war he was superintendent of the West of England Convalescent Centre at Saltash until 1923. He took the D.M.R.E. in 1924, and went to Cheltenham, where he practised radiology and electrotherapeutics until a few days before his death on Sept. 23. He wrote several articles dealing with curvature of the spine, flat-foot, sacralization of the 5th lumbar vertebra, etc., and was hon. consulting radiologist to Tewkesbury and Burton-on-the-Water Hospitals, and a member of the B.M.A. Kellett Smith's vigorous and genial personality (writes a colleague) endeared him to all. He had a sound knowledge of surgery and he took infinite pains. He was always anxious to help any of his colleagues, and it was a pleasure to him to demonstrate a barium meal or an unusual fracture. He was the best type of Northcountryman, and stood always for the highest principles of the profession. His only son, who studied at St. Thomas's, is now serving in the R.A.M.C.

On Nov. 3 there passed away a physician who occupied a unique position in these times. It is not many men who throw over the practice of medicine to devote themselves to a life of pure study and contemplation. **Herbert Edward Izard** qualified from Guy's in the year 1896 and went to Cheddleton to study diseases of the mind and to Manchester for diseases of childhood. Thence he went to a general practice in East London. It was here that he began to think of even deeper problems, and the result was that Dr. Izard sought admission to the Catholic Church and to the Benedictine Order, and ultimately became a priest and a contemplative monk. He finally settled at Quarr Abbey, where he became the infirmarian to the Community. Nor did he ever lose interest in the advances of medicine, and he loved to learn from visiting doctors. His scientific training found an outlet in a staunch upholding of the theological aspect of psychopathological conditions. The *Journal of the Guild of S. Luke* was rarely without an article from his pen. He was in consequence a man much sought after by those in trouble. He knew both sides of religion, Protestant and Catholic: he knew both sides of life, material and scientific. He will be very much missed both by the Community with whom he had lived for the last twenty years and by many more in the world outside who came to him for his wise advice in their spiritual and even physical difficulties.—C. L. E.

We regret to announce the death on Nov. 3 after a long illness of Dr. **Lawrence Edwin Price**, who had been a leading figure in the medical and public life of Nuneaton. He was born at Port Tipton on March 29, 1879, the son of Edwin Price, M.R.C.S., and was educated at Bourne College, Quinton, and the University of Birmingham. After qualifying M.R.C.S., L.R.C.P. in 1904 he served as house-surgeon at the General Hospital, Birmingham, and then settled in practice at Nuneaton, where he became honorary surgeon to the General Hospital and held a number of public appointments, and was instructor and examiner for the St. John Ambulance Association. He was elected to the Nuneaton Borough Council in 1920 and after holding office as chairman of the Health, Maternity and Child Welfare Committees became Mayor in 1928-30. Dr. Price had been chairman of the Nuneaton and Tamworth Division of the B.M.A., and presi
Branch. During the last war he hel
in the R.A.M.C. in No. 36 Genera
was a J.P. for the county of Warwi

A veteran member of the professi
F.R.C.S., died on Oct. 30 in his 94
he had spent nearly the whole of
that town in 1849, and from Blund
medicine at the London Hospital, qu
the F.R.C.S. in 1875. He returne
general practice, and became medic
and coroner for the borough. He
County Council and became chair
Committee; he was also for a time
subcommittee of the Devon Educa
Annual Meeting of the B.M.A.
Mackenzie was vice-president of th
Children, and during the last war he
for Devon. He was a J.P. for the
and in 1924 his long and notable ser
of which he was an alderman, were
election as a Freeman.

We regret to announce the recen
Josef Loebel. Dr. Loebel was born
after studying in Vienna settled at
slovakia in 1907. In 1926 he bega
articles and popular books on medi
most interesting volume entitled *Lel*
of the discovery of insulin.

Universities an

UNIVERSITY OF C

The degree of M.A., *honoris causa*, h
Alfred Mitchell, lately chief assista
Pathology, and the degree of M.A. u
M.D.Adelaide, University Demonstrato
Bayley, M.B., B.Chir., has been appro
in absence.

UNIVERSITY OF S

Profs. H. N. Green and E. J. Wayne
sentatives of the University on the com
Sheffield Hospitals Council; and Dr.
appointed assistant bacteriologist.

ROYAL COLLEGE OF SURG

At an ordinary meeting of the Counci
Alfred Webb-Johnson, President, in the
Mr. G. T. Mullally, Mr. V. Zachary
and Mr. E. W. Riches were re-elected
Romanis was elected a member, of the

Leave of absence was given to Mr.
to act as chairman of a mission to re
for the armed Forces in India.

The award of a Streatfeild Scholarsh
was reported.

Diplomas of membership and Dipl
granted to the candidates whose name
of the meeting of the Royal College o
lished in the *Journal* of Nov. 14 (p. 59

SOCIETY OF APOTHECAR

At a recent meeting of the Court of
Woodwark, Master, presiding, the repo
Warden, Mr. Warren Low, was receive
Hedley was elected Junior Warden fo
reappointed as the Society's representa
Council. Sir Stanley Woodwark, Sir
and Dr. A. P. Gibbons were appointe
of the Society before the Interdepa
Ministry of Health on Post-war Hosp
tion of Medical Schools. Prof. W.
Examiner in Pathology. It was repor
of 1617, Licence to hold the Hall, G
removed from the Hall for safe custo

The following candidates have sa
subjects indicated:

Surgery.—R. M. Erdman, C. E. P. Gro
Medicine.—R. M. Erdman, T. C. Masson
Midwifery.—P. L. G. Cole, A. M. Ear
T. Y. Martin, J. M. Thomas
Master of Midwifery.—H. V. Corbett; I.

The diploma of the Society was granted t

:ick, R.N., has been mentioned in

varded to Temp. Surg. Lieut. A. D.
y and devotion to duty, and to Surg.
.A.N.R., for gallantry and devotion
estor was lost.

son, V.D., and Prob. Temp. Surg.
R.N.V.R., have been mentioned in

d the Efficiency Decoration of the
P. J. Gaffikin, M.C., late R.A.M.C.,
McCall, Major (Temp. Lieut.-Col.)
. M. Forbes and R. H. Mortis, and
M.C.(T.A.).

THE MEDICAL SERVICES

ANCIS MASON HAYES, R.N.V.R., is
esumed killed" in an Admiralty
n Nov. 14. He was born on Sept.
ed at the University of Cambridge
alifying M.R.C.S., L.R.C.P. in 1940.
Miller General Hospital he entered
. He was serving in H.M. Destroyer

tes in Parliament

Var in Japanese Hands

RIGG told Mr. Granville that so far
had continued to refuse permission
ss and Protecting Power representa-
mps, except in Shanghai and Hong
sits had been allowed. The informa-
of-war conditions in other Japanese-
erefore scanty and unofficial. Little
conditions in the camps was avail-
the prisoners were receiving similar
Japanese troops; these consisted
oles, and fish. European food was
imited quantities of medicines, food,
it on ships returning to Japan with
and others, and they were known
ore and Hong Kong. Owing, how-
Japanese authorities to allow dis-
es under independent supervision,
ds of the Japanese military authori-
to use them for the prisoners. In
changes every effort would be made
the returning Japanese ships to the
able for this purpose. The Japanese
allow the passage of ships carrying
auspices of the International Red

ohn Wardlaw-Milne that it appeared
ey Internment Camp at Hong Kong
since the early days, but there was
wding and a shortage of beds and
ly the general health situation could
ory. There had been no major
ugh there had previously been some
sentery. There had, too, been some
re being treated as well as possible
drugs. Medical supplies in general
e International Red Cross Commit-
ship them to Hong Kong. There
in the camp, and those which had
y to organic diseases. During July
s made by a British doctor of all
results which showed a great im-
May, when the conditions were at
been two medical surveys of the
The first, in April–May, gave an
second, in July, showed a great
efforts of the camp welfare com-
including milk, to supplement the

Hospitals, Dr. Shemelovich, stated that the right kind of medical and surgical supplies were not being sent to Russia at present; that they were short of large quantities of sulphanilamide and its compounds and x-ray apparatus, and that a better exchange of the latest information between Russian, British, and United States research foundations and doctors was required; and whether these matters would receive urgent attention. Mr. LAW: No, sir; medical supplies and equipment are being dispatched to the Soviet Union on the basis of a list of requirements communicated officially by the Soviet Government to the British Government. With regard to the suggestion that a better exchange of information on medical matters between the two countries was required, Mr. Law referred Mr. Adams to an answer given to Mr. Harvey on Jan. 21, and added that the British Government would at all times be happy to give urgent attention to any requests for information or assistance from the Soviet Government.

Diphtheria

Mr. BROWN, replying on Nov. 17 to a series of questions on diphtheria, said he understood that general practitioners in Darlington were encouraged to send to the infectious diseases hospital any case in which diphtheria was suspected, whether clinically established or not, because of the great importance of administering diphtheria antitoxin as early in the disease as possible. During the last 7 years there had been about 800 such admissions, covering all age groups. Of these, 78 were found to be not diphtheria cases, 47 being diagnosed as tonsillitis, and the remainder as cases of bronchopneumonia, Vincent's angina, syphilis, scarlet fever, or measles. Six of the 78 cases proved fatal, and 13 of them were in immunized children. In 1940 and 1941, 61 and 163 cases respectively of diphtheria were notified from Darlington. The numbers of deaths classified to diphtheria by the Registrar-General and assigned to Darlington according to residence in 1940 were, up to 5 years, one; 5 years and over, one; in 1941, up to 5 years, two; 5 years and over, five.

In Southend, 568 children under 5 and 1,355 between 5 and 14 received a full course of immunization under local authority arrangements during the months January to June, 1941. No cases of diphtheria were notified among immunized children. Among non-immunized children 17 cases were notified. None of these cases was rediagnosed. Two deaths occurred among non-immunized children under 5.

Medical News

The Duchess of Kent has become President of the Tavistock Clinic (the Institute of Medical Psychology)

Major B. W. Rycroft, M.D., F.R.C.S., R.A.M.C., has been appointed surgeon-oculist to the King of the Hellenes.

The United States National Foundation for Infantile Paralysis has given a 300,000 dollar grant to Johns Hopkins University for a prolonged study of the disease. This is the largest single grant made by the Foundation since it was organized in 1938.

The Association of Scientific Workers is holding a conference on "Scientists of the United Nations and the War Effort" at Gas Industry House, 1, Grosvenor Place, S.W., on Dec. 5 (2.30 p.m.) and 6 (11 a.m.) under the chairmanship of Sir Richard Gregory, F.R.S., President of the British Association. Applications for tickets should be sent to the secretary, Foreign Scientists Committee, Association of Scientific Workers, Hanover House, 73, High Holborn, W.C.1.

At a meeting arranged by the Wireless Section of the Institution of Electrical Engineers on Wednesday, Dec. 2, at 5.30 p.m., Dr. G. E. Donovan will read a paper on "The Electrical Amplifying Stethoscope and Phono-electro-cardioscope." Members of the British Medical Association will be welcomed at this meeting, to be held in the lecture theatre of the Institution, Savoy Place, Victoria Embankment, W.C.

A revised list (No. 7, Sept., 1942) of treatment centres in Great Britain and Northern Ireland approved by the Minister of Health under the Public Health (Venereal Diseases) Regulations, 1916, has now been issued. It gives the times set aside at each centre for medical examination and treatment.

Dr. Cyril Banks, M.O.H. for Nottingham, was installed on Nov. 20 as President of the Society of Medical Officers of Health.

At the annual ceremony of nominating the sheriffs for England and Wales on Nov. 12 Dr. J. C. Henderson was nominated for Westmorland and Sir Edmund Spriggs for Denbighshire

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales,* except for the relatively large increases in scarlet fever 153 and measles 572, the notifications for infectious diseases were below those of the preceding week. The incidence of scarlet fever is now higher than at any time in recent years.

Measles fell slightly in London and the south-eastern counties, and in Wales there was a large drop from 403 to 295. The biggest rises were in Lancashire 150, Derbyshire 136, and Yorks West Riding 124.

Notifications of dysentery were half those of the preceding week. The outbreak in Caernarvon, which with 152 cases was responsible for the large rise last week, contributed only 5 further cases. There were 37 more cases in Yorks North Riding (Middlesbrough C.B. 34), the largest total recorded during the eight weeks the outbreak has persisted in this area. The only other totals of importance were London, 14 cases from six boroughs, and Durham, 14 cases from five administrative areas.

In *Scotland* a rise occurred in cerebrospinal fever, measles, and scarlet fever. Measles, with an increase of 87 due to the experience in the large towns, reverted to the level of a fortnight earlier. Cases of cerebrospinal fever were recorded in twelve areas, the largest centre of infection being the city of Glasgow with 13 of the 30 cases. A small general rise in the incidence of scarlet fever was reported from the western area of Scotland.

In *Eire* the epidemic of poliomyelitis persists, 18 notifications coming from thirteen areas. According to the daily press a serious outbreak of typhus has occurred in the district of Spiddal, Co. Galway: 3 cases were reported from this county a fortnight ago, and one in the preceding week. Up to the time of going to press, 13 cases have been notified and an area of 175 square miles has been isolated. It is stated that some contacts have gone "on the run" to avoid medical treatment and isolation. Special measures have been taken by the Ministry of Health to prevent the disease from spreading to Britain. A watch is being kept on sea and air ports and teams of doctors and nurses are ready to be called in case of need.

Small-pox

In the outbreak of small-pox in Edinburgh there have been 20 confirmed cases and 2 deaths. In one case, that of a girl, there was apparently no connexion with the other cases, which had a common source. A case of small-pox reported from Halfway, Lanarkshire, had its origin with the Edinburgh outbreak. At Cowdenbeath a schoolboy has contracted the disease but the source of infection has not been established; there appears to be no relation between this case and the outbreak in Fife or Edinburgh. A suspected case has been admitted to hospital in Perth.

Diphtheria

The campaign for immunization against diphtheria has not yet had any very large apparent influence on the trend of the incidence of this disease. Although the relatively big weekly fluctuations in the totals of notifications mask to a certain extent the differences between various years, there has been a tendency for the recent level of diphtheria to be below that recorded in the last few years. The notifications totalled in four periods of eleven weeks for the last six years illustrate this:

Weeks	1942	1941	1940	1939	1938	1937
1–11	9,969	12,435	7,820	13,034	18,160	13,077
12–22	7,854	10,230	7,511	8,844	12,333	10,332
23–33	7,382	8,808	8,379	8,861	10,457	10,247
34–44	9,551	10,217	12,306	9,698	13,540	15,270

During the 23–33 weeks of 1942 the notifications were approximately 1,000 fewer than in the next best year, but this advantage was largely lost during the 34–44 weeks, when 1942 was only 147 below the next best year. The position may be better than the figures would lead us to believe if the London experience can be applied to the whole country. In pre-war years, in London, an error of 30% occurred in the diagnosis of diphtheria, and since the war this has increased to over 40%.

Returns for the Week Ending November 14

The notifications of infectious diseases during the week in England and Wales include: scarlet fever 2,880, whooping-cough 1,155, diphtheria 940, measles 7,731, acute pneumonia 556, cerebrospinal fever 50, dysentery 148, paratyphoid 3, typhoid 13.

No. 44

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 7.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	65	3	30	1	—	102	3	26	1	3
Deaths		—	1				—	1		
Diphtheria	881	43	259	93	16	915	61	295	28	27
Deaths	16	1	2	5	—	22	1	9	—	2
Dysentery	142	14	53	—	—	123	14	51	—	—
Deaths			—	—	—		1	—	—	—
Encephalitis lethargica, acute	2	—	2	—	—	2	—	—	1	—
Deaths		—	—				1	—		
Erysipelas		—	58	8	4		—	47	11	5
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				30						
Deaths	57	5	10	20	4	59	3	13	25	7
Measles	7,384	—	379	10	44	624	46	19	43	5
Deaths	10	5	—	—	—	2	—	—	—	1
Ophthalmia neonatorum	76	2	18		—	79	3	22		1
Deaths			—							
Paratyphoid fever ..	6	—	—	—		35	4	4	—	
Deaths	1	—	—	—	—	1	—	—	—	
Pneumonia, influenzal*	543	24	9	—	5	553	18	6	—	3
Deaths (from influenza)	19	3	8	—	—	11	1	—	—	4
Pneumonia, primary ..			148	6				152	13	
Deaths		—		8	7		—		11	—
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute ..	18	1	4	18	—	23	—	5	3	1
Deaths		—	—				—	—		
Puerperal fever ..	—	3	11	6	—	—	—	14	1	—
Deaths		—					—	—		
Puerperal pyrexia ..	140	10	15		1	118	6	24		—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	2,736	163	453	55	47	1,204	36	245	60	35
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	8		1	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever† ..	6	—	1	11	3	20	2	3	4	9
Deaths	1	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough ..	965	72	39	33	11	1,955	188	50	15	4
Deaths ..	7	1	—	3	—	9	3	—	—	—
Deaths (0–1 year) ..	324	33	60	32	30	325	23	73	36	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,219	603	57	181	133	3,941	493	558	196	137
Annual death rate (per 1,000 persons living)			13 0	12·1	‡			12·1	13·0	‡
Live births	5,572	650	876	309	249	4,678	443	760	246	200
Annual rate per 1,000 persons living ..			18 1	20·6	‡			15·5	16·3	‡
Stillbirths	202	23	31			157	17	37		
Rate per 1,000 total births (including stillborn)			34					46		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Treatment for Eruption on Scalp

J. A. M. writes: I have a woman patient with psoriasis of the scalp in which the whole scalp is covered with a very thick hard crust which, being entangled with the roots of the hair, is very difficult to remove and when removed leaves a raw painful surface. I have tried all the usual remedies without success. Could any reader suggest a simple method of removing this crust and/or treatment of the condition?

Dressing for Cancer of Breast

"DEODAR" would be grateful for suggestions for dressing a carcinoma of the breast which has ulcerated through the skin and is discharging copious clear fluid as well as pus. Wood-wool tissue, cellulose wadding, and gauze are being used, but something deodorizing would be welcome.

Intractable Urticaria

J. R. would be grateful for suggestions in treatment of an intractable case of urticaria. The patient, a healthy man aged 35, has been a victim for over 2½ years. He is unaware of any exciting cause. The swellings are very tender and painful and vary in size from a pea to an orange. They may appear on any part of the body. The feet, if involved, become so swollen as to prevent shoes being worn, and the lips become pendulous. The spots come out every afternoon after he has been on his feet since morning. Resting will not cause them to disappear. He must actually sleep for several hours before this occurs. He has failed to respond to treatment by elimination diets, colloidal calcium, autohaemotherapy, vaccines, ephedrine, and adrenaline. Protein tests were negative.

Income Tax

Locumtenent: Payment of Commission to Agency

"L.R.C.P." was engaged for a period in 1941 as locumtenent to one firm and later in the same year as assistant in another practice. He paid £23 commission to an agency in respect of these appointments. Can he claim to deduct the amount for income tax purposes?

⁂ There is no legal claim. The expense was incurred to obtain the appointments and not "wholly and exclusively and necessarily *in carrying out the duties*," though it was a natural preliminary thereto.

LETTERS, NOTES, ETC.

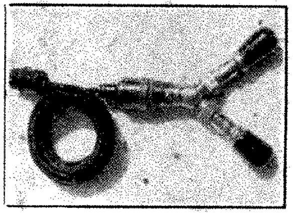
Sulphapyridine in Chronic Suppurating Conditions

Dr. A. FRY (London, S.E.25) writes: A man aged 59 was operated on on June 8, 1942, for an infected right hydrocele and right inguinal hernia. Post-operative hydrocele infection supervened, and the patient was kept in the hospital until July 13. The right scrotum was tender and painful, and there was a persistent discharging sinus. The discharge was thick and purulent. This continued until Sept. 29, and ordinary treatment—e.g., fomentations, etc.—had no effect. On Sept. 29 3 g. of sulphapyridine was given, and the following 6 days 2 g. was given each day. Twenty-four hours after the beginning of the administration of sulphapyridine the pain and discharge from the scrotum disappeared and the patient felt better. He resumed his work as a hairdresser on Oct. 10, and there has been no recurrence since. There was no bacteriological examination of the pus.

Dry Pleurisy

Dr. P. Mc[illegible]. ELDER writes: I read with interest Dr. J. Smart's paper on a new aspect of dry pleurisy (May 16, p. 604). The value of diagnosing those cases of dry pleurisy due to bronchiectasis has been rightly stressed by Dr. Smart, especially from the point of view of the ultimate prognosis and of fitness for employment in the Services. The only objection to routine bronchography would seem to be the danger of obscuring with retained lipiodol an early tuberculous lesion in the follow-up of the non-bronchiectatic cases?

Testing Skin Temperature Sensation



Surg. Lieut. T. DINSDALE, R.N.V.R., sends the following modification of Corner's skin temperature sensation tester (*Lancet*, 1932, 1, 732). He writes: It was designed to avoid the inconvenience of having to use test-tubes filled with water. A large lampholder has an "on and off" switch, which controls one of the two small 230-volt lamps; the other lamp does not light up. Both lamps are treated with cylinder black enamel. I wish to acknowledge the willing co-operation of Lieut.-Cmdr. (E) W. E. H. King, R.N., and also the skilful workmanship of Chief Electrical Artificer H. Frearson in the construction of this instrument.

Colour Film of Air-raid Casualties

This film (see *Journal*, July 18, p. 88) has now been shown to many hundreds of persons interested in first-aid work, and all over the country. Anyone still desirous to have it shown in their district are now invited to write to Mr. J. Magrill, 17, St. Quintin's Avenue, London, W.10, from whom all particulars can be obtained.

Corrigenda

Dr. HELEN MACKAY asks us to make two corrections to the report of the discussion on nutritional anaemia in children appearing at page 586 of our issue for Nov. 14. First, the work mentioned in line 10 of the second paragraph was done by Dr. Lucy Wills, Dr. Richard Dobbs, Lady Bingham, and Dr. Helen Mackay, and not by Drs. Wills and Mackay. Secondly, the sentence, "Of school children examined 90% had an average haemoglobin level of about 80%, and some 10% were lower than even the Davidson series of poor children before the war," should read: "Ninety school children aged 5 to 13 examined last winter had a mean haemoglobin level of 80%, which is about 10% lower than the value of poor Aberdeen children of similar age in Davidson's series."

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journal* of November 26, 1842:

"Mr. Chadwick's report on the sanatory condition of the laboring classes contains an interesting chapter on the comparative chances of life in different classes of the community. We can readily understand that the various causes of sickness and mortality which prevail throughout the kingdom act with increased force upon the poorer orders, or are exclusively exercised upon them. The evil effects resulting from want of pure air, neglect of cleanliness, and inattention to various circumstances which predispose to or directly excite disease, are admitted as a general truth; but nowhere has the influence of these causes been so clearly and effectively demonstrated as in the report of Mr. Chadwick. Death, it has been said, is no respecter of persons, and the adage of the Roman poet, 'Pallida mors equâ pulsat pede,' &c., is familiar to us all; but death is like a dun; he knocks four times as often at the poor man's door as he does at the rich man's. The average duration of the poor man's life in a crowded, dirty court, may be *fifteen* years; while that of the rich man, who dwells in the neighbouring square, may be *sixty* years. The one class disappears from a scene of misery and privation before the other has arrived at manhood.

"The returns, from which Mr. Chadwick has derived his conclusions, appear to have been collected with as much accuracy as the nature of the inquiries admitted, and were generally corrected by local investigation of facts. They lead to conclusions of the most painful nature, mitigated solely by the reflection that the causes which determine such a sacrifice of human life are, in a great measure, under the control of wisely directed legislative enactments. At what period, whether near or remote, the attention of our Government will be seriously directed to this question, we cannot pretend to determine. It is one of pressing and vast importance; yet, while public clamor is raised against the destruction of a handful of barbarians, some three or four thousand miles removed from us, the loss of 80,000 of our countrymen, annually swept off by diseases, the great proportion of which are proved to be preventible, is unheeded, or treated with disregard."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 5 1942

INFECTED WOUNDS INVOLVING BONE TREATED WITH SULPHAPYRIDINE AND SULPHATHIAZOLE

BY

J. F. HEGGIE, B.Sc., M.B. **A. W. KENDALL, M.S., F.R.C.S.**
Surgeon Commanders, R.N.V.R.

AND

R. M. HEGGIE, B.Sc., M.B.
Lately Surg. Lieut.-Commander, R.N.V.R.

(From an R.N. Auxiliary Hospital)

Compound fractures caused by bomb splinters and other high-velocity particles and chiefly infected with *Staphylococcus pyogenes* were treated with sulphapyridine and sulphathiazole in addition to standard antiseptic and surgical measures. From our observations four main conclusions were reached: (1) Chemotherapy is a very necessary supplement to the surgical treatment of staphylococcal osteomyelitis in wounds. (2) Sulphathiazole is more efficacious than sulphapyridine in the treatment of these staphylococcal infections when the necessary blood concentration is obtained by oral or intramuscular administration. (3) Our results and experience in cases of staphylococcal infection established in bone indicate the advantage of combined oral and local administration of sulphathiazole when given at the time of surgical intervention, especially during radical surgical treatment. (4) Sulphathiazole applied locally, alone and unsupported by simultaneous oral administration, is of but limited value in the presence of slight or moderate, but established staphylococcal infection in wounds involving bone even on repeated application, and even after the bulk of the infected focus has been removed surgically.

In the absence of adequate simultaneous chemotherapy the surgical treatment of staphylococcal osteomyelitis complicating wounds may be attended by acute diffuse inflammatory changes locally and by varying degrees of bacteriaemia. Of the antibacterial drugs at present available for general clinical use sulphanilamide, sulphapyridine, and sulphathiazole can effect varying degrees of bacteriostasis. The superiority of sulphathiazole over sulphapyridine and sulphanilamide in such cases is in accord with the *in-vitro* finding that sulphathiazole is the most effective of these antibacterial sulphonamides and is 10 times more bacteriostatic against *Staph. pyogenes* than is sulphapyridine. The optimum times for the administration of sulphathiazole are pre- and post-operatively at sequestrectomy or at the removal of the entire infected focus—that is, when the amount of infection is so reduced that the concentration of free sulphathiazole in the blood and tissue fluids from oral administration, and the higher local concentration in the opened wound area from local application, will ensure maximum inhibition of the growth of remaining staphylococci for the time necessary for these organisms to be killed by the drug or dealt with by the body-defence mechanisms. The meagre results from local application alone are to be expected; for in such instances the high concentration of free sulphathiazole available for effective bacteriostasis (saturated solution in serum or exudate) is limited to a depth of only a few millimetres from the surface, since ready and free absorption of the drug into the lymph and blood streams results in a rapid fall in concentration to an ineffective antibacterial value in the deeper fibrous and osseous tissues of the wound in which staphylococci persist. The cases described below illustrate these points and other observations we wish to make.

Before admission to base hospital, active surgical treatment of a preliminary kind had been carried out, usually within 24 hours of injury; but this interval varied—2 to 3 days was common, 7 to 8 days was the extreme. Sulphapyridine in adequate doses orally, starting from the day of, or that following, the first operative treatment, may have accounted for the good general health and satisfactory progress in some cases found moderately infected on admission. In cases of severe injury the effect of sulphapyridine was less noticeable, but delay in primary surgical treatment probably contributed more to the detriment than sulphapyridine to the benefit of these. After admission cases requiring sequestrectomy received several courses of sulphapyridine to control recurring acute exacerbations of the staphylococcal osteomyelitis. It was in such cases that, after a "control" period of sulphapyridine therapy, sulphathiazole was given.

Persistence of Staphylococcus in Latent Foci

First of all it is necessary to recall and emphasize the persistence of pathogenic staphylococci in the deep and osseous tissues of infected wounds. This is an early manifestation which has its later counterpart in recurring acute exacerbations in the subacute and chronic phases of staphylococcal osteomyelitis. When, after surgical and chemotherapeutic treatment, granulating surfaces and exudates are bacteriologically sterile and the wound is healing well, and when, later, surgical measures prove necessary—e.g., trimming of a stump—organisms in latent foci may rapidly bring about grave local and constitutional disturbances. This case is an example.

Case 1.—Youth aged 17. Sustained three major bony injuries and burns of face and hands. Left foot amputated first day after injury on account of compound comminuted fracture of left tibia involving the ankle-joint. Stump became septic with sloughing (6th day). Admitted to hospital. *Staph. pyogenes* was the only organism recovered. Sulphapyridine 35 g. given in next 6 days. Improvement slow but steady. Clinical sepsis diminished. *Staph. pyogenes* last recovered 42nd day. Stump healed well, fibula protruded for 1½ in.; trimmed 94th day. Within 4 days the wound broke down over a fairly large area. Moderate pyrexia. Sharp anaemia: 93rd day—R.B.C. 4,800,000/c.mm., Hb 96%; 94th day—operation; 98th day—R.B.C. 2,900,000/c.mm., Hb 55%. The excised tissue yielded *Staph. pyogenes* in pure culture from the deeper parts of the granulations, the periosteum, and medulla of the fibula. The anaemia was due to the absorption of the α-haemolysin of the staphylococcal toxin.

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In a previously infected case such as this pre- and post-operative chemotherapy are necessary to secure, at the time of operation and later, an adequate blood concentration of antibacterial sulphonamide to combat transient staphylococcal bacteriaemia and to support a local application of the sulphonamide in providing an effective bacteriostatic concentration of the drug in the wound area against foci remaining after, or foci resulting from dissemination during, surgical intervention. Both oral and local administration should be undertaken in all such cases, for, although either alone may suffice, there are occasions when what may be regarded as "near misses" result from want of the combination. For example, in the next case; but for greatly increased dosage, oral administration alone would have failed to effect the necessary bacteriostasis.

Case 2.—Patient aged 38. Compound fracture lower end left tibia and fibula complicated by secondary haemorrhage and osteomyelitis due to *Staph. pyogenes* and haemolytic streptococci. Healing was slow, and was interrupted by acute exacerbations associated with sequestra. Amputation was decided. Sulphapyridine had not been tolerated well. Haemolytic streptococci were recovered until 49th day; *Staph. pyogenes* was recovered to time of operation and in the amputated limb from the deep granulations and bone. Pre-operatively, sulphathiazole 7 g. in 18 hours to within 2 hours of operation. Drug well tolerated.

Post-operatively, 1st 24 hours, sulphathiazole 9 g.; 2nd 24 hours, 8.5 g. During this period, however, the limb became painful and there was much redness and oedema of the stump; so in the 3rd 24 hours sulphathiazole was increased to 20 g. (4 g. 4-hourly). Acute nausea resulted; fluid intake was much reduced, but there were no urinary disturbances. Effect on stump striking and immediate. 4th day: Diameter of limb reduced by 1/2 in. 5th day: Nausea ceased; fluid intake increased to 5 pints. The serous discharge from the posterior aspect of the wound yielded *Staph. pyogenes* until 10th day. Wound epithelized by 17th day. Further progress uninterrupted. 18 months later: no exacerbations.

In this case we have concluded that the blood concentration of free sulphathiazole in the first 2 days (6.5 mg. per 100 c.cm.) was adequate to stem the bacteriaemia and to effect a certain measure of bacteriostasis locally, but the higher concentration of the 3rd day (8.6 mg.) and the concentrations of the 4th and 5th days (7.25 and 5.5 mg.) were necessary to control the local infection. A local application of 10 g. or thereabouts at the time of operation would have aided bacteriostasis in the stump at the site of amputation, and the much-increased oral dose of 20 g., well tolerated on the 3rd day, might not have been necessary. Alternatively, had the amount of sulphathiazole on the pre-operative and first post-operative days been 15 g., and 10 g. respectively, a further amount of 10 g. on the two succeeding days might have sufficed and no local infection developed.

These two cases stand in marked contrast. In the first, in the absence of continued chemotherapeutic measures, the amputation site became acutely and widely inflamed and broke down, pyrexia and acute haemolytic anaemia occurred, the staphylococcal infection persisted in the stump for 64 days, and healing was delayed until the 70th post-operative day (see below). In the second, using sulphathiazole, infection was controlled almost completely: from want of local application of sulphathiazole at the time of operation staphylococci persisted until the 10th day; nevertheless the degree of bacteriostasis obtained allowed the apposed flaps to heal and the scar to epithelize by the 17th post-operative day. There can be little doubt of the necessity for continued chemotherapeutic measures and for combined oral and local administration.

Superiority of Sulphathiazole in Staphylococcus Infections

It has been shown by Fleming's sulphonamide "impregnated strip" method in culture media that sulphathiazole is 10 times more bacteriostatic than sulphapyridine against *Staph. pyogenes.* The superiority of sulphathiazole over sulphapyridine in staphylococcal infections is fairly clearly demonstrated in the following case, in which the latter sulphonamide effected only partial, temporary amelioration, while the former, although given later, secured complete resolution. It could be argued, however, that in this case the number and virulence of the staphylococci had been reduced by previous treatment with sulphapyridine. Be that as it may, complete resolution occurred within a remarkably short time—10 days—after sulphath
was used, while with sulphapyridine therapy partial reso
only was recorded.

Case 3.—Midshipman aged 18. Sustained tracer
wounds of left leg with much muscle damage. First
treatment was on 7th day after injury; on the 12th a
abscess in leg was opened and muscle sloughs removed.
were two severe secondary haemorrhages, 15th and 21st
and mid-thigh amputation was done immediately afte
second. The patient was dangerously ill; blood transf
were numerous, but anaemia was marked. Pyaemia deve
on 25th day and showed some temporary resolution after
muscular sodium sulphapyridine therapy. Fresh met
foci appeared on 32nd day, but sulphapyridine orally w
minor value. Abscesses were opened at intervals until th
day. Metastatic foci appeared afresh on 57th day. S
thiazole was given orally. Temperature settled and foci sh
resolution within 10 days. Further recovery was uninterr
The patient returned to full flying duties and there we
exacerbations in the succeeding year. Sulphonamides
given as follows: 7th to 11th days, sulphapyridine, orally,
26th to 29th days, sodium sulphapyridine, intramusc
17 g.; 32nd to 35th days, sulphapyridine, orally, 30 g.; 5
62nd days, sulphathiazole, orally, 30 g. Despite the good
of oral sulphathiazole on the resolution of the metastatic
the stump exudate continued to yield *Staph. pyogenes,* the
organism present throughout. Sulphathiazole powder 1
applied locally, and was repeated 7 days later. *Staph. pyo*
was recovered until 20th day after application, but was bec
less haemolytic—1/10 to 1/160 of former value. This l
haemolytic value of the toxin was not permanent, and
recovered somewhat after 6 daily subcultures in ordinary

As in Case 2, the clinical improvement after sulphathi
therapy was much greater than anticipated, and in attri
the benefit to the sulphathiazole the result accords well
the *in-vitro* estimations of the relative bacteriostatic effe
these compounds.

Local Application

The effect of local application of sulphathiazole to a w
already infected is seen in the later treatment of the first
described, in which, after the acute inflammation of the s
had subsided, the local application of sulphathiazole
combined with immobilization in plaster, but unsupport
simultaneous oral chemotherapy.

Case 1 (continued).—Twelve days after stump was trin
temperature settled. Sulphathiazole powder 10 g. appli
raw areas and covered with vaselined gauze, and stump enc
in plaster. 16th day: Plaster changed, only *B. proteus* iso
47th day: Pain in stump, moderate rise in temperature; p
removed. *Staph. pyogenes* recovered from exudate then a
diminishing numbers for another 14 days—i.e., 47th to
days from application of sulphathiazole powder. Epitheli
70th day.

Had a second application of sulphathiazole been ma
the time of changing the plaster (16th day) the infection v
almost certainly have terminated by the 21st day or so.
the powder was seen to be absorbed on the 16th day—th
application was not sufficient to provide adequate concentr
of antibacterial substance for the necessary time in the
jacent tissues, from some residual foci in which reinf
of the wound area occurred. Later experience and estim
of sulphonamides in the washings of wounds showed
sulphathiazole is usually all absorbed at the 5th day.
case illustrates a certain minimum degree of effectivene
one local application alone to bring about bacteriostasis.
following case is an example of the effect of repeated ap
tions of sulphathiazole locally—again unsupported by s
taneous oral administration: this case was relatively
heavily infected at the time of treatment.

Case 4.—A man aged 25 sustained multiple wounds
a shell-burst. The concerned wound was penetrating:
fragment entered at the back of the left arm and came th
the shoulder. The wound became infected; for long there
discharging sinuses. The humeral head showed osteom
after fracture. Following increased pain in shoulde
sinuses were opened up and curetted; no sequestra were f
neither was bare bone seen. Sulphathiazole powder 10 g
packed in the wound. Cultures at 8th day after this were s
but *Staph. pyogenes* was isolated again from 17th day onw
There was an exacerbation on the 45th day; at a further o
tion on the 48th day the head of the humerus, mostly se
trum, was removed, the wound cleared out, and sulphathi

powder (10 g.) packed in wound. 3.3 g. sulphathiazole was excreted in the urine in the first 24 hours. Eleven days later *Staph. pyogenes* was recovered. The wound was re-dressed and sulphathiazole 10 g. in saline–tragacanth sludge used. The wound was examined, cultured, and repacked with sulphathiazole in slowly diminishing amounts (according as the volume of the wound diminished) at 5-day intervals. Healing was slow but satisfactory. Cultures at the first, second, and fourth intervals were sterile, but those at the third, fifth, sixth, and seventh yielded *Staph. pyogenes* in pure culture, but showing diminishing values for the α-haemolysin of the exotoxin in association with the continuous environment of sulphathiazole. The wound was sterile from the 51st day after the second operation and epithelized at the 60th day. Further progress was uneventful.

It will be noted that on each occasion when the bulk of the infection was reduced—after curettage and increased drainage in the first instance, and excision of the infected focus, the humeral head, in the second—the local application of sulphathiazole secured only temporary bacteriostasis: complete sterilization of the wound was not obtained. Sterilization—as judged by cultures from the wound surface and of exudates—occurred for brief periods. Had oral administration been combined with the first local applications at the times of surgical intervention, and the concentration of sulphathiazole in the blood and tissue fluids been thus higher at the time of "opening" of the foci, it is probable that bacteriostasis in deep-seated foci would have been more speedy and complete. And again, it is probable that results would have been more satisfactory *qua* speedy bacteriostasis had the wound been repacked on each 4th day rather than on each 5th, for the patient excreted on an average 3 g. of sulphathiazole daily, with the result that on each 4th day there was only 1 g. left in the depot (that is to say, when the depot was 10 g. in the first instance). Nevertheless we believe that this would have made but little difference so far as deep-seated foci were concerned.

One other factor to be considered regarding the local application of sulphathiazole in ordinary powder form to wounds is the probability that aggregation of particles and clumping occur, hindering solution and interfering with steady diffusion from the depot to the wound area. In Case 4 we made a suspension of sulphathiazole in a saline–tragacanth base. Later we used a glycerin–jelly base, part of the sulphathiazole being first dissolved in the glycerin: the remaining particulate part probably dissolved in the exudate resulting from the lymphagogue action of the glycerin, for in such instances we remarked, the absence from the walls of the wounds of the sulphonamide-impregnated fibrin "felt" sometimes seen when ordinary powder was used.

Effect of Sulphathiazole on Staphylococci

As regards the effect of sulphathiazole on the staphylococcus it will have been noted that in two of the cases described the organisms that were recovered at intervals from the wound areas to which sulphathiazole had been repeatedly applied were altered in character. The coagulase was never affected, but the haemolytic strength of the α-haemolysin was progressively reduced, first to 1/10 of its former value and later almost to zero, when estimated in the filtrate of a standard 24-hour broth culture. This effect was subsequently confirmed by suitable *in-vitro* experiments, using varying inocula of a subculture of the original virulent organisms and varying concentrations of the three sulphonamides. On further repeated subculture in broth from which all sulphonamides were omitted the strains showed recovery in α-haemolysin from almost zero to 1/20 of the original values shown by the virulent cultures when first isolated. It is probable that since the sulphonamides are believed (Fildes, 1940) to act by blocking the enzyme concerned with the utilization of *p*-aminobenzoic acid by the bacterium, the enzyme and the *p*-aminobenzoic acid are necessary to the *Staph. pyogenes* for the elaboration of the α-haemolysin of the exotoxin. We would also add that so far we have not encountered a strain of *Staph. pyogenes* which is sulphonamide-resistant.

Discussion

When wounds involve bone in which staphylococcal infection is established it is common to find repeated courses of sulphonamides necessary in treating the acute exacerbations of the local condition and possible systemic effects. This may be on account of either (i) the inability of the concerned sulphonamide *per se* to bring about complete or the minimum bacteriostasis necessary for healing, or (ii) the relative "inaccessibility" of the focus of infection to the drugs—or both.

The conditions under which the sulphonamides are actively bacteriostatic are now clearly defined. They are *active* only when in sufficient concentration in solution in the blood and other body fluids, 4 to 6 mg. per 100 c.cm. being a minimum level; and in this regard it should be noted that as their solubility in serum and other fluids varies, sulphanilamide being the most and sulphapyridine the least soluble, so also will the rates of absorption and the eventual fluid and tissue concentrations vary. In turn these variations will modify the effective bacteriostatic concentration resulting from the use of a given sulphonamide, for these substances vary also in their antibacterial effect, sulphathiazole being 10 times more bacteriostatic than sulphapyridine, and sulphapyridine in turn 5 times more active than sulphanilamide. Thus the absolute or resultant sulphonamide-bacteriostasis effected at any time is a function of the amount, solubility, and antibacterial index of the particular sulphonamide prescribed. The sulphonamides are *inactive* in the presence of large numbers of organisms and pus cells, and the disintegration products of these and of the tissues and fluid exudates.

The mode of action of the sulphonamides is now fairly well understood. They are directly antibacterial or bacteriostatic and inhibit the growth of organisms by competing with one or more of the essential growth-promoting substances (e.g., *p*-aminobenzoic acid, which is closely related chemically to sulphanilamide) for the enzyme or enzymes concerned with the utilization of these. The presence or absence of growth depends on the relative concentrations, and is proportional to, for example, the ratio of the growth-promoting *p*-aminobenzoic acid to the antagonistic or growth-inhibiting sulphonamide. Certain concentrations of the sulphonamides are thus prerequisite; but, even when obtained, the degree of bacteriostasis effected is dependent on the amount of neutralizing growth-promoting substances present, and these relatively simple chemical substances which promote growth are found in the disintegration products of tissues, pus cells, organisms, and fluid exudates. In the tissues the sulphonamides diffuse fairly freely and relatively quickly, and so from any established depot in a wound the concentration gradient in adjacent tissues shows a steep fall as the drug is absorbed into the general circulation. Again, the concentration in any tissue is a function of the water content, and consequently is lowest in fat, bone, and fibrous scar tissue.

All these things considered, it is perhaps obvious that, in the requisite concentration, this group of drugs will be more effective in cases of slight to moderate rather than in severe septicaemia, and early rather than late in pyaemia; and results will be more favourable *qua* bacteriostasis in the milder forms of these conditions than in cases of established localized infections in which the number of organisms may be relatively great and in which in addition there is serous exudation, a well-developed round-cell infiltration, and granulation and fibrous tissue. Thus, for example, it is agreed that, using sulphapyridine, it is easier to secure a successful result in the treatment of pneumococcal pneumonia than in lung abscess complicating that condition.

Similarly, having regard to the steep diffusion gradient, number of organisms, leucocytic infiltration, and fibrosis of the healing process, the *local application* of sulphonamides to wounds infected deeply would be expected to be of relatively little value. We have noted much delay, failure even, to secure bacteriostasis in wounds in which bone is involved and in which there is subacute or chronic osteomyelitis with sclerosis. The reappearance of the staphylococcus in exudates from such deep foci has been common. In this type of case it has been much easier to effect bacteriostasis or delay the reappearance of the organism by using local applications from the time of sequestrectomy or amputation, when the wound has been opened up or the bulk of the focus removed, than from a later date when infection has reappeared, say, 1 to 5 weeks after operation, when granulations are well formed and fibrous healing is proceeding apace in the depths, and when 5 or even 10 local applications at intervals have been necessary to obtain a measure of bacteriostasis, which even then may be only temporary.

And as, according to the example cited, it is easier to treat to a successful conclusion the pneumonia from the outset than the complicating lung abscess later, so in cases of infected wounds involving bone it is prudent to employ full chemotherapeutic measures at the time of full surgical treatment rather than later, when sequestra and sinuses may have formed in association with established infection. Full surgical procedure is of first importance, but we would emphasize that in cases of the kind considered here the pre- and post-operative administration of a sulphonamide, preferably sulphathiazole, is equally essential, and should be supplemented by local application, especially when many fascial planes have been disturbed or there is much tissue damage. For minimum pre-operative medication, 6 g. of sulphathiazole within 4 hours yields a blood concentration of 4 mg. per 100 c.cm., so that intramuscular and intravenous routes are not always necessary to supply the immediately available sulphonamide requisite in the blood and tissue fluids.

There is little doubt that sulphathiazole should replace sulphapyridine, both orally and locally, in the treatment of such cases of staphylococcal infection, for this drug is better tolerated and has a greater bacteriostatic action. Further, adequate oral administration of sulphathiazole should be continued as necessary, so that essential tissue-fluid concentrations are present when multiplication of organisms occurs or is likely to occur, thus ensuring that bacteriostasis is sufficient to permit the several body-defence mechanisms to operate unhindered or in conditions as favourable as possible.

Comment

While the treatment of infected compound fractures in wounds is essentially surgical, the role of the sulphonamides must not be forgotten or ignored. Sulphathiazole particularly is a valuable supplement. Given orally and locally at the time of major surgical measures, it provides the desired maximum bacteriostatic action when and where the diminished remaining foci of infection are most open to successful attack.

Since staphylococcal osteomyelitis is likely to be a not uncommon feature of many severe wounds sustained in this war by civilians and Service personnel alike, it behoves those concerned with early treatment to ensure that surgical treatment is adequately supplemented by chemotherapy so as to prevent the establishment of infection in bone, the treatment of which is notoriously difficult.

Summary

Sulphathiazole is more efficacious than sulphapyridine in the treatment of wounds with compound fractures that have become infected with *Staph. pyogenes*. The necessity for pre- and post-operative chemotherapy with this sulphonamide is stressed, as is also the combination of local with oral administration, especially at the time of radical surgical treatment. Sulphathiazole applied locally unsupported by simultaneous oral administration is of little value in the treatment of established infections of the kind discussed. Four cases are described illustrating these observations.

Strains of *Staph. pyogenes* recovered from our cases showed diminution of the α-haemolysin production but no alteration in coagulase in association with a local environment containing sulphathiazole. No sulphonamide-resistant staphylococci were encountered.

Our thanks are due to the Medical Director-General of the Navy and to Surg. Rear-Admiral H. E. R. Stephens, R.N., for permission to record these cases. We are indebted to Messrs. May and Baker Ltd., who kindly supplied the sulphathiazole used in the treatment of our early cases; and to Sick Berth Chief Petty Officers F. C. Prince and A. R. Woodman for technical assistance.

REFERENCE

Fildes, P. (1940). *Lancet*, 1, 956.

J. Lusser (*Ann. Pediatr.*, 1942, **152**, 226) records his observations on 1,000 cases of scarlet fever at the children's clinic at Basle during the period 1930–40, 368 of which had relapses. 127 of the latter had recurrent eruptions. The second or third attacks usually had a mild course. The ages of the patients ranged from 1½ to 15 years; the incidence was highest between 4 and 15, while young children were less frequently attacked.

VENOUS PRESSURE DURING VENESECTION AND BLOOD TRANSFUSION*

BY

J. F. LOUTIT, B.M., M.R.C.P.
M. D. MOLLISON, M.B.
AND
E. D. van der WALT, M.B., M.R.C.P.

In man few observations have been made on the changes in venous pressure during the withdrawal and administration of blood, although the effects during the intravenous injection of crystalloid solutions have been investigated (Altschule and Gilligan, 1938; Murphy, 1941). In the present paper observations of venous-pressure changes have been made upon healthy individuals during venesection, and upon unselected hospital patients during the administration of blood. As an extension of this work similar observations were made during the transfusion of a number of patients suffering from pulmonary disease: in this group the vital capacity was measured before, during, and after transfusion. In all cases preliminary and final arterial blood pressures were taken, the pulse and respiratory rates noted at frequent intervals, and any change in the clinical condition of the subject recorded.

The venous pressure was estimated by the direct method, using a modification of the original Moritz and von Tabora (1910) technique. A stand was made with a backboard, to which the vertical arm of the manometer was clamped. The crosspiece rested on a horizontal ledge attached to the backboard. The backboard-and-ledge system was easily adjustable to different heights. In place of the reservoir a 30-c.cm. syringe, also resting on the horizontal ledge, was fitted to the crosspiece. By means of this syringe the manometer (7 mm. bore) was filled with 3% sodium citrate solution, and thereafter was flushed with this solution when required. The reference point taken was that recommended by Lyons *et al.* (1938)—an arbitrary point, with the subject supine, 10 cm. above the posterior surface of the thorax. The arm used for the venous-pressure estimation was abducted to an angle of 45 degrees. Where necessary, to prevent venous spasm a hot-water bottle was placed underneath the arm. Warm citrate solution was used throughout. An intradermal injection of local anaesthetic was given before all venepunctures.

An antecubital vein was chosen. A 16 s.w.g. intravenous needle was then inserted and connected with the manometer. If the needle was well in position the fluid in the manometer fell rapidly at first but later more slowly until equilibrium of pressure between the fluid in the manometer and the blood in the vein was reached. At this point there were minor respiratory fluctuations, either spontaneous or easily induced by deep breathing and occasionally pulse transmissions. Approximately 1 to 5 minutes were allowed to elapse before proceeding further, to ensure a steady base line of venous pressure. Throughout the experiment a rapid return of the manometer reading to the original level, after the apparatus had been flushed with fresh citrate, was regarded as the best criterion of patency of the system. In 4 cases venous spasm resulted in unsatisfactory readings and these records had to be abandoned.

Venesection

To minimize anxiety in the subject only donors previously venesected were chosen. In all cases complete rest for 10 to 15 minutes in the supine position was imposed, to allow the blood pressure and pulse rate to become stable. The venous pressure was then determined. Venesection with a 10 s.w.g. intravenous needle was performed on the opposite arm. A sphygmomanometer cuff maintained at a pressure of 60 to 70 mm. Hg facilitated the flow of blood. The average time taken to collect 430 c.cm. was 4 minutes. The venous pressure and pulse rate were recorded after 100 c.cm., 200 c.cm., 300 c.cm., 400 c.cm., and 430 c.cm. of blood had been withdrawn. In most cases the venous-pressure readings were continued at 5-minute intervals for 30 minutes after venesection.

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* A report to the Medical Research Council from the S.W. London Blood Supply Depot.

In 19 of the 20 cases the initial venous pressure varied between 60 and 145 mm. H_2O. In one very obese woman the pressure was 167 mm. H_2O (Table I). In every case there was a fall in the venous pressure during bleeding, varying from 13 to 80 mm. H_2O, with an average of 43 mm. In most cases the venous pressure showed a fall after 100 to 200 c.cm. of blood had been withdrawn, and it continued to fall until the end of the venesection. After venesection the venous pressure rose gradually, but in none of the cases did it return to the original value within 30 minutes. The changes in the blood pressure and pulse rate were variable and not related to the constant fall in venous pressure.

TABLE I.—*Effect of Venesection on Venous Pressure, Blood Pressure, and Pulse Rate*

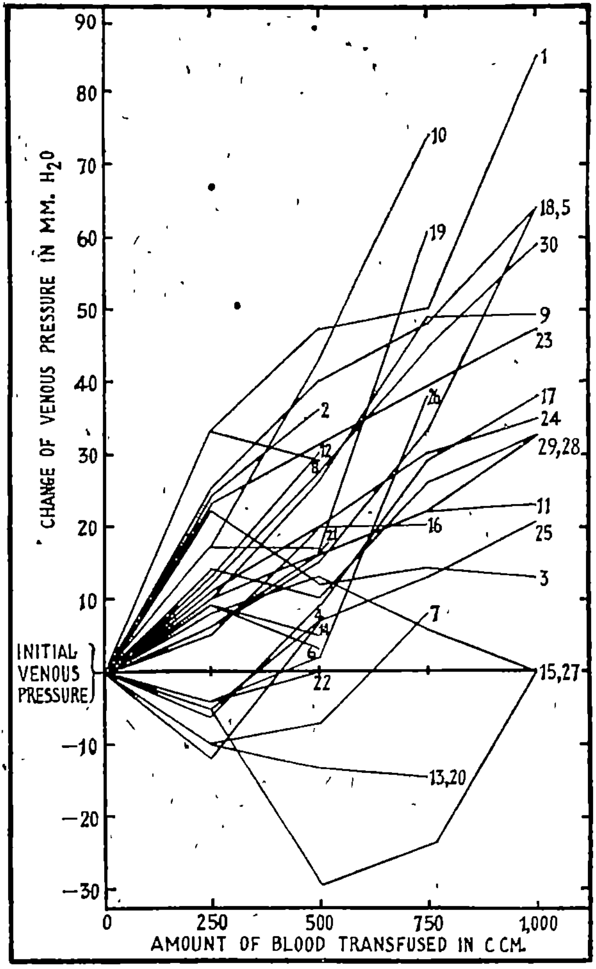
Case	Venous Pressure (mm. H_2O)			Blood Pressure		Pulse Rate	
	Before Venesection	After Venesection	30 min. Later	Before Venesection	After Venesection	Before Venesection	After Venesection
1	115	35	44 (15 min.)	120/85	—	80	78
2	97	43	46 "	95/60	—	68	70
3	115	52	90	145/90	140/90	80	80
4	110	55	90	140/90	140/90	80	80
5	167	110	112	140/85	130/80	72	72
6	110	50	—	154/104	154/100	76	76
7	125	75	95	130/75	112/95	88	92
8	130	80	90	148/85	145/85	100	96
9	80	30	31	105/65	105/65	75	84
10	130	115	80	136/84	—	112	112
11	94	48	80	105/60	105/70	90	92
12	148	105	105	130/90	—	70	70
13	79	43	57	115/70	112/70	84	78
14	130	95	98	148/106	140/102	76	76
15	60	25	—	110/76	108/76	96	96
16	100	78	85	170/110	160/110	100	100
17	72	55	55	125/80	110/70	76	76
18	68	58	55 (15 min.)	118/75	—	88	94
19	145	110	109 "	155/95	135/75	100	76
20	75	30	53 "	115/80	115/60	88	56

Transfusion

Observations were made on 30 unselected hospital patients (19 males, 11 females) suffering from secondary anaemias. In many cases the slight degree of anaemia would not have justified transfusion in the ordinary way. The chest measurements and approximate height and weight of all patients were recorded. They were allowed one pillow. This had no noticeable effect on the venous-pressure level. The preliminary rest period of 15 minutes was imposed and the venous pressure determined. The opposite arm was used for the transfusion, which was administered by gravity with the Medical Research Council giving-apparatus. Warmed compatible blood was given to all cases. The amounts varied from 500 c.cm. to 1,000 c.cm. In 4 cases the venous-pressure system blocked towards the end of the transfusion. The venous pressure was noted so far as was possible after every 50 c.cm. of blood had been transfused. In 5 cases the readings were continued at 5-minute intervals for 10 minutes after the end of transfusion and in a further 5 cases for 20 to 30 minutes. A rise of 20 mm. or less has been considered insignificant.

Venous Pressure and Amount Given.—Of the 30 patients, 19 showed a rise in venous pressure greater than 20 mm. H_2O, 10 no rise, and 1 a fall. In 13 cases the rise was between 20 and 50 mm. and in 6 cases between 50 and 85 mm. H_2O. In each of the 19 patients who showed a rise in venous pressure this increase was approximately proportional to the amount given, (see Graph).

Venous Pressure and Transfusion Rate.—14 cases were transfused at rates varying from 7 to 15 c.cm. a minute, the average being 12 c.cm.: 8 showed no change in venous pressure, 4 a rise between 20 and 50 mm., and 2 a rise between 50 and 80 mm. H_2O. 12 cases were transfused at rates of 16 to 30 c.cm. a minute, the average being 20 c.cm.: 3 showed no change in venous pressure, 6 a rise between 20 and 50 mm., and 3 a rise between 50 and 80 mm. H_2O. 4 cases were transfused at rates of 30 to 45 c.cm. a minute, the average being 37 c.cm. All 4 showed a rise: in 3 the increase was between 20 and 50 mm. and in 1 between 50 and 80 mm. H_2O. There was apparently no constant relation between the rate of transfusion and the rise of venous pressure, although proportionally more cases showed a rise at the faster rates. Signs and symptoms suggestive of vasodilatation were encountered in 3 cases. In one of these the interpretation of the signs was complicated by the onset of allergic manifestations.



Graph of the venous-pressure changes during the transfusion of blood to 30 unselected hospital patients.

Case 1.—Gastric ulcer, in a spinster aged 33, weight 7 st. 12 lb., height 5 ft. 4 in.; Hb 66%. The patient was given 540 c.cm. of blood at an average rate of 22 c.cm. a minute. The venous pressure at the end of transfusion showed a rise of 36 mm. H_2O. The blood pressure was 110/65 before and after transfusion. After 250 c.cm. had been given, flushing of the face and arms was observed and at the same time the patient complained of hotness of the face. This was followed successively by complaint of a throbbing sensation in the head and tingling of the lips. The flushing of the face and arms was present for several hours after the completion of transfusion. There was no rise in temperature.

Case 2.—A married woman aged 42; diagnosis—carcinoma of the rectum: weight 8 st. 4 lb., height 5 ft. 5 in.; Hb 78%. The patient was transfused with 950 c.cm. of blood at a rate of 16 c.cm. a minute. The venous pressure showed a rise of 64 mm. H_2O. The blood pressure before transfusion was 135/90 and immediately after transfusion 100/55. When 850 c.cm. had been given she complained of throbbing in the ears, followed in three minutes by palpitations, a feeling of fullness and hotness, and a generalized pumping sensation. After the onset of the symptoms, flushing of the face and both arms was noticed, and this lasted for 10 minutes after the completion of transfusion. There were no further signs or symptoms.

Case 3.—A married woman aged 61; a convalescent air-raid casualty: weight 7½ st., height 5 ft. 3 in.; Hb 66%. The patient was transfused with 990 c.cm. of blood at a rate of 15 c.cm. a minute. The venous-pressure rise was 38 mm. H_2O. After 450 c.cm. the patient complained of generalized hotness. After 600 c.cm. oedema of the right eyelid was observed, followed by flushing of the face. After a further 250 c.cm. the left eyelid also became oedematous, the flushing still being present. All signs had disappeared within 2 hours.

These 3 patients were transfused at rates varying from 15 to 22 c.cm. a minute (average 18 c.cm.). The rise in venous pressure varied from 36 to 64 mm. H_2O (average 46 mm.). In Cases 1 and 2 the venous pressure had risen significantly before the onset of signs or symptoms of vasodilatation, and remained steady in Case 1 and continued to rise in Case 2 until the end of transfusion. In Case 3 the venous pressure blocked just after the vasodilatation became evident.

The 10 cases in which recordings were continued after the end of transfusion showed a gradual fall in venous pressure, but in no case was there a return to the basal level within the next 10 to 30 minutes. In 26 of the patients blood-pressure readings were taken before and after transfusion. The changes after transfusion were variable and apparently not related to the frequent rise in venous pressure. Only minor variations in pulse rate were recorded, and these were inconstant.

Transfusion of Cases of Pulmonary Disease

Examination was made of 13 such cases—3 females, 10 males. The patients were allowed two flat pillows instead of one, as most of them found the supine position irksome. This position was maintained for at least 15 minutes before the vital capacity was recorded. The vital capacity was measured again after 500 c.cm. of blood had been given and at the end of transfusion (after 1,000 c.cm.). A Kendrick recording spirometer was used. In patients with rib resection the arm opposite the resected ribs was used for the venous-pressure estimation.

The transfusion rates given below are calculated from the actual time during which the 1,000 c.cm. of blood was being administered. However, it must be pointed out that after the first 500 c.cm. had been administered there was a time interval varying from 6 to 15 minutes (average 8 minutes), during which the vital capacity was being recorded and no blood transfused. The transfusion rates varied from 17 to 40 c.cm. a minute (average rate 23 c.cm.). The amount given was 800 to 1,000 c.cm. One case had 500 c.cm. only.

Vital Capacity.—With one exception every patient showed a decrease in vital capacity after receiving 1,000 c.cm. (1 case 500 c.cm.) of blood. The percentage reduction bore no constant relation to the original vital capacity. Clinically, 3 patients showed an increase of above 4 respirations a minute during the transfusion. One of these complained of a dry cough and another of dyspnoea during the night following the transfusion; the third patient, however, had no symptoms (Cases 12, 13, and 10, respectively; Table II). To exclude the possibility that the recumbent attitude was responsible for the reduction in vital capacity one normal subject and Case 10 of the pulmonary disease series assumed the posture for one hour without being transfused. There was no change in vital capacity in the normal subject, and only a 50 c.cm. drop in the other.

Table II.—*Effect of Transfusion of 1,000 c.cm. of Blood on Vital Capacity and Venous Pressure*

Case	Sex, Age, Diagnosis	Rate (c.cm. per min.)	Vital Capacity (c.cm.) Before Transfusion	Vital Capacity (c.cm.) Reduction after Transf.	Venous-pressure Change during Transf (mm. H_2O)	Transfusion Signs or Symptoms
1	M. 43 Empyema	33	2,450	150	+45	Headache
2	M. 44 Lung abscess	40	2,250	150	+77	Nil
3	M. 25 Pneumonectomy	20	1,900	350	+21	"
4	M. 52 Carc. bronchus	23	1,750	400	− 1	Nil. (Only 540 c.cm. blood given)
5	M. 59 Empyema	28	1,700	150	+81	Nil
6	M. 39 Pneumonectomy	22	1,450	150	+66	"
7	M. 50 Carc. bronchus	19	1,300	300	+33	"
8	F. 55 Empyema; rib resection	18	1,300	100	+ 6	Rigor 40 min. after transfusion
9	M. 21 Empyema; rib resection	20	1,250	200	−35	Urticaria, headache
10	M. 38 Pneumonectomy	25	1,250	300	+14	Urticaria
11	M. 21 Pneumonectomy	20	1,150	+50	−20	"
12	F. 45 Empyema; rib resection	17	1,100	300	− 5	Rigor 30 min. after transf. Dry cough during following night
13	F. 32 Pneumonectomy	18	750	200	− 5	Dyspnoea during following night

Venous Pressure.—Of the 13 cases of pulmonary disease 6 showed during transfusion a rise in venous pressure greater than 20 mm. H_2O, 2 a fall, and 5 no appreciable change. Again, in the 6 cases showing this rise the increase was approximately proportional to the amount given. None of these 13 patients developed signs or symptoms suggestive of vasodilatation.

Discussion

Normal Venous Pressure.—Lyons *et al.* (1938) consider that the normal venous pressure lies between 50 and 150 mm. H_2O. The same reference point being used, the cases in this investigation showed a similar range of venous pressure; though in one obese woman it was 167 mm. H_2O. According to Kroetz (1922) a raised venous pressure is common in obese subjects.

Venous Pressure During and After Venesection.—The constant and often striking fall in venous pressure during venesection (Table I) was, under the conditions of this investigation, unrelated to the arterial blood pressure or pulse rate. The subjects were a selected group in that all had previously undergone venesection. None had an established vasomotor collapse ("faint"), and so no record of the venous pressure during such an attack was obtained.

Venous Pressure During and After Blood Transfusion

Altschule and Gilligan (1938) in their study of the dynamics of the circulation used saline as a transfusion fluid and recorded the venous pressure at intervals. They found that it rose in the majority of cases transfused at rates above 20 c.cm. a minute, and this rise was proportional to the amount of fluid given. The venous pressure fell rapidly immediately after the end of these transfusions and reached the original level within 20 minutes. A rise in pulse pressure was commonly seen during transfusion. In all their cases receiving large-volume (1,000 to 1,500 c.cm.) transfusions a widespread flush was observed. The rise in venous pressure they interpret as being due to a failure of the peripheral vascular bed to dilate rapidly enough to accommodate the increased blood volume. Murphy (1941), who also used saline as a transfusion fluid, noted a rise in venous pressure during the first half-hour of transfusion. This was followed by a fall attributed by him to vasodilatation. There is no mention of this having been observed clinically, nor is it clear at what intervals the venous-pressure readings were recorded.

The present investigation, in which blood was used as a transfusion fluid and the venous pressure was recorded at frequent intervals, gave results similar to those of Altschule and Gilligan. As stated, 19 of the 30 cases had a rise of venous pressure greater than 20 mm. H_2O. This rise was approximately proportional to the amount of fluid given. The rate of transfusion played a less important part, but on the whole the faster rates showed greater venous-pressure rises. No correlation could be drawn between the venous-pressure rise and the age, sex, haemoglobin values, or chest measurements of the recipients.

In contrast to the findings of Altschule and Gilligan, the fall in venous pressure after the completion of the transfusion was slow. Moreover, in none of the 10 cases which were observed for the subsequent 10 to 30 minutes was there a decrease to the pre-transfusion level. This is probably due to the fact that blood was used as the transfusion fluid, and as a result the increase in blood volume was maintained for a much longer period than after the infusion of crystalloid solutions.

Symptoms and signs suggestive of vasodilatation were encountered in 2 patients who received 1,000 c.cm. of blood and 1 who received 500 c.cm. The rate of transfusion was greater than 15 c.cm. a minute and the rise of venous pressure greater than 30 mm. H_2O. However, other patients transfused at similar and faster rates and showing similar rises in venous pressure experienced no symptoms. All 3 patients were females of small stature. Although not beyond the limits of chance it seems possible that vasodilatation was more likely to occur in an individual with a small blood volume.

The cases with a venous-pressure rise either had no clinical evidence of peripheral vasodilatation or only developed signs and symptoms of this after the rise was already considerable. The peripheral vasodilatation was not accompanied by the fall in venous pressure described by Murphy.

Venous Pressure During the Transfusion of Cases of Pulmonary Disease

These 13 pulmonary cases, transfused at rates varying from 17 to 40 c.cm. a minute, were comparable to 16 of the first group of 30 cases, in which the rates varied from 16 to 45 c.cm. a minute. In the latter group 13 of the 16 cases showed a significant rise of venous pressure, whereas only 6 of the 13 patients with pulmonary disease showed an increase of similar extent. Venous-pressure rises were apparently less frequent in the group suffering from pulmonary disease, but the number of cases examined was too small to warrant drawing conclusions. In this group, too, the venous pressure increased with the amount given. There was a slight decrease during the interval when the intermediate vital capacity was being recorded.

Glaser and McMichael (1940) found a significant increase in vital capacity following venesection. They calculated lung volume in each instance and converted the changes into equivalent changes in blood volume. From these figures they deduced that 47% of the blood withdrawn came from the pulmonary vascular bed. Conversely, during a rapid transfusion one might expect that an appreciable proportion of the increased blood volume would be accommodated by the lungs. Altschule and Gilligan recorded the vital capacity in 4 of their cases, but they could find no change. In the present investigation vital-capacity changes were studied in patients with pulmonary disease. Such cases were chosen because in subjects with an already reduced vital capacity any further reduction due to the accommodation of the transfused blood in the lungs would be more readily appreciated. In point of fact, a reduction was seen in every case except one, but in most instances the reduction was such that it could account for only a small proportion of the transfused fluid.

If it is accepted that reduction of vital capacity is due to pulmonary congestion, then the question whether this is brought about by heart failure from overloading the circulation must be considered. In such cases a systemic venous-pressure rise would be expected. However, the only cases (3 and 7) that showed a well-marked reduction in vital capacity and an increase in venous pressure had no signs or symptoms suggestive of cardiac embarrassment. Furthermore, the 2 cases (12 and 13) that did develop respiratory signs and had the greatest percentage reduction in vital capacity had no increase in venous pressure; and the 4 cases (1, 2, 5, and 6) that had the greatest rise in venous pressure had only slight reduction in vital capacity. In this series there appears to be no direct relation between venous pressure and vital capacity. The changes in vital capacity therefore cannot be ascribed to cardiac failure. The accommodation of the blood is perhaps best explained by alteration in the capacity of various parts of the circulatory system. The signs and symptoms of peripheral vasodilatation seen indicate that the capacity of the subpapillary venous plexus was being increased. The rise in venous pressure and the reduction of vital capacity show that the larger veins and the lung capillary bed respectively were accommodating the extra fluid.

Since this paper was written Sharpey-Shafer and Wallace (1942) have published observations on the rapid transfusion mainly of serum and saline (300 c.cm. to 2,100 c.cm.) to subjects without cardiovascular disease. Their results indicate that the venous pressure is raised when there is considerable retention of injected fluid. Dilatation of peripheral vessels was noted, and an engorgement of the pulmonary vessels was shown by vital-capacity and radiographic records.

Conclusions

The venesection of normal subjects is accompanied by a fall in venous pressure. During the following 30 minutes there is a return towards the original venous pressure, although this level is not regained in this period.

During the transfusion of blood to unselected hospital patients there is in the majority of cases a rise of venous pressure which is approximately proportional to the amount given, and occurs more frequently at the faster rates. Signs and symptoms suggestive of peripheral vasodilatation were encountered in 3 of the 43 cases transfused. In these cases vasodilatation occurred after a rise in venous pressure and was not followed by a fall.

After transfusion, patients suffering from pulmonary disease showed signs of pulmonary congestion, as revealed by a reduction in vital capacity. This decrease was not related to the venous-pressure changes.

We should like to thank Dr. W. D. Nicol and the staffs of the medical and thoracic units of the Emergency Hospital and Mr. C. F. Swinton of the Mayday Hospital for access to cases. We are indebted to Dr. O. M. Solandt for help and encouragement.

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A WATER-BORNE AND MILK-BORNE OUTBREAK OF PARATYPHOID B INFECTION IN WORCESTERSHIRE

POTENTIAL DANGERS OF RAW-WATER SUPPLIES

BY

S. CHALMERS PARRY, M.R.C.S., L.R.C.P., D.P.H.

Deputy County Medical Officer for Worcestershire

This small but none the less interesting paratyphoid B outbreak occurred from June to Aug., 1941, in one of the rural districts of Worcestershire where I was acting medical officer of health. It comprised a total of 17 primary and secondary cases, notified over a period of two months, and is of particular interest owing to the extreme rarity of epidemics of paratyphoid B fever recorded in which the organism has been recovered from water and which, in that respect, may be regarded as water-borne. Since the water that was implicated was not actually a drinking water, and since the milk supply was apparently contaminated secondarily from this water supply, I prefer to designate this outbreak milk-borne and water-borne rather than water-borne.

It will suffice to state that cases of paratyphoid B infection had recently occurred in adjacent areas and that the alleged source of infection had been traced to cream buns. While every patient in the present outbreak denied consumption of cream buns during the incubation period of their attack, an indirect and subtle connexion probably existed between these two epidemics.

History of Onset of Outbreak and Events Leading up to the Investigation of Farm

My suspicions were aroused on the discovery that there was a common milk supply to the first two cases of paratyphoid B reported (Table, Cases 1 and 2). On July 2, accompanied by Mr. Owen, county sanitary officer, I visited the farm which supplied milk to both these cases in order to ascertain, in particular, whether there was any sickness among the milk-handlers. The machine-milker, who had had some slight symptoms for a week or two, was on July 4 proved to have a mild attack of paratyphoid B fever (Case 5). Incidentally, his son, who had been admitted to hospital on June 26 with a history of three weeks' diarrhoea, was later diagnosed as a case of paratyphoid (Case 6). This important information proved the latter could not have derived his infection from milk contaminated by his father. A search for missed cases, carriers, and other sources of infection was made.

This bottling establishment also received milk from six local producers, and, while paratyphoid B organisms were absent in all milk samples submitted for examination, they were present in the *ram-water* used for dairying purposes. This ram-water was therefore the *missing link* we were seeking; for it was proved that the small son of the machine-milker contracted his infection from actually drinking the ram-water as it flowed in the gulley outside the dairy.

The machine-milker had ample opportunity of contracting paratyphoid from (1) his little son at home, (2) the tap-water in the cowshed,[1] and/or (3) drinking the raw milk. At the same time in the process of hand-stripping he had plenty of opportunities of contaminating the milk himself. The milk could also have been contaminated by the ram-water delivered from the cowshed tap. The milk was supplied from this farm in bottles to the private customers and in bulk to a big depot in the district.

Table showing Details of Cases

Case	Sex	Age	Paratyphoid B Widal Result "H"	Faeces	Urine	Clinical History	Remarks
1	F	6	+	–	+	"Cold" for 5 days. June 21: Fever, lassitude. 22nd: Diarrhoea. 29th: Rash, abdomen tumid, spleen +, liver +. "Typhoid state" for 2 weeks	Milk stated by parents always boiled previously. All family ate ice-cream twice a week
2	M	27	+	–	+	Indefinite. Jaundice since April 14. Stated illness began May 6. Fever June 13. Admitted hospital 20th. Epistaxis 28th. July 1: Tumidity, spleen +, liver +, "typhoid state" for one week. Jaundiced until about July 7	Date of onset very indefinite. At work until fever began. Very fond of raw milk
3	F	43	+	–	+	Poorly for about a week at work. June 24: Headache. 27th: Fever started; backache, headache, spleen +, liver +. No rash or tumidity	Canteen cook at depot. Handled uncooked food until evening June 27. Drank glass of raw milk daily
4	F	19	+	+	–	Sudden onset. Giddiness, pains in stomach and back. Frequent epistaxes June 21 to 28. July 1: Rash, tumidity, spleen +, liver +, constipation	Last worked at depot June 8. On holiday until July 1. No raw milk except in tea
5	M	26	+	–	–	Indefinite (1–2 weeks). Indigestion and backache. No diarrhoea. July 3: Headache; no rash or tumidity, spleen +, liver +	Machine-milker to bottling establishment. Father of Case 6. Fond of raw milk
6	M	2	+	–	–	Indefinite. Diarrhoea for 3 weeks. Admitted as suspected bronchopneumonia, diagnosed peritonitis until + Widal ("H" & "O") result July 5. Tumidity +, rash +, respirations rapid and shallow, with cough	Son of Case 5. History of having actually drunk ram-water. Drank raw milk
7	M	30	+	+	–	June 24: Epistaxis. 25th: Headache and lassitude. July 3: Diarrhoea and fever several days. 11th: Stiff neck, spleen +, liver +, rash +	No raw milk at depot except in tea; this had previously been added in urn
8	F	24	+	–	–	Sudden onset of intense headache, fever, and vomiting. July 6. Two rigors. 13th: Rash +	Stated she always boiled milk before drinking
9	M	1½	Nil	+	–	Diarrhoea since July 14. Fever since 18th. 22nd: Rash +, tumidity +	Admitted on + faeces (collected July 21, reported 23rd). Reputed to have last drunk raw milk from suspected source on June 18. Evidence inconclusive
10	F	18	+	+	–	July 22: Fever, headache, and aches in legs. 23rd: Rash +	Admitted as suspected case, being mother of Case 9. Blood culture – (collected July 23). Faeces + (received July 26). Leucocytes 11,550 (Aug. 7)
11	M	21	+	Nil	Nil	July 22: Headache, nausea, diarrhoea. 28th: Rash +, tumidity +, spleen +	Admitted on + blood culture (collected July 23, reported 28th). Died from haemorrhage Aug. 5. Uncle of Case 9
12	F	60	+	+	–	July 24: Sudden onset; headache, diarrhoea, vomiting. 25th: Collapsed with sudden acute abdominal pain and diarrhoea. 28th: Rash +, tumidity +	Blood culture – (collected July 25). Admitted on + faeces (collected 25th, reported 28th). Drank one glass of raw milk daily
13	F	21	+	+	–	Headache and pains in legs for 2 weeks; diarrhoea. July 26: Rash +. 28th: Epistaxis. 29th: Spleen +, liver +	No raw milk at depot except in tea. Last at work on July 21
14	M	55	+	+	–	Headache and febricula since July 22. Diarrhoea since 24th. Rash +. Aug. 1: Spleen +, liver +	Blood culture – (collected July 23). Grandfather of Case 9
15	F	10	+	+	–	Headache, fever, diarrhoea. Aug. 1: Spleen +, liver +	Blood culture – (collected July 23). Aunt of Case 9
16	F	11/12	+	+	–	Aug. 2: Fever for four days. 6th: Diarrhoea began. 8th: Fever, diarrhoea with mucus until 10th. Drowsy, tumidity +, green stools; rash +	All well-water boiled and all milk reported sterilized for child. Grandparents (living in same cottage) take milk from suspected farm; but child stated to drink milk from another source
17	M	58	+	–	–	Aug. 17: Sudden onset. Fever, diarrhoea, and vomiting 2 days; tumidity +. 28th: Admitted on relatively high paratyphoid B agglutinin titre	No raw milk at depot except in tea from urn. History T.A.B. inoculation (1917). Widal on Aug. 29 showed rising titre paratyphoid B agglutinins from 1/500 to 1/1,000 "H" in two days. [Typhoid agglutinin remained constant (1/125 "H")]

Events Leading to Investigation of Depot

Canteen Cook suffering from Paratyphoid.—On July 3 (i.e., the day before the Widal result of the machine-milker) Mr. Owen and I visited the depot to investigate a case of paratyphoid (Case 3) reported at one of the canteens. The patient was a cook who had been ill at work for about a week. It was evident that a salad-borne epidemic among the depot workers on that particular site was probable, and, in addition, a milk-borne epidemic among the farmer's private and depot customers was imminent.

Source of the Contaminated Ram-water.—One of the sources of the ram-water—two miles up-stream—was traced to the outfall of a sewage effluent from the depot.

Common Milk Supply.—Some of the paratyphoid B organisms, originally discharged from the depot in the sewage effluent, evidently completed their circular tour in the suspected milk supply, and a total of 5 cases of paratyphoid B fever (Cases 3, 4, 7, 13, 17) were notified among its employees. The fact that no raw milk was served over the counter at the canteens accounts for the negligible number of cases at the depot. The canteen cook (Case 3) was one of the few persons with access to raw milk. Milk was available only in tea; however, the actual procedure of making tea varied somewhat at the several canteens.

Course of Streams Contaminated by Sewage Effluents

A complete survey was made of farms and dwellings situated along the course of streams receiving effluents from the depot sites. We first explored the course of the brook from which the bottling establishment derived its ram-supply. This procedure entailed a visit to every farm in order to ascertain certain facts. The following five questions were asked (the answers apply only to the *bottling establishment*):

1. *Whether any Case of Sickness had Occurred Recently.*—One case of sickness—i.e., the machine-milker (Case 5), who was an immediate contact of Case 6—which may be regarded as definitely water-borne in origin. The type of sanitary accommodation at the milker's home is a privy, and the bucket contents are disposed of by burial in the garden.

2. *Access of Milch Cows to Brook containing Effluent, on Account of Possible Source of Contaminated Udders.*—At the

time of the outbreak all 12 milch cows had access to the contaminated brook water.

3. *Use, if any, made of Brook Water.*—The ram-water supply from the brook was used in particular for washing the machine-milker's hands before hand-stripping, and each udder and teats before milking, and for supplying the cooler and washing out the cowsheds. In addition it was used at the farmhouse for washing up the plates and dishes.

4. *Drainage therefrom—as any Contributing Source of Pollution to the Brook above the Ram-intake.*—The sanitary accommodation, used exclusively by the farm household, consists of a W.C. (supplied by ram-water) that discharges into a septic tank. The point of entry of the drainage from the farm is definitely below the point of intake of ram-water.

5. *Any Special Action taken.*—Immediate action taken was: (*a*) sterilization of the milk (from July 4 to 22); (*b*) removal of cows from access to brook; (*c*) use of well-water only; (*d*) cutting off the ram (following the bacteriological report on ram-water sample—July 12). Remote action taken was: (*a*) after a period of 18 days sterilization of the milk was no longer enforced; (*b*) after a period of 9 days the farmer was permitted to use chlorinated ram-water for washing out the empty cowsheds and for the cooler; (*c*) to continue employing well-water for cleansing the udders and teats and for washing the milker's hands and the bottles.

Commentary on Case Histories

Two cases (16 and 17) are worthy of special mention. Case 16 (see Table) gives an interesting history of combined Sonne dysentery and paratyphoid B infection. The source of infection remains a mystery. Case 17 gave a history of absence from the depot for several days during the incubation period, so the probability is that the source of infection was not derived from the depot; in any event, milk may definitely be ruled out. It is reasonable to suppose that the remaining 15 cases were associated in some way with spread of infection from the ram-water and/or the milker who contaminated the milk, or by secondary infection from another case (e.g., Cases 10, 11, 14, and 15 secondary to Case 9). Case 9, in my opinion, was attributable to raw milk drunk on July 2.

Whether the machine-milker (Case 5) was infected by ram-water from the cowshed tap or by direct contact with his son (Case 6) during his illness at home it is impossible to prove. As the onset of illness in Case 6 was estimated to be about June 5, it is safe to assume that the ram-water had been contaminated with paratyphoid B organisms some days previously and that the incubation period was exceptionally short (Warren, 1941).

Record of Laboratory Findings in Connexion with Cases

Isolation of Paratyphoid B Organisms by Culture from Faeces and Urine.—In studying the bacteriological results obtained from samples of faeces and urine submitted to the laboratory (see Table), it will be noted that there were 3 cases reported with urine + only; 9 cases with faeces + only; and 4 cases with faeces − and urine −. The first 3 cases recorded suffice to show how essential it is for specimens of *urine* to be sent to the laboratory; this is particularly important in the case of men, who micturate more frequently than women and who have correspondingly fewer facilities for washing their hands after the act. On the other hand, of course, women urinary carriers with unclean habits may be a greater menace to public health on account of their food-handling occupations.

Agglutination Tests.—With regard to the determination of the paratyphoid B Widal results, positive titres were obtained up to dilution 1/250 "H," except in two instances: Case 15 was admitted to hospital on obtaining an end-point of 1/125 "H," as the child was obviously a secondary case due to infection from Case 9. In Case 16 there was not sufficient blood to proceed further with the dilutions; but there is no doubt about the diagnosis, for, paratyphoid B bacilli were isolated from the faeces.

Blood Cultures.—Blood cultures were carried out on 4 patients in one family, the primary case of which—Case 9—was admitted to hospital on the recovery of paratyphoid B organisms from the stools. Only one positive paratyphoid B culture was obtained: this patient subsequently died.

Special Bacteriological Investigation

As a matter of exceptional interest, Mr. Monk submitted several cultures of paratyphoid B bacilli (through the medium of the Ministry of Health Regional Office) to Dr. A. Felix for phage typing. All these cultures, which were isolated during the outbreak, were tested against Vi phage preparations and found to react in an identical manner. The cultures were isolated from two patients, from the sewage effluent at the depot, and from the ram-water at the farm; and the result indicated that they all belonged to the same phage type.

Period of Survival of the Bacilli.—Using the dye method, it was estimated that the paratyphoid B organisms travelled through two miles of open stream for about 6 hours 7 minutes, and then through slightly less than 1/3 mile of piping for 34 minutes; the total distance from the sewage outfall at the depot to the tank at the bottling establishment taking 6¾ hours. These times and distances have been included in order to show the conditions through which *B. paratyphosus* B survived.

The Effluent Dilution Factor.—From observation alone it was evident that the effluent from the depot constituted a substantial fraction of the volume of the brook—even by the time it reached the point of ram-intake, which was situated two miles below the outfall. So I decided to estimate this dilution figure experimentally.

Determination of the Dilution Factor.—First of all it must be understood that the dilution of the effluent by streamlets within the precincts of the depot—over a distance of about 1/4 mile—may be regarded as negligible from a practical point of view. The degree of dilution undergone by the effluent at a point in the stream below the last tributary and above the position of the ram-intake was estimated. A dye was used for timing the speed of the stream. The true dilution factor was less than 1 in 4; or, putting the result still more dramatically, the effluent was diluted by slightly less than three times its volume of stream water along its course to the ram. Under weather conditions existing at the time of this experiment the dilution at the point of ram-intake was probably greater than just before the actual outbreak. I am indebted to Mr. W. Pembleton, the district sanitary inspector, for assistance in carrying out this investigation

Revelations and Recommendations

The epidemic illustrates two important facts:

1. *Potential Dangers of Hydraulic Ram-water Supplies under Wartime Conditions.*—Sewage effluents must find some outlet for discharge, and, in rural districts, brooks may be regarded as their natural course. The potential risk run by persons using hydraulic ram-water for domestic purposes must therefore be apparent, even though it may not be very significant. However, when an individual happens to be a food-handler, the health of a community may be endangered. Therefore, every farmer making use of a ram-water supply for cleansing the cowsheds and dairy must regard this water as potentially dangerous—for brook water is liable at any time to pollution. Ram-water really consists of a mixture of samples collected from a brook over a continuous period. Any sample taken direct from a contaminated brook may contain no harmful organisms, whereas a specimen of ram-water from the same brook is more likely to do so, for it is an accumulation of an infinite number of samples. This fact is pointed out as it is not generally realized that ram-water is even more unsafe than brook water *per se*. All users of ram-water should therefore take warning of the dangers of ram-supplies—especially under wartime conditions.

2. *The Importance of a Primary Planning Co-operation.*—During wartime large factories and works of every description are springing up in rural districts all over the country. They are built so rapidly and so secretly that the powers-that-be seldom consult the local authority on matters regarding the discharge of their sewage effluents. Co-operation between any particular branch of the Services concerned and the sanitary authority is essential, and, in order that the local knowledge of the latter shall be employed to the mutual advantage of both parties, it must start at an early stage in the planning of the sewage works and before the actual building has begun. This planning co-operation is of particular importance in rural districts, where there is danger of the effluents contaminating brooks used for dairying purposes; for the local sanitary

authority is the one and only body possessing that local knowledge of the district so essential before the plans are made. In the interest of general public health it is vitally important that powers over which the civilian authorities have no control should not discharge their sewage effluents into streams in dairying localities without this primary planning co-operation with the local sanitary authority.

Conclusions

The outbreak was due to a combination of factors, the chief predisposing causes being: (1) a hot spell and drought for the previous six weeks; (2) the recent incidence of paratyphoid "fever" in surrounding districts; (3) the inadequate dilution of the effluent from one of the sewage works at the depot; and (4) the comparative proximity of sewage outfall to ram-intake.

I am very grateful to Dr. Wyndham Parker, county medical officer, for his valued advice on all matters and for kind permission to publish this article. Thanks are due to the local sanitary staff and to Mr. R. W. T. Owen, county sanitary officer, for his indispensable support in carrying out the investigations. I am indebted to all the medical superintendents of isolation hospitals and the district medical officers of health who were good enough to supply me with clinical data, and to the local general practitioners for taking such prompt action to establish an early diagnosis in suspected cases. Grateful acknowledgment is made to Mr. H. E. Monk, county analyst and bacteriologist, and to his staff, for their enthusiastic co-operation. I also wish to express my appreciation of Prof. J. F. D. Shrewsbury's kindly help and criticism.

FATAL PHOSPHORUS POISONING FROM AN EXPLOSIVE BULLET

BY

A. J. BLAXLAND, M.S., F.R.C.S.
Senior Surgeon, Norfolk and Norwich Hospital

It is well recognized that certain types of incendiary bomb may cause local damage to skin or a wound from phosphorus contained in them, but, so far as I am aware, there is no appreciable risk of poisoning from absorption in these cases. The proportion of phosphorus present is, I understand, quite low—only about 4%. The risk of absorbing a lethal amount of phosphorus is apparently very much greater in penetrating wounds caused by a certain new type of explosive bullet. In the case recorded below there seems to be no reasonable doubt that death was due to phosphorus. Similar cases may have occurred without recognition of the cause of death, and I feel that it is important that the medical profession should be on the alert for them.

Case Report

A Canadian airman navigator aged 24 was wounded in the early hours of Sept. 14 in action over enemy territory. His aeroplane landed at a near-by aerodrome, where he was given morphine and his wound was dressed with sulphanilamide. He arrived at the Norfolk and Norwich Hospital at 9 a.m. There was a ragged entrance wound on the outer aspect of the left thigh, 2 in. long. His abdomen was rigid and tender, with dullness over the lower half. He was suffering from extreme shock. Pulse 144; B.P. 65/0. Three pints of serum were given intravenously and his B.P. gradually rose to 120/60. A radiograph showed a metallic foreign body in the centre of the abdomen, a punch fracture of the wing of the left ilium, and also some small metallic fragments in the thigh above the entrance wound and below the fracture.

Operation was begun at 11.30 a.m. The abdomen was opened and over 2 pints of blood mopped up. A ragged portion of a distorted bullet was found embedded in the upper part of the mesentery. This was extracted, and large torn branches of the superior mesenteric vessels were ligated. A transverse tear in a loop of jejunum was sutured and invaginated. There were no other intra-abdominal injuries, but some scattered fragments of bone were present in the subperitoneal layer of the abdominal wall on the left side. The abdominal incision was closed without drainage. The entrance wound in the left thigh was then enlarged up to the site of the penetrating fracture in the ilium, the edges of the skin and damaged muscle were excised, and some loose debris wiped away with gauze. While doing this it was noticed with astonishment by myself and my assistant that the wound emitted a visible vapour. This vapour was then found to possess the smell characteristic of phosphorus. The wound was impregnated with sulphanilamide powder and lightly packed with gauze. My first impression on smelling the vapour was that it was due to a tracer bullet, but examination shortly afterwards in a dark room failed to demonstrate any phosphorescence. During the operation a blood transfusion of the same group (O) as that of the patient was started, and it was continued until he had received 3 pints. The blood pressure at the end of the operation was only 84/40, but by 8 p.m. it had risen to 134/60.

The following day the patient's general condition was fair, with some vomiting. On the 16th he had improved, and his general condition was satisfactory: no vomiting; abdomen soft; no gas in the wound or spread of infection. On the 17th he was not so well, and was slightly restless. Abdomen soft; no vomiting. The wound in the thigh was unhealthy. On the 18th he was obviously deteriorating and very ill—restless and semi-comatose. There was a lemon tint in the skin. A blood count showed 3,000,000 red cells with haemoglobin only 38%. A pint of blood was given. No urine had been passed for 24 hours, and a catheter withdrew less than 2 oz. The blood transfusion was followed by a continuous drip of saline and dextrose. The abdominal wound broke down and was strapped.

On the 19th the patient was comatose. In spite of the many pints of fluid given intravenously the anuria continued, not more than 1¼ oz. of urine being withdrawn by catheter. Examination of the blood showed that the haemoglobin had risen to 58%. The blood urea was 453 mg. per 100 c.cm. His pulse remained comparatively slow—92 to 100 during the day—and was of quite good volume. He died at 1.50 a.m. on the 20th—that is, 6 days after being wounded.

Report on the Necropsy, by Dr. G. P. C. Claridge, Hon. Pathologist to the Norfolk and Norwich Hospital

At the post-mortem examination a gaping wound was found in the left thigh from which there was a track up into the tissues of the left flank passing through the iliac bone. The edges of this wound showed some necrosis, but not more than one often sees in these war wounds. The peritoneal cavity was clean and the stitching of the intestine sound. The liver was not enlarged, but on section had a homogeneous appearance and the cut surface was of a dull yellow colour. Apart from some slight swelling of the kidneys there was nothing of note in the other abdominal and thoracic organs.

Microscopical sections of the liver show extensive necrosis with fatty degeneration; the lobules cannot be identified, while the liver cells, which can still be recognized as cells, have a hazy outline with absent or shadowy nuclei which take the eosin stain, and a granular and highly vacuolated cytoplasm. Sections of the kidneys show the changes of catarrhal nephritis, the cells of the convoluted tubules being enlarged, granular, and in many cases necrotic. These changes in the kidneys are in themselves insufficient to account for the anuria. The gross destructive lesion of the liver is typical of acute phosphorus poisoning.

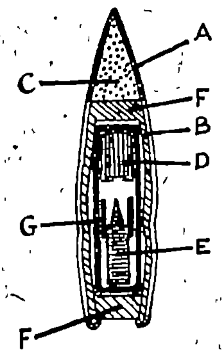
Comments

The rapid deterioration in the patient's condition after making good progress for the first three days, with the local condition in the abdomen and thigh satisfactory, was most puzzling at the time. The anuria and uraemia led me to surmise that it might be caused by some incompatibility of blood, although there were no symptoms to suggest that during the transfusions. The microscopical appearance of the kidneys makes it unlikely that incompatibility had any part in the fatal result.

The condition of the liver is not readily explained by anything other than phosphorus poisoning. If that explanation is correct, the important point arises as to what could be done to eradicate or counteract the poison in similar cases in the future. A more extensive excision of the damaged area than usual is indicated, and the application of a chemical antidote. I am ignorant as to whether copper sulphate would be of value. I believe that its use in the treatment of phosphorus burns of the skin is mainly as a colour index of the exact position of the phosphorus, and that the phosphorus has to be scraped off and further copper sulphate applied, to discover if there is any more to remove.

Apart from the evidence of necrosis of the liver and the presence of the vapour in the wound, with its distinctive smell, I have recently collected further and more convincing proof that this case was one of phosphorus poisoning. Lieut. K. M. Wheeler, R.E., has, with much kindness, great enthusiasm, and some risk to himself, done some research work for me. He has matched the distorted remains of the bullet with some identical bullets from a batch found on a wrecked German plane. His investigation proved it to be an explosive bullet—containing a charge of high explosive and also 3¼ gr. of phosphorus—which is double the minimum fatal dose recorded (Sydney Smith, *Forensic Medicine*, 4th ed., p. 472). A replica of the striker of the detonator in the bullet was found in the portion of bullet removed from the patient; and also traces of phosphorus were detected on this portion by chemical tests. The radiographic evidence of minute portions of metal in the thigh and the ragged large entrance wound suggest that the bullet exploded in the tissues of the thigh, probably on striking the iliac bone, thus releasing and scattering the concentrated phosphorus.

A DESCRIPTION OF THE BULLET, BY LIEUT. K. M. WHEELER, R.E. It is a 0.312 Mauser pattern bullet. Its total weight is about 10.6 g. The outer case of the bullet is in two layers, except the nose—the outer layer of hardened iron with copper plating (A), the inner layer of lead (B); the whole of which encloses, in the nose of the bullet, a concentration of phosphorus (C); and in the main body a brass sleeve containing a detonator (D), of high explosive, actuated by a striker (E). F, F are lead plugs, and G is a safety device. The total quantity of phosphorus is the equivalent of 3.254 gr., most of which is in the nose, although some seems to have crept up between the inner and outer skins of the casing.



I wish to acknowledge my indebtedness to Lieut. Wheeler, whose research work largely solved the mystery of the death; to Dr. Claridge for his help and advice; to Dr. John Williams of Messrs. Reckitt and Colman Ltd., who supplied the chemical data; and to my house-surgeon, Mr. W. P. Hirsch, who assisted me at the operation and was responsible for the after-treatment and clinical notes.

Medical Memoranda

Urticaria with Pigmentation as a Sequel of Scabies

As an unusual sequel of scabies the following case may be of interest.

CASE RECORD

In February of this year an airman aged 20 complained of paroxysmal irritation, localized to small pigmented papulo-macules, which when rubbed became elevated as in urticaria pigmentosa. His history was that in July, 1941, he was treated with sulphur ointment for scabies. As the irritation did not disappear he then received treatment with benzyl benzoate on four different occasions up to September, 1941. Late in August, 1941, he noticed that the irritation was confined to a small, flat, brownish pigmented lesion on the site of an old scabietic burrow on the left axillary fold. A week or so later he noticed similar pigmented lesions on the abdomen, left upper arm, and trunk; all were about the size of a silver threepenny-piece. The irritation was paroxysmal, in bouts, nocturnal and diurnal, lasting some minutes and confined to the lesions, which, when rubbed, became definitely more prominent and raised above the surface. This swelling would last a few minutes and then decrease, with a consequent extinction of the irritation. The majority of the lesions were on the abdomen. There were also a number of small dark-brown pigmented non-hairy moles on the abdomen and arms which had been present since birth.

The patient was above average intelligence and there was no evidence of a psychogenic factor. He was medium in colour of complexion and hair, and stated that he sunburned slowly. As a child he had had "heat spots" occasionally, after eating porridge. There was no dermographism.

During the four months under observation there has been some decrease in the pigmentation. The urticarial response and the paroxysmal irritation are now absent. Biopsy showed a consistent intracellular increase in the melanin throughout the lesion in the lowest two cell layers at the base of the stratum malpighii; melanoblasts were normal in distribution and pigment content. The epidermis and dermis were normal in thickness. The hair follicles, sweat glands, and sebaceous glands were all normal, but around some sweat glands, and around all capillaries, superficial and deep, was a definite round-cell infiltration; no eosinophils were seen. The cells lining the capillaries gave the impression of slight swelling, but all were empty of blood.

COMMENT

The absence of mast cells in the biopsy excludes urticaria pigmentosa. One would suggest that the lesions represent a peculiar sensitization response to local results of scabietic infestation.

I wish to thank Dr. J. T. Ingram of Leeds for his advice.

GEOFFREY A. HODGSON, D.M.,
Major, R.A.M.C., Dermatologist.

Reviews

DRUGS OF ADDICTION

National Research Council. Report of Committee on Drug Addiction 1929-1941, and Collected Reprints 1930-1941. (No price given.) Washington, D.C.

This huge volume of 1,581 pages contains, besides the report of the committee, reprints of numerous papers embodying the results of researches made on the chemical, pharmacological, and clinical aspects of addiction during 11¼ years. To read it through would be, as Sir Thomas Browne might say, "a work not to be performed on one leg," though only a captious critic would complain that "more authors are quoted in one work than are needed in a whole world." As a book of reference it will be found invaluable, and it is indispensable as an exhaustive record of the very important researches on addiction which have been carried out in the U.S.A. during more than a decade. The hope expressed that the foundations thus laid "may be of value not only to contemporary research but to posterity" can fairly be grouped among those hopes which are "sure and certain."

It is, of course, impossible to do adequate justice to a book so rich in content within the exiguous space at our disposal. While the chemical and pharmacological studies will deeply absorb specialists in those branches, it is to the clinical papers that the practising physician will chiefly turn. As regards the two former aspects, it will perhaps suffice to say that, while the ultimate goal is still far off, proof has been afforded of the possibility of so manipulating the morphine molecule as to produce substances which exhibit, in a certain degree, less of the undesirable and more of the desirable effects of morphine. Especial mention may be made of two morphine derivatives, desmorphine and metopon, which have been found to possess greater analgesic powers than morphine and, as regards the latter, less liability to addiction. Hopeful as such results seem to be, yet the conclusion is regretfully reached that while one of the two (metopon*) is an excellent analgesic for chronic pain and has promise of being a real addition to our armamentarium—especially in the field of terminal cancer—yet morphine, in spite of its disadvantages, still holds its position as the most satisfactory phenanthrene derivative in the majority of cases when used with due caution. A promising field of research has also been opened up among the amino-alcohols, for it has been found that the phenanthrene nucleus is not essential for analgesia. It was found also that the most convenient method for assessing the addiction factor in new compounds was observation of their capacity or incapacity to maintain pre-established physical dependence upon morphine.

Coming to the more clinical aspects of addiction, Treadway estimates the proportion of addicts to the general population in the U.S.A. as about 1 per 1,000. Himmelsbach and Small, in another paper, usefully clear the ground by demonstrating the uselessness of certain remedies much lauded by some. Thus, e.g., "rossium," the barbiturates, and insulin were found to be without any real beneficial effect upon the abstinence syndrome. Kolb, in another paper, gives reasons for his belief that belladonna treatments, pilocarpine, the endocrines, and immunity treatments are of little or no value, and, indeed, states that all treatments based upon theories of addiction mechanism have been failures, since that mechanism still remains obscure. All may not go with him quite so far, but his arguments deserve careful study. The chief positive contributions to treatment are contained in the papers by Kolb and Ossenport and Kolb and Himmelsbach which describe the method used at Lexington Hospital. The drug is first withdrawn, then physical and mental rehabilitation is undertaken within the institution, and, lastly, the patient is adjusted to outside conditions in preparation for his return to society. Intensive psychotherapy is given only to selected patients, but occupational therapy, recreation, and a grade of custody or supervision loom large. Drugs play a minor part. As regards withdrawal, the plan recommended for the generality of cases is a rapid but not abrupt withdrawal, helped out sometimes by a few doses of codeine for two or three days. The authors deprecate abrupt withdrawal in addicts with strong habits as cruel, dangerous, and unnecessary.

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* Metopon (methyldihydromorphinone) is, however, not yet available commercially.

An extremely valuable book would, however, be even more valuable if someone could be found to undertake the prodigious task of compiling an adequate index. Perhaps such an index could be issued as a supplement to the volume? It would be an inventory of a real treasure house.

VAGINAL HYSTERECTOMY

Vaginal Hysterectomy. By James William Kennedy, M.D., F.A.C.S., and Archibald Donald Campbell, M.D., F.R.C.S.(C.), F.R.C.O.G., F.A.C.S. (Pp. 495; fully illustrated. $10.00 or 60s.) Philadelphia: F. A. Davis Company; London: H. K. Lewis. 1942.

It is quite customary nowadays for medical books to be written by two authors, but it is unusual for two recognized experts in different countries to combine to produce a monograph on such a special subject as vaginal hysterectomy. This, however, has been done by Kennedy of Philadelphia and Campbell of Montreal, and may be considered to be a sign of the times illustrating the reciprocal value of the lease-and-lend policy. The appropriation of 495 pages for such a monograph might seem to be superfluous, but this is in nowise the case. The operation of vaginal hysterectomy is one that is comparatively seldom done in this country at the present time, though it had many advocates in the past; it is, however, much more frequently performed in Canada and the United States and on the Continent: it is, therefore, most opportune that this monograph should be published to allow British gynaecologists to revise their ideas as to the suitability of the operation and to be able to appreciate the full details of the operational technique as practised by these two experts.

The book begins with an interesting historical account of the operation, interspersed and enlivened by many interesting anecdotes; this is followed by Kennedy's account of the clamp method of vaginal hysterectomy which he and his predecessor, Price, have practised for sixty years; he goes into the indications, operative details, post-operative treatment, and complications very fully, and, though all the indications would not meet with universal approval, many warrant very careful consideration by British gynaecologists. His mortality rate of under 1% in 4,000 cases is in itself sufficient reason for a more extended practice of the operation. We note that he has never encountered a death from embolism following this operation. This would also seem to refute condemnatory statements regarding the operation, which Kennedy states are made by those not accustomed to its performance, but he lays himself open to a similar criticism for his remarks on the Manchester operation for prolapse. Vaginal hysterectomy would seem to be of especial value in cases of carcinoma corporis, pre-cancerous cervix associated with menorrhagia, and procidentia. Campbell gives a very full account of the anatomy of the pelvic floor, especially with regard to the aetiology of prolapse, which he discusses thoroughly; he then goes on to describe in detail his admirable operation of vaginal hysterectomy with sutures in association with pelvic floor repair for prolapse. From the point of view of one who has seen Campbell at work this is an operation which is well worth detailed study by all gynaecologists who are unacquainted with it.

The beautiful binding, the luxurious paper, and the excellent printing give the book a pre-war appearance which is most refreshing and stimulating, but its chief attraction is the beautiful and detailed illustrations, of which there are 120: these for the most part are whole plate and are so exquisitely drawn as to make the steps of the operative technique easily understandable, for each step is most adequately depicted.

It is essentially a book for the practising gynaecologist, who will be well repaid by its purchase.

LOCAL GOVERNMENT

The Municipal Year Book. (Pp. 1,450. 40s.) London: The Municipal Journal Ltd. 1942.

This encyclopaedia of local government administration makes its appearance again, apparently undiminished in bulk, and as informative as ever. It is not as rich in statistics as were pre-war issues, but, then, the value of statistics is mainly for comparative purposes, and the war has made comparisons useless.

To make up for the loss of some sections, others having a close bearing upon wartime administration have been introduced, including war damage, planning, building, and reconstruction. If the reader wishes to look up recent legislation affecting local government, or defence regulations, or law cases, or important official documents, this volume will prove an unfailing source of reference. Similarly if anyone is curious to know the constitution and personnel of urban and rural councils from Orkney to the Isles of Scilly, or particulars of corporation properties, housing schemes, rates, or indebtedness of boroughs from Lowestoft on the east to Aberystwyth on the west, this work is as ready with its information as a cash register.

In the section devoted to public health services there appears a useful directory of orthopaedic centres and fracture departments and clinics. There are eight orthopaedic centres in the London sectors and ten in other regions. The fracture departments "A," which are suitable for long-stay cases, number 55; the departments "B," which are for ambulatory and short-stay cases, number just 200; and the fracture clinics "C," for out-patient treatment, just over 100. An outstanding feature is the number of "B" departments in Yorkshire and Lancashire—more than two dozen in each county. Another feature of this section is a list of the institutions which have been "appropriated" under the Local Government Act, 1929. Those appropriated as general hospitals number 32 in London, 15 in the neighbouring counties of Middlesex, Kent, and Surrey, but only 23 in other county areas of England and Wales, and 54 in the county boroughs.

This work of reference, while severely matter-of-fact, does manage to convey the fascination of local government, with its many fingers reaching down into the life of the community, more intimate and in some ways more interesting than national politics. It also illustrates the vast amount of public service, largely unpaid and unacknowledged, which local government is able to enlist, and the valiant part it is taking in the organization of the country for war and for the tasks of peace that will come after it. We hope the future historian of these times will not be so occupied with Westminster and Downing Street as to forget the hundreds of civic centres and town halls.

Notes on Books

The *Medical Progress Annual,* Vol. III, 1942 (Baillière, Tindall and Cox; 27s. 6d.) is a reprint of 52 articles which appeared in the *New England Journal of Medicine* during the successive weeks of 1941. The standard of editorship and production of the book is high. The articles range over the whole field of the progress of medicine in its widest sense, and, being by chosen authorities, they are almost uniformly excellent. Taken in a dosage of one a week they might well have been stimulating, but it must be confessed that they make heavy reading when combined in one volume. Readers who are not under the spell of local patriotism will question the wisdom of a publication of this kind. Medical progress is already reported in medical annuals, yearbooks, annual reviews, and monographs, at a length which is hardly justified by the pace of significant discovery. Many British readers will feel that, if any addition is necessary, a system of abstracting, such as they have learnt to appreciate in the *Bulletin of War Medicine,* is a better way of classifying advances and giving prompt and wide circulation to what is important.

Preparations and Appliances

A SYNTHETIC MORPHINE SUBSTITUTE

Roche Products Ltd. recommend for trial a synthetic morphine substitute called pethidine. It is closely allied to morphine in composition, and is issued in 25-mg. tablets and 50-mg. ampoules. It may therefore be administered intravenously (1 to 2 c.cm. over 3 minutes) for the immediate relief of pain, as well as orally (25 to 75 mg. two or three times a day). It is claimed that pethidine will relieve pain without impairing consciousness or co-ordination, and that it is valuable in renal or biliary colic because of its anti-spasmodic activity. It is comparatively free from toxic effects, though medullary depression and other side reactions may occur on intravenous injection; nevertheless it would seem to have many of the properties of morphine without certain of its disadvantages.

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INFANT AND MATERNAL MORTALITY

A number of thorough investigations have been made in recent years into the causes of death of mothers in childbirth and of infants before the end of the first month. It is common knowledge that neonatal mortality has not shared in the general fall in the infant mortality rate and that the maternal death rate—at least until the introduction of the sulphonamides—has remained for many years at a disturbingly high level. Some of the reports based on these inquiries lie on dusty shelves, but others were used as a framework for legislation. The latter tended on the whole to emphasize the technical aspects of the subject, leaving the layman with a vague, comfortable feeling that all would be well if we had better ante-natal services and more competent midwifery. The most recent report[1] blows a cold east wind on these delicate illusions by taking into account the wider biological and social implications of child-bearing. In this investigation, which comes from the Department of Physiology of Durham University, Mrs. C. M. Burns reports the results of an exhaustive study of the records of health visitors in the administrative county for the years 1930-7. Its main object, as the author puts it, is to consider the relation of the age of a woman to her fitness for motherhood, such fitness being measured by the chances of survival of mother and child; this necessarily implies a study of the number of children born and the rate of breeding. The subject-matter falls roughly into two parts, the first dealing with the history of some 17,000 children born in the year 1930, and the second with the maternal deaths which occurred during the whole period under review. The age and parity of the mother were known in over 15,000 cases, and from these records it has been possible to draw conclusions which are not made less positive by cautious insertion of the phrase "it would seem to be."

In a recent work Julian Huxley says: "If we wish to work towards a purpose for the future of man we must formulate that purpose ourselves. Purposes in life are made, not found." The essay which Mrs. Burns has written is an illustration of this truth, and it is rightly described as "a study in human responsibility." Many of her conclusions lay a new stress on what is already accepted, but they are set in the form of a challenge to action. We know, for example, that the lowest infant death rates are found in first, second, and third children born to mothers between 20 and 35, and fourth and fifth children to mothers between 35 and 40; and that the infant death rate is abnormally high among *first* children born to mothers under 20 and over 30. The age of a mother at the birth of her first child is therefore a factor of prime importance in a forward social policy, and it is evident that this biological consideration is relatively unaffected by improved medical, nursing, and social services. The only remedy is to encourage marriage and the foundation of a family at the most favourable age. The second major influence on the preservation of infant life is the spacing of the family. It is abundantly clear from the figures presented that a rapid succession of pregnancies means a high death rate, and once again biological causes predominate, and we cannot expect to secure great advances without taking these into consideration. As the author says: "It is a mistake to lose sight of the woman in the mother. Many women are more in need of ante-conceptional than ante-natal advice, and any service that proposes to care for maternity must not relinquish responsibility at the end of ten days after childbirth, but must be responsible for the woman's health throughout the entire reproductive period."

The Durham investigation brings out a number of other facts of great interest, many of which are applicable to the country as a whole. It shows that, contrary to the general belief, first children, once they survive the perils of birth, are just as healthy as the rest. The late children of large families, however, have a high death rate at all stages—infancy, childhood, and adolescence. The relation of infant mortality to social conditions is also discussed, but the material is not well adapted for firm conclusions. As might be expected, there is a relatively high death rate in overcrowded homes, but the figures suggest that the size of the family rather than the overcrowding as such is the harmful factor. First children living under the same overcrowded conditions as seventh children had the death rate of their own birth rank, not the higher figure of the late child in a large family. It is pointed out, however, that the inquiry applies to a county area and not to the slum conditions of a great city. When we come to the discussion of maternal deaths the same general conclusions hold good. The death rate among women bearing their first child after the age of 30 was four times that of primiparae between 20 and 25. Where marriage or the first childbirth is postponed till after 30, not only is the first birth relatively dangerous but all subsequent births are associated with a maternal death rate relatively high for that stage of the family. "This in part explains the absence of improvement in the figures for maternal death rates in the more fortunate classes, who on the whole marry later than the working classes." Unfortunately, late marriage is no longer the monopoly of the well-to-do; it is spreading among the capable and the prudent in all trades and professions which demand a period of preliminary apprenticeship. These groups suffer a double disadvantage—late marriage and small families—and the author suggests that these groups are faced with extinction.

Two broad considerations of policy emerge from this inquiry: first, that not enough stress has been laid on the biological factors concerned in maternal and infant mortality. What are we going to do in order to secure that marriage and the foundation of a family take place at the best biological ages (i.e., 20–25)?; and, How are we to achieve better spacing of families—which counts so much towards the health and efficiency of the mother? The second consideration is still more fundamental, but it depends to some extent upon the first: How are we to prevent the breeding of the unfit? Mrs. Burns says that "in this country it is already broadly true that only those who are unable to look after themselves are increasing their numbers," and quotes (with apparent approval) a statement of the Chief Medical Officer to the Ministry of Health (1935): "We must not overlook the fact that, if the nation saves infant life on this scale, it must not be surprised if many weakly and perhaps even defective children are saved, which tend to increase the number of unfit." Elsewhere Mrs. Burns speaks of infant death as a process of weeding out the unfit, as though the survivors must inevitably be healthy. But is there evidence to suggest that the appalling death rates of a century ago were merely the weeding of a garden? We know very little of morbidity figures except in relation to infectious disease, but all the keenest observation of the period indicates that the quantity of ill-health was then greater both absolutely and relatively to the number of deaths. Records of death are a small and somewhat biased sample of the total volume of sickness, and one may venture to doubt whether, as stated in the concluding remarks by Prof. David Burns, the misfits of civilization, who at present form about 10% of our population, will form 30% of the next generation. We have only just begun to try the effect of education and social welfare on the bulk of our people.

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[1] *Infant and Maternal Mortality in Relation to Size of Family and Rapidity of Breeding. A Study in Human Responsibility.* By C. M. Burns, M.A. J. M. Carr, 204, Westgate Road, Newcastle-upon-Tyne. (5s.)

THE ANTI-PERNICIOUS-ANAEMIA FACTOR

The therapeutic triumph over pernicious anaemia must remain incomplete until it is found possible to produce this disease experimentally in animals. Only in this way will it be possible to standardize efficiently preparations used in treatment. Perhaps of more fundamental importance is a closer understanding of the deranged physiology of hyperchromic anaemias. The initial problem, still unsolved, is to determine the location of the intrinsic haemopoietic factor in the stomach. Meulengracht's investigation[1] indicated that preparations made from the pig's pylorus were much more potent in the treatment of pernicious anaemia than those derived from the cardia, while extracts of the fundus were completely inactive. Total gastrectomy, however, failed to produce a pernicious-anaemia syndrome in the pig, dog, or monkey, even after the subsequent institution of defective diets, the administration of poisons such as carbon tetrachloride, or infestation with *Bothriocephalus latus*.[2] In this series of experiments it was found that hypochromic anaemia developed much less frequently when the stomach, although isolated from the rest of the alimentary tract, was left in the body, a fact which favours the hypothesis[3] that the stomach may have some hormonal function in haemopoiesis. The failure to produce a condition of pernicious anaemia by gastrectomy naturally led to the consideration of the possibility that some region producing the anti-anaemic factor was still functioning in the body. Attention was then focused on that part of the duodenum containing Brunner's glands, which resemble the glands in the pylorus. Sharp and his colleagues,[4] indeed, found that the dried duodenum of the hog had a therapeutic effect on pernicious anaemia similar to that of preparations of dried stomach. This observation was confirmed by Meulengracht.[5]

Petri and his colleagues[6] [7] have studied this aspect of the problem of the experimental production of pernicious anaemia by means of selective resection of various regions of stomach and duodenum. Three types of operation are reported: (1) total gastrectomy with resection of the Brunner-gland area of the duodenum, (2) resection of pylorus and Brunner-gland area, and (3) resection of pylorus and entire duodenum. In none of the animals, pups and adult dogs, was the picture of pernicious anaemia produced, though in all there appeared symptoms of pellagra, relatively mild in the adult animals but much more severe and at times rapidly fatal in pups. If Castle's view as to pathogenesis is accepted, the attempt to produce pernicious anaemia failed because the experimental procedure did not completely destroy the ability to form the intrinsic factor. Uotila,[8] indeed, has already shown that preparations derived from the small and large intestine, but especially the ileum, of swine did possess some anti-pernicious-anaemia factor, though they were not so potent as those made from pylorus or upper duodenum. Accordingly Petri and his co-workers tried to produce pernicious anaemia by resection of the pylorus, the Brunner-gland area, and the distal two-thirds of the small intestine. This resulted in the appearance of a macrocytic hyperchromic anaemia, with pathological changes in the central nervous system, but there was no marrow hyperplasia and recovery was spontaneous. Accordingly, so far as experimental pernicious anaemia is concerned, another failure has to be recorded, but the morbid condition brought about may be included in that group of diseases such as tropical macrocytic anaemia, *Bothriocephalus latus* infestation, and sprue, and indeed may be identical with the pellagrous syndrome associated with hyperchromic macrocytic anaemia. It is possible that the inability to induce pernicious anaemia in dogs is due to the choice of unsuitable combinations of resections or to the need for associating dietary deficiency, such as B-hypovitaminosis, with gastro-intestinal interference.

It is well known that the haemopoietic factor, presumably manufactured in some region or regions of the alimentary tract, is stored in the liver. The anti-pernicious-anaemia potency of the liver of any animal is therefore an indication of the amount of haemopoietic factor formed and absorbed. Petri and his colleagues[9] have utilized this in devising a series of investigations wherein was estimated the therapeutic efficacy on pernicious-anaemia patients of livers from animals that had survived for at least 166 days after various sections of the alimentary tract had been removed. This ensured the disappearance from the liver of any haemopoietic factor previously absorbed from the resected portions of the stomach and intestine. In agreement with earlier workers, Petri found that after total gastrectomy swine liver completely lost its anti-anaemic principle, but it was also found that resection of the fundus had the same effect. This somewhat startling result raises further problems as to the formation and absorption of the anti-anaemic factor. The fundus has no therapeutic effect in pernicious anaemia, but it must play an important part in the synthesis or absorption of anti-anaemic factor in other regions of the alimentary tract. This fits in with the fact that in patients with pernicious anaemia the fundus shows the most pronounced histological changes. It is perhaps foolish to speculate on the nature of the fundus action, but it is worth while mentioning preliminary experiments by Petri indicating that administration of nicotinic acid for a period of six months restored the anti-anaemic potency of the liver in a hog with the fundus resected but not in one on which a total gastrectomy had been performed. This favours Castle's view that the intestinal content of anti-anaemic factor is not the result of local synthesis but is due to absorption of pre-formed substance. There can be little doubt that if these results are confirmed and extended a new field of work is opened for physiologist and clinician.

Although the experimental production of pernicious anaemia still eludes us, some interesting information has been gathered on the pathogenesis of experimental endogenous pellagra. Three forms can now be described[10]: (1) the most severe, following total gastrectomy; (2) the most protracted, resulting from removal of pylorus and duodenum; and (3) a condition following removal of the distal two-thirds of the small intestine. The last variety resembles the second, but with the presence of a macrocytic hyperchromic anaemia, glossitis, and chronic diarrhoea. Clinically, indeed, the picture resembles that seen in sprue and in some cases of terminal ileitis. Experimentally it must be contrasted with the results following resection of the jejunum—namely, a mild degree of pellagra, hypochlorhydria, and, above all, a striking increase in red blood cells with a tendency to macrocytosis.[11] It is obvious that we are gradually accumulating facts as to the varied functions of the different regions of the alimentary tract, and more knowledge of its functional pathology may throw a sharp light on the pathogenesis of the anaemic states and deficiency diseases.

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[1] *Acta med. scand.*, 1934, **82**, 352.
[2] Ibid., 1941, **106**, 274
[3] *Ann. intern. Med.*, 1933, **6**, 1535.
[4] Ibid., 1931, **4**, 1282.
[5] *Acta med. scand.*, 1935, **85**, 79.
[6] Ibid., 1941, **107**, 506.
[7] Ibid., p. 532.
[8] Ibid., 1936, **89**, 50; 1938, **95**, 415.
[9] *Acta med. scand.*, 1941, **109**, 59.
[10] Ibid., 1942, **111**, 75.

SUBACUTE BACTERIAL ENDOCARDITIS

A recent talk by Willius[12] is entitled "The Hapless Therapy of Subacute Bacterial Endocarditis." He points out that an occasional positive blood culture in a patient with a cardiac murmur and fever is not proof positive of subacute bacterial endocarditis. Without a doubt many instances of this type represent acute exacerbations of rheumatic endocarditis, in which from time to time streptococci in relatively small numbers are demonstrable in the blood stream. Such patients may recover without any treatment. But if the diagnosis of subacute bacterial endocarditis is confined to patients with pathognomonic signs such as embolic phenomena and splenomegaly the outlook is indeed grave, and there is little support for the new wave of optimism which is sweeping North America. Willius enumerates the systems of treatment that have had their day—immune transfusion, arsenicals, antiseptic dyes, vaccines, *x*-ray therapy over the cardiac region, artificial pyrexia, intravenous colloidal carbon, etc.—and he concludes that the present enthusiasm for chemotherapy, used alone or supported by anticoagulants or hyperthermia, should be met with scepticism. This cool outlook should be preserved in studying the recent paper by Smith, Sauls, and Stone.[13] They have summarized a number of group-studies by individuals who have treated series of cases, thus trying to avoid the fallacy of judging from isolated successes. The percentages of recoveries in these series certainly suggest a progressive improvement in results. The actual figures are as follows:

	Recovered	Died	Total
Non-specific treatment	6	628	634
Chemotherapy alone	12	186	198
Chemotherapy + heparin	5	38	43
Chemotherapy + hyperthermia ..	4	21	25
Chemotherapy + intravenous typhoid	4	17	21

Statistical analysis of these figures, which the authors unfortunately omitted to employ, shows that there is strong evidence that chemotherapy has improved the survival rate in subacute bacterial endocarditis. The data provide no evidence that heparin or hyperthermia significantly increases the survival rate above that for chemotherapy alone. There is a strong indication that intravenous typhoid vaccine does so, but one needs more cases in these last two groups. Smith and his colleagues stress the importance of early diagnosis, but we must remember Willius's hint that early diagnosis may be erroneous diagnosis. A second factor of importance is the maintenance of a high blood concentration of the drug. False hopes may be raised by the antipyretic action of sulphapyridine or by the failure of the blood cultures to show bacterial growth after the sulphonamides have been given, even though infection is still present. This error may be avoided by adding para-aminobenzoic acid to the culture medium to neutralize the bactericidal effect of the sulphonamide present in the blood when it is cultivated. Poston and Orgain[14] have found that there are very great variations in the reaction of different strains of *Str. viridans* to the sulphonamide drugs, and it is therefore desirable to test the strain with which the patient is infected against the available sulphonamides, in order to decide on the most suitable drug. There is a definite correlation between the effects *in vitro* and *in vivo*. If preliminary experiments of this kind are impossible, sulphapyridine is the drug of choice. Recovery from subacute bacterial endocarditis is in any event likely to be of limited duration and to be followed sooner or later by recurrence of infection or by cardiac failure. Using recovery in this restricted sense, chemotherapy has probably improved the chances of recovery in subacute bacterial endocarditis from about 1 in 100 to 1 in 20 or 30, and the ordinary clinician will do well to confine himself to chemotherapy with the sulphonamide drugs until there is more convincing evidence that results can be improved by the addition of anticoagulant therapy or artificial pyrexia.

INFECTIOUS MONONUCLEOSIS

In a recent monograph on the aetiology of glandular fever (or infectious mononucleosis) Wising[15] of Stockholm finds support for the assumption that a virus is the responsible agent and not *Listerella monocytogenes hominis* or a toxoplasm. Twenty-seven typical cases were studied. Cultures from blood and lymph nodes were negative. The injection of cultures of *Listerella* into rabbits and monkeys did not produce a disease picture similar to infectious mononucleosis in man. Attempts were made to transmit infectious mononucleosis in the acute phase to rabbits and monkeys; the results were negative in rabbits, but suspensions from lymph nodes produced typical mild infections in monkeys. Wising was surprisingly successful in obtaining human "volunteers" for his later experiments. (1) Four students received 20 intravenous injections of 100 million to 3,000 million *Listerella*, heated to 65° C. for two hours on two consecutive days. Their sera developed high agglutinin titres and positive flocculation reactions. The Paul-Bunnell test, which depends on the presence of sheep-erythrocyte agglutinins in amounts well above the normal, was negative. (2) Eight recently afebrile convalescents from mononucleosis and four healthy controls received intravenously 5,000 to 10,000 million heat-killed *Listerella* organisms in a single injection. Several persons developed malaise and chills, but the extent of the toxic response did not vary between the groups. (3) Five healthy medical students were transfused with heparinized blood or plasma from acute cases of infectious mononucleosis, and one developed an illness which was typical on clinical, serological, haematological, and histological grounds: the incubation period was 18 days, and symptoms decreased rapidly after the thirty-fifth day. Thus, in the experimental subject, further evidence was adduced that *Listerella monocytogenes* does not play a causal part in glandular fever. A virus may be the infecting agent, but unfortunately unfiltered and not filtered blood was used for the one successful experiment in transmission. Extirpated lymph nodes from sixteen cases were examined microscopically. No bacteria or protozoa were demonstrated, but photomicrographs revealed numerous large cells with a cytoplasm which absorbed ultraviolet light intensely. Further, the nucleoli were large and irregular and generally surrounded by irregular zones of chromatin. The author states that these changes could be explained by the presence of a virus. Nettleship[16] inoculated chorio-allantoic membranes with filtrates of the blood and nasal washings of patients and produced small white pearly growths infiltrated with mononuclear cells. Van den Berghe and Liessens[17] also used bacteria-free filtrates, and consider the agent a virus. The agent having been isolated by tissue culture of bacteria-free filtrates, the authors were with it able to reproduce disease in monkeys, which developed a typical blood picture and heterophile reaction.

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[11] *Acta med. scand.*, 1942, **111**, 116.

[12] *Proc. Mayo Clin.*, 1942, **17**, 216.

[13] *J. Amer. med. Ass.*, 1942, **119**, 478.

[14] *Amer. J. med. Sci.*, 1942, **203**, 577.

[15] *Acta med. scand.*, 1942, Supplement, **133**.

The laboratory and clinical data of 20 cases of infectious mononucleosis have been reviewed by Kilham and Steigman[18] of the American Red Cross-Harvard Field Hospital Unit. Four had clinical and three subclinical icterus; liver biopsy showed parenchymatous changes in one case. The Barrett[19] modification of the Paul-Bunnell test for the heterophile antibodies which agglutinate sheep erythrocytes was positive in all cases. (This modification differentiates the antibodies found in infectious mononucleosis from the types found in "normal" human serum and in human serum following horse-serum injection.) A high lymphocytosis was observed in all cases and an absolute or relative decrease in polymorphonuclear cells in many. No treatment proved effective. The agglutination of sheep erythrocytes in this disease is strongly reminiscent of the Hirst[20] test in influenza, in which the agglutination of chicken erythrocytes provides an easy and useful method of titrating influenza virus. The fact that exacerbations in the disease are usually unassociated with increase in the agglutination titre in the Paul-Bunnell test hardly supports the view that it has any immunological basis; may not the agglutination be due to persistent circulating virus? One is tempted to speculate whether the Paul-Bunnell test with sheep erythrocytes supports by analogy the view that infectious mononucleosis is of virus origin, and whether in other virus diseases the serum of the patient will be found to agglutinate the red cells of certain animal species.

FOOD PROBLEMS IN THE U.S.S.R.

A recent review of Soviet food problems[21] shows how the U.S.S.R. in some measure was able to prepare for the loss of much fruitful territory by shifting the basis of market grain from the Ukraine to the north and east. The Russians now rely on regions in Siberia in which preparations for rapid expansion had been well advanced in 1941. By September of that year the Altai area had three times its 1940 acreage under winter crops, and there was a similar increase in other districts. By means of irrigation schemes such an area as Uzbekistan has been able to turn over 1½ million acres into grain-producing land. The Altai area is growing mainly beet, the area given to this crop having increased from 60,000 to 100,000 acres between 1941 and 1942. Two refineries deal with 250,000 tons of beet a year. This immense development has been made possible by the use of some 150,000 motor tractors and 53,000 harvester combines, involving the training of many thousands of drivers and operatives. When, after the German retreat, territory in Western Russia was reoccupied, an intensive effort was made to get the land under cultivation; and, though the setback must have been great, prompt action and strict management in future will do much to minimize losses. About 500 tractors which had been buried by the farmers were recovered; collections of seed were instituted and credits granted for the purpose of buying seed and stock. By the end of March, 1942, collective farmers west of Moscow had stored 78.5% of the season's seed, and a number of fresh cattle ranches had been set up. Allotment holdings have been taken up eagerly, especially in Leningrad, where 22,000 acres round the city are under vegetables. Rationing began in July, 1941, first in Moscow and Leningrad and then in other industrial areas. The system has been one of differential rationing. For instance, the industrial worker gets 27 oz. of bread a day and the office worker 22 oz. Bread consumption as a whole remains higher than our own. Expectant and nursing mothers receive extra butter, sugar, milk, bread, and other cereals. During siege conditions in Leningrad meat, butter, and sugar became scarce luxuries, and were diverted to the armed Forces. In the interior of the country conditions approach normal, but the population behind the fighting fronts must be suffering serious privation.

SEE HOW THEY JUMP

Some readers may recall the irritation displayed by the versatile members of the "Brains Trust" on being asked how flies take off and land. The erudite zoological member of the team dismissed the question (*a*) as being unimportant, and (*b*) as being a matter of aerodynamics. The interesting *Monthly Science News*, *MSN*, issued by the British Council (3, Hanover Street, London, W.1) recently made good this deficiency on the part of the B.B.C. entertainers by recording an interesting experiment carried out some three years ago by Prof. Edgerton of Massachusetts. Prof. Edgerton put a bit of sugar on a piece of paper. To this was attached a few feet of string, which was also wrapped round the shaft of a high-speed camera. As the camera brought the film up to running speed, it wound the string attached to the paper and eventually dislodged the paper from beneath the fly which had settled on the piece of sugar. With this ingenious and simple experiment Prof. Edgerton was able to get accurate pictures of the fly taking off. This is how the fly did it. It first of all jumped backwards into the air for about an inch and at an angle of 60 degrees to the horizontal. Once it was clear of the ground its wings began to beat, and the fly came out of reverse and went forwards. The anatomy of the fly's legs makes it impossible for it to jump in any direction other than backwards. *MSN* suggests that, making use of Edgerton's observations, fly-swatters should be able to increase their score by aiming at the back area of a fly at rest.

MEDICAL ADVISORY COMMITTEE

The Minister of Health has set up a committee to advise him on the medical aspects of problems relating to the health of the people. The members of the committee are: the Presidents of the Royal College of Physicians, the Royal College of Surgeons, and the Royal College of Obstetricians and Gynaecologists; the Chairman of Council of the B.M.A.; Dr. G. C. Anderson; Dr. J. C. Arthur; Miss Alice Bloomfield, M.D.; Dr. J. A. Brown; Mr. E. Rock Carling; Dr. J. A. Charles; Prof. Henry Cohen; Dr. W. Allen Daley; Lord Dawson of Penn; Dr. E. A. Gregg; Lord Horder; Sir Wilson Jameson (vice-chairman); Dr. W. S. Macdonald; Dr. Alan Moncrieff; Prof. R. M. F. Picken; Prof. Harry Platt; Dr. A. T. Rogers; Dr. D. O. Twining; Dr. Oscar Williams; and Miss A. L. Winner, M.D.

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[16] *Proc. Soc. exp. Biol.*, N.Y., 1942, **49**, 116.
[17] *C. r. Soc. Biol.*, Paris, 1939, **130**, 279; **131**, 156; **132**, 90.
[18] *Lancet*, 1942, **2**, 452.
[19] *J. Hyg.*, Camb., 1941, **41**, 330.
[20] *J. exp. Med.*, 1942, **75**, 49.
[21] *Wartime Nutrition Bulletin*, Nov.–Dec. 1942, No. 22.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

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THE PRACTICAL MANAGEMENT OF WOUND SHOCK

BY

J. McMICHAEL, M.D., F.R.C.P.Ed.

Attempts to define "shock" are baulked in various ways. Newspapers and laymen use the word to describe any state of fright, with or without collapse, associated with injury or emotion. The older textbooks of surgery regarded it [illegible] a condition of "general depression of the vital functions" following on injury. This definition was recently put more crudely by a surgical colleague as "a state in which the patient is half dead." Since the last war the condition of low blood pressure observed in injured patients has been a subject of interest, and many definitions have limited shock to "a state of circulatory collapse following injury." This was the generally accepted definition when the present war began. Experience has revealed, however, that one important result of injury hitherto unappreciated may be renal failure, and the much-discussed "crush syndrome" has taken a prominent place as a remote consequence of injury. For various reasons it thus seems that the general term "shock" can no longer be limited to the circulatory effects of injury.

As no agreement on a classical definition of shock could be reached, there has been a great deal of confusion in the use of the term. It is this very confusion which has led to much ill-advised controversy on the value or otherwise of therapeutic measures. Some medical men, for example, have laid emphasis on the value of weak tea in treatment, as against blood transfusion. It is certainly true that, if all cases admitted to hospital after a raid are regarded as "more or less shocked," warm drinks may have a large measure of success. Those who restrict the term to cases showing low blood pressure find that a high proportion of cases do need transfusion. The only way out of this impasse seems to be the cessation of use of the word "shock" as an unqualified term.

Varieties of Shock

The following terminology may be used with advantage:

Fright, or emotional "shock" due to severe emotional strain.

Neurogenic Shock.—A state of low blood pressure with slow pulse, resembling an ordinary faint. This mild variety may be named "vasovagal syndrome." The onset is often early after an injury, and it is probably to this condition that some of the older writers referred when discussing "primary" shock. A more serious form occurs after severe cerebral injury, and may be called *cerebral shock.*

Oligaemic Shock.—A condition of circulatory collapse due to a low circulating blood volume. This condition includes the majority of cases of severe shock encountered as war casualties.

Post-traumatic Hypertension.—A cardiovascular reaction to injury recently described by Grant and Reeve (*British Medical Journal,* 1941, **2,** 294) which may simulate oligaemic shock.

Crush Syndrome.—This description is applied to renal failure which follows devitalization of limb muscles by crushing injuries. It is usually, but not always, preceded by a phase of oligaemic shock.

Toxaemic Shock.—This term may be applied to the circulatory collapse due to intense bacterial toxaemia, typically seen when a serous cavity is suddenly flooded with infected material—e.g., rupture of an inflamed appendix or a lung abscess. The blood volume in such cases may be normal.

Shock due to Defined Mechanical Causes.—For example, coronary thrombosis, massive pulmonary embolism, fat embolism, etc.

Dehydration Shock.—Occurring in diarrhoea (and ? diabetic coma).

It is apparent that by the use of such qualifying terms much of the present confusion would disappear. A common understanding of the condition under discussion might result in greater clarity when dealing with methods of treatment.

Clinical Manifestations of Shock

The various types may be discussed in order of increasing severity:

1. *Fright.*—When patients are admitted to hospital they may, on examination, look rather ghastly owing to a covering of dust, and cold extremities may give an initial impression of shock. On more detailed examination it is found that the blood pressure and pulse rate are within normal limits and that the injuries are of a minor nature. Such patients are simply suffering from fright and exposure. No treatment is required other than warmth, reassurance, and hot drinks.

2. *Post-traumatic Hypertension.*—A small proportion of patients with injuries of some severity may be found to have systolic blood pressures as high as 140 to 170 mm. Hg. The subsequent course of these cases shows that the normal pressure has been about 120 mm. Hg. As Grant has emphasized, there may be a rather thready radial pulse, which creates a false impression of circulatory collapse. Sphygmomanometer readings correct this impression. Although no active treatment is indicated at the hypertensive stage, the patients must be carefully watched, as they may pass on to a more characteristic picture of oligaemic shock. Our experience of this type of reaction has been limited to two cases, and in both the blood pressure fell to a low level, necessitating transfusion, within an hour or two of the finding of hypertension. The severity of the injury is usually in itself an indication for careful observation of these patients.

3. *Neurogenic Shock.*—In this condition there is a fall of blood pressure accompanied by a slow pulse. Two groups should be recognized:

(A) *Vasovagal Syndrome.*—This condition resembles an ordinary faint in every respect. Following on emotional stress or increased susceptibility to pain, the sensitivity of the carotid sinus mechanism seems to be altered in such a way that slowing of the heart and peripheral vasodilatation occur. The patients complain of a feeling of warmth, nausea followed by faintness, and a clammy sweat, while the systolic blood pressure falls to 50–70 mm. Hg and the pulse is slowed—e.g., to 50 a minute. It is important to remember, however, that these phenomena are compatible with considerable loss of blood from haemorrhage and that this vasovagal faint is a common consequence of venesection even if this is massive (Wallace and Sharpey-Schafer, *Lancet,* 1941, **2,** 393).

(B) *Cerebral Shock associated with Brain Injury.*—In a number of cases of severe head injury blood pressure may fall, the pulse may become slow or irregular, and various other vegetative disorders may be manifested—for example, deep, stertorous, irregular, or periodic breathing. The circulatory collapse in these cases is neurogenic in that it results from disturbance of the centres of cardiovascular control in the medulla.

Treatment of Neurogenic Shock.—In the uncomplicated vasovagal attack recovery usually follows rest in the recumbent position. In those cases which are associated with haemorrhage the blood pressure may remain low for an hour or more and the condition may pass into the more serious picture of oligaemic shock. For this reason continued observation is essential. In neurogenic collapse due to cerebral injury the condition is much more serious. Transfusion and the head-down position are both contraindicated, as they add to the risk of further intracranial bleeding. The surgical care of the head injury will dominate the picture: transfusion should be employed only by agreement with the surgeon, when the risk of precipitating intracranial haemorrhage has passed.

Oligaemic Shock

In this variety a number of well-recognized features are present, the pathological basis of which may be described as follows. Owing to loss of circulating fluid the veins are poorly filled. With deficient venous return to the heart the cardiac output drops to a low level. This in turn leads to a fall in pressure in the aorta and carotid sinus. From these reflexogenic zones vasoconstriction and cardio-acceleration are initiated. The vasoconstriction takes place mainly in the skin and splanchnic areas, leading to skin and visceral pallor. Along with this there seems to occur general increased sympathetic activity with a tendency to sweat, giving the cold skin its characteristic clamminess. Up to a certain degree of blood loss the compensatory vasoconstriction may maintain blood pressure at a level which is near normal, but the pulse will be accelerated. With further blood loss compensation fails and the blood pressure drops, with further acceleration of the heart. When oligaemic shock persists over a certain time a great danger is the development of an irreversible state in which restoration of the circulating blood volume fails to produce lasting improvement. For this reason treatment should be early, adequate, and effective.

Some Quantitative Considerations.—The reduction of blood volume necessary to produce various degrees of shock has as yet been very inadequately studied. Keith, in the last war, found that the severest cases of shock had blood volumes down to 60% of normal—i.e., a fall from 5 litres to 3 litres in circulating blood volume. Observations made by the Army Transfusion Service and by workers in the British Postgraduate Medical School indicate that blood volumes may fall much lower than this. We have observed several cases with blood volumes of 1.2 to 1.5 litres and blood pressures about 50 to 60 mm. Hg; while at the other extreme a number of volunteers have given 1,200 c.cm. of blood without much decrease in blood pressure. Further quantitative studies on this important subject are required, but meantime we may work on the assumption that a reduction of blood volume by 1 litre may be well tolerated and that in the most severe cases (B.P. below 60 mm. Hg) we may perhaps be dealing with a blood loss of as much as 3 litres. The importance of such quantitative studies is that they reveal the necessity for large transfusions (over a litre) in the vast majority of cases requiring such treatment.

Pulse Rate.—Although it might be expected that the carotid sinus mechanism would dominate in the cardiovascular reaction to oligaemia, the pulse rate is often surprisingly slow. We have already mentioned the occurrence of vasovagal attacks with pulse rates below 50 after moderate haemorrhage (1 litre), and it should now be noted that pulse rates of over 120 are rare even in very severe shock. A common pulse rate with blood pressure below 80 is 100 to 110. Further, we have observed that transfusion, while increasing the blood volume and raising the blood pressure, may be accompanied by a further rise in pulse rate. This paradoxical pulse reaction emphasizes the unreliability of pulse-rate records as giving any indication of severity, progress, or results of treatment. Increasing and fundamental emphasis is therefore laid on blood-pressure records.

Causation of Oligaemia

During the last war, and in the scanty observations made by clinical workers up to the onset of the present war, there seemed to be considerable mystery about the loss of blood. It was thought that loss of blood was not accounted for by external haemorrhage, and there was much speculation about "pooling" of blood in various parts of the vascular system. We can now state that in the vast majority of cases the diminution of circulating blood volume is due to extravasation of blood either outside the body or into the injured areas. The evidence for this is as follows:

(A) A carefully taken history often reveals quite extensive bleeding from unexpected sources. For example, one patient, whose major injury appeared to be a comminuted compound fracture of both bones of the leg, volunteered the information that she bled so much from her scalp that the pillow was soaked and had to be changed in the ambulance. Careful examination both before and during the operation often reveals enormous effusions of blood among the lacerated tissues.

(B) When serum or plasma alone is used for transfusion the whole course of the condition is very similar to that of a patient who has had, for example, a large haematemesis. Immediately after any severe bleeding the haemoglobin is not much reduced, and the usual figure is 80 to 90%. It takes a few days for plasma volume to be made up and for full blood dilution to occur, and it is only after 48 hours or more that the haemoglobin figure really does give a true indication of the blood loss. In one patient who had considerable haemorrhage among the thigh muscles following a punctured wound, and who was given a serum transfusion, the haemoglobin settled down from 86 to 48% in the course of three days. There was no evidence here of any sudden reappearance of blood from a "site of pooling" as the patient recovered from his shock. It seems apparent from the final haemoglobin figure that he had lost about half his circulating blood volume by haemorrhage. This was further borne out by the fact that it took 1,800 c.cm. of serum to restore his blood pressure from 70 to 120 mm. Hg.

It seems, therefore, that haemorrhage plays a very considerable part—in our opinion the most important part—in the production of shock.

Shock due to Plasma Loss.—In our experience this is encountered only in shock due to burns and in patients who have been subjected to prolonged crushing injuries. Again the clinical manifestations are very obvious. There is extensive oedema of the injured areas, and the haemoglobin concentration rises as high as 160%. Along with this haemoconcentration the blood pressure falls, and when serum is transfused in a quantity adequate to reduce the haemoglobin to a normal level the blood pressure is once more restored.

Shock due to Blood Loss combined with Plasma Loss.—It is obvious that injuries causing blood loss may be combined with prolonged muscle-crushing, which seems to produce the factor of plasma loss as well. In one such patient who was fully studied the initial haemoglobin figure was 100%; serum transfusion reduced the haemoglobin to 72% with restoration of the blood pressure. One and a half hours later the haemoglobin rose to 90%, indicating loss of serum from the circulation, and this was accompanied by further circulatory collapse. After further transfusion, operation was undertaken on an injured limb, when a large pool of blood containing several pints was found under the deep fascia.

The observations at operation thus established haemorrhage as a factor, while the inability to retain transfused serum meant that the capillaries in some part of the body were leaking serum constituents.

Other Factors in Shock

While loss of circulating blood volume is the dominant single factor, we should not deny the possibility that other influences may render the syndrome much more complex. These should be kept in mind as follows:

(A) *The irreversible state* must first be considered. We have seen patients in whom the blood pressure has been low (below 90 mm. Hg) for a few hours, and in whom restoration of the blood volume by transfusion failed to produce anything more than a transient improvement. It may be that the prolonged tissue anoxia has led to grave changes in the central nervous system and in other organs. Whatever the explanation, this condition is responsible for many therapeutic failures, and it should be prevented by *early* restoration of the blood pressure.

(B) *Toxaemic Factors.*—In the classification outlined it was noted that severe bacterial toxaemia could in itself produce a shock-like picture. It is apparent that infection of traumatized tissues may lead to the same result.

(C) *Crush Syndrome.*—It is noteworthy that the fall in blood pressure associated with loss of half the plasma—i.e., about 1½ litres—may be much more profound than that which follows a similar blood loss. The demonstration of grave renal impairment at an early stage in such cases seems to indicate the release of toxic substances into the circulation: these may have damaging effects on organs and tissues other than the kidneys. Reduction of blood volume may possibly be poorly tolerated when haemoconcentration is present.

Treatment

Organization.—The shocked patient calls for more continued and assiduous attention than is required in any other condition. It should be realized from the outset that these injured patients are under the care of the receiving surgeon. In order to relieve pressure on the operating teams the services of physicians skilled in transfusion technique may be employed in supervising the work of resuscitation in special wards set aside for this purpose. It should be realized that adequate nursing aid should also be available; over a period of a few hours one nurse should be at hand for each patient requiring transfusion. There is usually little difficulty in achieving this through the help of volunteers from among the nursing staff. In addition to the ordinary pulse and temperature charts, blood-pressure records are very important. Students, nurses, and orderlies may be trained to record systolic pressure.

General Measures.—Patients should be undressed as quickly as possible so that a full assessment of injuries may be made. They should be put to bed in the recumbent position; if circulatory collapse is obviously severe the head-down position should be adopted while waiting to begin transfusion. Warmth is desirable, as these patients are often chilled; but overheating is to be avoided. In a striking recent paper Blalock and his colleagues showed that overheating was definitely harmful. Not only is blood deflected to the warm skin when it is badly needed elsewhere, but the metabolism of tissues in general is increased by warmth, calling for a still greater oxygen supply. Adequate cover should therefore be given to shocked patients, but there is no need to worry unduly about cool or cold extremities.

Morphine.—Morphine should be given when indicated. It has little value as a specific therapeutic measure, but if there is a complaint of pain it should not be withheld. It is usually found, however, that patients in profound oligaemic shock do not complain of pain, though restoration of the blood pressure by transfusion is accompanied by increasing restlessness and awareness of pain. Morphine is therefore likely to be required while the patients are recovering rather than during the stage of severe shock.

Fluid Administration.—Since loss of circulating fluid is a fundamental feature of oligaemic shock, fluid replacement is necessary. If the patients are thirsty they should be allowed glucose drinks, warm tea, or water as desired. Vomiting is sometimes a troublesome feature, and in such cases tap-water may be given slowly per rectum. If these methods prove unsuccessful, deep intramuscular infusions of saline may be given into the lateral aspects of the thighs, the needles being pushed right down to the bone. A large amount of fluid may be administered in this manner.

Transfusion.—Blood transfusion is the sheet-anchor of successful treatment in oligaemic shock. Other transfusion fluids may also be used, and these are discussed below. Considerable clinical judgment is necessary to decide when transfusion should be begun, and no simple rule can be enunciated. It is obvious that in patients with very low blood pressures—e.g., below 80 mm. Hg—transfusion should be started at the earliest possible moment. Where injuries are severe, and from the history and from examination there is evidence of severe blood loss, transfusion should be begun without delay, even though the blood pressure may not be below 100 mm. Hg. Experience has shown that in such cases more serious vascular collapse may develop quite rapidly. In the less severe cases of injury a period of observation is necessary. A low blood pressure, if associated with a slow pulse, is likely to recover spontaneously; in other instances the pulse may become more rapid and the patient will pass into a state of obviously severe oligaemic shock, for which transfusion is required. Generally speaking, if the blood pressure remains at or below 90 mm. Hg for more than one hour transfusion should no longer be delayed. The danger of prolonged lowering of blood pressure is the development of the irreversible state already mentioned.

The volume of blood or blood substitute to be given by transfusion is determined entirely by the response of the blood pressure. The transfusion should not be stopped until the blood pressure has returned to a normal figure, say 110 to 120 mm. Hg. In previously hypertensive subjects it will be found that the blood pressure will go on rising towards a higher figure with quite moderate transfusion volumes, and in such patients the transfusion should be continued until a pressure of 140 to 150 mm. Hg is reached. When a normal blood-pressure figure has been reached the transfusion apparatus should not be at once disconnected but the infusion should be allowed to continue slowly as a drip: the slow drip is a precaution against a further fall in blood pressure which may result from loss of the saline part of the transfusion fluid or which may develop at subsequent operation. Arrangements should be made for the continuation of transfusion while any operative procedures are being undertaken.

Transfusion Fluids.—Blood is the fluid of choice, but there are considerable advantages in the use of serum or plasma. The latter fluids can be used without cross-grouping, and we have seen no untoward results from the administration of quantities as great as 2 litres. During the administration of serum the recipient's haemoglobin is diluted and he is rendered moderately anaemic. It is desirable, therefore, that some limit should be set to the degree of blood dilution produced by such methods of transfusion, and we regard it as unwise to reduce the haemoglobin below 60%. It is safe to give serum or plasma in quantities up to 1 litre, but if further transfusion is necessary blood should be used where possible.

Other blood substitutes include Bayliss's gum-saline, introduced in the last war. Casualties have not yet occurred on such a scale as to exhaust our stocks of blood and serum, but in such an event gum-saline would undoubtedly be used. More recent blood substitutes devised in America include solutions of pectin and isinglass. We understand that these are rather disappointing.

Reports of Societies

BACILLARY DYSENTERY IN THE MIDDLE EAST

MODERN CHEMOTHERAPEUTIC TREATMENT

At a meeting of the Royal Society of Tropical Medicine and Hygiene on Nov. 4, with Sir Rickard Christophers, F.R.S., presiding, Col. N. Hamilton Fairley, F.R.S., presented on behalf of himself and Col. J. S. K. Boyd the results of certain work carried out in the Middle East on the diagnosis and treatment of bacillary dysentery, with special reference to sulphaguanidine. Col. Fairley said that the joint investigation of Col. Boyd and himself ended in January, 1942. The analysis of data was at that time incomplete, and further data might be incorporated before the paper was published.

The outstanding feature of bacillary dysentery in the Middle East, said Col. Fairley, had been its mildness. Even with Shiga dysentery the mortality had not been as high as expected. But although the general mortality rate had been exceedingly low and the incidence much less than in the last war, bacillary dysentery continued to cause great wastage of man-power, especially as duration in hospital averaged three to four weeks.

Army Prophylaxis

At Headquarters, Middle East, the aspects on which the work had been concentrated were Army sanitation, fly control, the dysentery carrier, bacteriological types of organisms present, and specific treatment. In the Middle East fly transmission was the rule, and faecal-feeding flies abounded. In the forward areas it was the duty of the sanitary personnel to burn or treat promptly with insecticide all exposed excreta and animal carcases. Where possible in these forward areas trench latrines were immediately dug and provided with well-fitting fly-proof covers if available. Failing this, earth was immediately used to cover the stools in trench latrines, which were sprinkled once daily with powdered borax or some insecticide. It had been found that desert flies did not like entering roofed structures where it was darker inside than out. In camps curtains of fishing-net hung outside of doors and windows afforded protection even although flies could get through the meshes. Cooks and all people handling food were instructed to wash their hands regularly. Native labour presented a problem, but when latrines of the Moslem type were constructed, fly-proofed, and conveniently placed this problem became manageable.

Shiga dysentery on the average accounted for about 10% of all cases seen in the Middle East. The most common organism was Flexner II, and the next most common was Flexner VI. the old Newcastle–Manchester group. About 10% of all dysentery was amoebic (with which the present study was not concerned); no bilharzia dysentery had been seen by Col. Fairley. After dealing with the different types of exudate and the relation between these and the percentage of isolations, he passed on to the carrier problem. In chronic cases, and also in acute cases which failed to clear up in the ordinary way, sigmoidoscopic examinations were always made, and he described the appearances and varieties of ulceration seen in such examinations and discussed their significance. In certain cases of chronic Shiga dysentery ulcers surrounded by normal-looking mucous membrane were found to contain Shiga bacilli six months after the original attack.

Clinical Aspects

Most epidemic diarrhoea was dysentery. From a military point of view any person who had collicky pain followed by febrile diarrhoea with fluid stools containing flakes of mucus or mucus and blood should be regarded at once as a case of dysentery and sent away without delay. He had stressed the mild nature of most of the dysentery encountered, but with Shiga dysentery there were many exceptions. Fulminating cases were rare. He recalled one case, however, in which death occurred within 32 hours of onset. In the ordinary severe Shiga infections onset might be sudden or insidious. The former began with a rigor associated with fever, nausea, and vomiting; in the latter, severe intestinal symptoms might not develop for several days. One unfortunate feature about bacillary dysentery was that neither the mode of onset nor the febrile course necessarily afforded a reliable index to prognosis.

Complications were rare, but some were met with which had not previously been described. Local complications included perforation, intestinal haemorrhage, chronic peritonitis with effusion and pneumoperitoneum (one case); among the systemic complications were peripheral circulatory failure, renal failure, and arthritis.

The majority of cases of non-Shiga dysentery ultimately got well, in Col. Fairley's experience, with rest, copious fluids, appropriate dietary, and magnesium sulphate, but magnesium sulphate treatment should not be continued over too long a period, as it sometimes tended to keep up the diarrhoea. With regard to dietary it had been found that with milder infections milk drinks could be allowed at a relatively early stage without disadvantage.

The conclusion reached with regard to serum treatment was disappointing. He took out with him to the Middle East a specially prepared experimental batch of high-titre anti-dysenteric Shiga serum (1 c.cm. = 20,000 I.U.), and had a fair opportunity of testing its value. It certainly relieved toxic features—presumably by neutralizing circulating Shiga toxin—but its benefit was rarely more than temporary.

Experience with Sulphaguanidine

He well remembered three of the first cases treated. Two of them had been under observation for three months and no treatment had made any real difference to the ulcers. Within 14 days of beginning sulphaguanidine treatment the ulcers completely healed, and the symptoms, which at this stage were mild, entirely disappeared. In the third case, which had lasted for about six months, there was again complete healing of the ulcers within a fortnight. A much wider investigation with the drug was then undertaken, and it was applied in a series of over 500 cases. Care was taken to combat dehydration where present.

The administration of sulphaguanidine was followed in some cases by headache or nausea, and in a few instances toxic rashes and fever developed. There was not a single case of haematuria, agranulocytosis, haemolytic anaemia, or jaundice, nor did sulphaguanidine bring about obstructive effects in the kidney. In 135 proved Shiga cases which recovered under sulphaguanidine therapy there was as a rule quite early an astonishing improvement, manifested by an increased feeling of well-being, rapid relief of abdominal pain and tenesmus, and a decrease in abdominal symptoms. An early reduction of temperature and pulse rate took place in uncomplicated cases, which reached normal in one to three days. There was also a remarkable reduction in the daily number of stools, and a rapid disappearance of blood and subsequently of mucus from the faeces.

In a total of 84 cases in which Shiga bacilli were isolated Col. Fairley was able to show the results in the following tabular form:

Interval of Days between Onset and Beginning of Treatment	No. of Cases	Average Number of Stools in 24 Hours preceding Treatment	Average Time in Days after Treatment started before Stools per Day were—		
			3–5	2 or less	Formed
1–5	39	27·8	4·0	5·3	7·7
6–10	32	21·7	4·0	5·4	7·15
11–20	13	14·1	3·0	5·0	8·3

That result could be interpreted only by assuming that there was an active bacteriostatic action on the dysentery organisms in the bowel wall. Out of 12 more chronic cases, 9 were completely cured as shown by the sigmoidoscope; in 2 others a certain amount of diarrhoea persisted, and there was evidence of sluggish healing, although there were no ulcers; in the twelfth case the symptoms persisted, but there was no real opportunity of following up this case, which must be put down as a failure. In the entire series of over 500 cases there were 5 deaths; in two of these the patients were really moribund before sulphaguanidine was given and died within 24 hours. The third case received a full course of treatment, but the patient died of cerebral thrombosis during convalescence, and at necropsy the colon was found to be completely healed. The fourth patient had an advanced chronic bilateral hydronephrosis, while the fifth died of lobar pneumonia, which was either present at the time or developed shortly after treatment.

If supplies were sufficient, the therapeutic ideal from the Army point of view (Col. Fairley concluded) was that every dysentery patient should have sulphaguanidine at the earliest possible moment. The case should be diagnosed on clinical grounds, and, although specimens should be sent to the laboratory for culture and microscopical reports, the clinician should not await the return before beginning treatment. Such treatment would be a means of saving life in a number of Shiga cases; it would shorten the stay in hospital of the average dysentery case; and would largely eliminate carriers. Sulphaguanidine, good as it was, might not be the ideal drug for dysentery; it was expensive and had to be given in large dosage. Two other drugs were now under trial—sulphasuxidine and sulphamethazine—and it was possible that these or analogous compounds in the future might be even more useful. Both Col. Boyd and he felt convinced that in drugs of this type there was available for the first time a specific agent for the cure of bacillary dysentery; since dehydration occurred in this disease it was essential that such drugs should not produce renal blockage.

Discussion

Dr. R. CRUICKSHANK said that for the laboratory diagnosis of bacillary dysentery a medium had now been found which was a great advance on McConkey's. This was desoxycholate acetate, and with this it had been found, as Col. Fairley's work had shown, that the convalescent carrier was much more common than had been originally supposed. As for the new drugs in treatment, sulphaguanidine was less effective with the Sonne infection than with Shiga. He had had an opportunity of trying sulphasuxidine and had found it more effective than sulphaguanidine in dysentery of the Sonne type.

Dr. H. J. SMYLY, who had lately returned from Occupied China, said that in December, 1941, he received out there 5,000 half-gramme tablets of sulphaguanidine for clinical trial, and when summer dysentery set in he arranged to carry out a systematic investigation with the drug. The average mild cases which came in on the third or fourth day and cleared up after a few days with rest and simple treatment were excluded. The cases selected were those of young children under 10, cases of less than 24 hours' illness, severe cases with more than 20 stools a day, and chronic cases of over one month's duration. The doses given were initially one-tenth gramme per kilo body weight, and then half of this every four hours day and night until the stools were fewer than five a day. All the acute cases improved rapidly, the early cases usually within the first few hours, and these were apparently well within three or four days But one chronic case—a man aged 30 who had had dysentery for two years—showed no improvement whatever, although he had had sulphaguanidine for the exceptionally long period of 16 days.

Sir Philip Manson-Bahr said that he had used sulphaguanidine for over two years in a good many cases of chronic bacillary dysentery and also of colitis. He was a bold man who would say that he had a cure for ulcerative colitis, which of all cryptic diseases was most cryptic, but he conceived the idea of injecting sulphaguanidine per rectum—it was very well retained—and, watching the cases by means of the sigmoidoscope, he had become rather confident about some of the results. In some cases of chronic bacillary dysentery the results were dramatic.

In the course of the further discussion Lieut.-Col. Boland, R.A.M.C., recently returned from the Middle East, expressed a more cautious view. His experience of one year out there without sulphaguanidine and one and a half years with it had left him with an open mind. He still thought there had not been a sufficient number of controlled cases to permit an estimate of the exact effect. Supplies of the drug also had been rather limited. Cases of dysentery in the Middle East were comparatively mild, and the mortality was low. There should be a large-scale experiment in which considerable numbers of cases were treated with the drug while others served as controls.

Correspondence

Physical Treatment of Acute War Neurosis

Sir,—Dr. Sargant's (*Journal*, Nov. 14, p. 574) emphasis on the practical value of physical as against psychotherapeutic measures and environmental readjustments, in relation to their greater facility of use and rapidity of action, is especially applicable to an army in the field or under conditions prevailing in an expeditionary force.

Practical experience of the psychiatric casualties occurring in the M.E.F. during the last two years has borne out very strikingly the great importance of early and adequate physical treatment in the acute war neurosis. In the great majority of cases of acute war neurosis rapid decisions have to be reached upon three questions—whether the case requires evacuation from a forward area; whether treatment is likely to prove beneficial in a reasonable time at an ordinary base hospital; or whether, in view of the exigencies of the situation and the pressure on accommodation, a more complete evacuation is necessary. The necessity for reaching a final decision on these points makes physical measures of treatment a matter not so much of choice as of necessity.

The comparison between the "acute abdomen" and the "acute neurosis" in its relation to the urgency of treatment necessary, and in the effects of delay in instituting such treatment upon the ultimate prognosis, was shown sufficiently strikingly throughout the whole period under review. The patient who was treated within a few hours generally showed a correspondingly good prognosis, whilst the longer the delay in commencing treatment the more unfavourable the prognosis became from the point of view of return to full duties, especially in a forward area. Unfortunately, although the importance and significance of these factors were well recognized in theory, the problem of carrying them into practice under the conditions of warfare actually prevailing presented great and, at times, apparently insurmountable difficulties.

The most striking features of desert warfare in relation to psychiatric casualties were: (1) the extreme fluidity and mobility of such warfare, at least during the actual campaign; (2) the long and arduous lines of evacuation; (3) the extreme physical strain and mental stress involved during this evacuation.

The responsibility of providing the immediate treatment for the battle neurotic lay, and lies, with the regimental medical officer in a forward area; and, as a corollary, the necessity for ensuring that such medical officers have an adequate knowledge of the principles of early treatment and, equally important, an adequate supply of drugs to carry such principles into effect, becomes a matter of very great importance. The ideal choice of drugs for the medical officer in a forward area is, of course, debatable, and cannot be discussed here. In any choice of drug the essential features would appear to be standardization, low toxicity, small bulk, and simplicity of administration.

In practice, two main groups of cases were met with in a base psychiatric centre: (1) The more usual group, in which the neurosis had been developing during a lengthy evacuation lasting several days, and in which treatment had either been intermittent or, as in some cases, not given at all. (2) The group where the acute neurotic was admitted within a few hours—following, for example, severe air raids, or with naval cases. In the latter cases treatment was carried out on the general lines described by Dr. Sargant—usually by a combination of luminal and paraldehyde. In the former the methods of prolonged narcosis were more frequently employed. In both groups the necessity for distinguishing between the true battle neurotic as such and the "exhaustion state" was important, the latter responding rapidly to simple sedation and the more routine measures of physical treatment—a warm bath, a hot drink, a comfortable bed, and general care and attention.

Several practical difficulties occurred in the actual administration of physical measures of treatment; for example, in prolonged narcosis several cases of collapse and hyperpyrexia of an alarming type occurred, even with relatively small dosages and with skilled nursing care and attention. The danger of prolonged narcosis—sufficiently real, as Dr. Sargant points out, in the ordinary course of events—becomes considerably intensified under tropical or subtropical conditions. On several occasions fairly intense aerial bombardment occurred in close vicinity to psychiatric centres; the value of physical as against purely psychotherapeutic measures became especially apparent at such times.

The importance of the patient's original personality and constitution is, as Dr. Sargant states, of very great significance, and was very strikingly emphasized in a series of 350 cases of acute war neurosis analysed at the psychiatric centre which I commanded. The effect of an unfavourable constitution under varying degrees of battle stress was brought out statistically in quite a dramatic manner. The use of intravenous barbiturates in the removal of the conversion symptoms of the hysterical reaction was found of very great value, and here, also, it was found the earlier the treatment was carried out the more satisfactory the prognosis became.

Convulsive therapy was used to an increasing extent, both in the depressive states described by Dr. Sargant and in certain hysterical cases; the results were most encouraging, and the risks of fracture regarded as negligible—no complications arose in any case in our series.

In conclusion, I could summarize our experience in the M.E.F. as follows: (1) It has emphasized the vital importance of physical measures of treatment. (2) The physical measures of treatment advocated in Dr. Sargant's paper have proved of the greatest value in the treatment of battle neurotics. (3) Early and adequate treatment is of paramount importance. (4) Certain practical difficulties exist in the administration of physical methods of treatment in a theatre of war.—I am, etc.,

H. B. Craigie.
London, S.W.7 Major, R.A.M.C.

Haemolysis in Causation of Erythroblastosis Foetalis

Sir,—I have read with great interest the paper by Messrs. K. E. Boorman and B. E. Dodd and Dr. P. L. Mollison on the clinical significance of the Rh factor (Nov. 7 and 14, pp. 535, 569), particularly that part which deals with erythroblastosis foetalis. The Boston school (Blackfan and his colleagues) has maintained that erythroblastosis foetalis is a primary condition and the cause of icterus gravis, hydrops foetalis, and congenital haemolytic anaemia, whereas my colleagues and I have held the view that it is the result of haemolysis, and therefore a symptom and not the cause of these syndromes. When I last saw the late Dr. Blackfan in 1937 I discovered that our arguments had somewhat shaken his views; since that time, chiefly as the result of the work of my colleague, Dr. H. S. Baar, on the metabolism of haemoglobin (shortly to be published in the *Archives of Disease in Childhood*), we have obtained other data which support the theory that haemolysis is the underlying factor in the disease.

When I realized that Levine and his colleagues had produced evidence that iso-immunization was the cause of erythroblastosis foetalis, I endeavoured to obtain some anti-Rh sera to test their conclusion. I was unsuccessful in my attempts, but I am glad that the writers of the paper were more fortunate. Paediatricians in general and my co-workers in particular are greatly indebted to them for their work on this subject. They have produced evidence which strikingly supports our thesis, but, even more important, have devised a method for determining whether subsequent children are likely to be affected by erythroblastosis foetalis or not, and made a real contribution to the treatment of the disease. There still, however, remains unsolved the greatest problem in treatment —namely, the prevention of those ghastly sequelae, spastic diplegia, cirrhosis of the liver, and bone changes, which so frequently occur in this disease, and which often make the paediatrician regret that he has saved the child's life.

Since the thesis that erythroblastosis foetalis is the result and not the cause of this disease may now be accepted, would it not be better and more accurate to adopt the terminology suggested by Hawksley, Gittins, and myself (*Arch. Dis. Childh.*, 1933, **8**, 159) and speak of the condition as haemolytic anaemia of the newborn and subdivide it into three clinical forms: (*a*) with hydrops foetalis, (*b*) with icterus gravis, (*c*) without oedema or icterus?—I am, etc.,

Birmingham. LEONARD G. PARSONS.

Bacteriophage Treatment of Bacillary Dysentery

SIR,—Surg. Cmdr. D. C. Wilson (July 18, p. 81) makes certain remarks on my article (June 13, p. 719) which I trust I may be allowed to reply to.

He makes the point that my figures deal only with death rates (which, of course, was all I set out to deal with) and not with duration of illness; and on the strength of this he states that the aim of all three Services is "to return a fit patient to duty at the earliest possible moment." Many Alexandrian onlookers, who sometimes see more of the game than the players, will be astonished at this gratuitous statement. Actually my theme has always been that there is no need for other than a minimum of Service dysenteries ever reaching hospital. This latter occurs usually when they have passed to the stage named by me "neglected dysentery" (*B.M.J.*, 1941, **2**, 280), with resulting greater incapacity and need for longer sick and convalescent leave than if their dysenteries had never been allowed to develop into full-blown attacks. *Preventive development* of dysentery from pre-dysentery phases, like "Gyppy tummy," could—I feel every confidence in asserting from civil experience—be easily achieved by making available adequate supplies of good phage preparations at all advanced Navy, Army, and Air Force units, for administration on the first appearance of intestinal upsets of a pre-dysentery character. Has Cmdr. Wilson not, in his own words, confirmed that "civilians in Alexandria are so 'phage-minded' that to my knowledge they treat themselves with bacteriophage on the slightest suspicion of 'Gyppy tummy'"? Therefore, I think I am in a position to set his mind at ease regarding duration of illness, feeling sure that the adoption of a sound phage policy, such as outlined, could effect more in the way of improving this aspect of the situation than whatever measures may hitherto have been at work.

Cmdr. Wilson refers to a trial, in which he took part, of phage therapy in a small number of dysentery cases in an Alexandria Service hospital, from which he concludes that there was not enough "variation in hospital time" between the phage-treated and the control groups "to justify the continuation of the bacteriophage treatment." The inference here is, of course, that phage did not live up to what was expected of it, and proved no better than "the then standard treatment of sodium sulphate and fluids." The inference is misleading in that the experiment, in my estimation, was doomed to failure from the start; and the description given of it deals with no more than the opening act—"curtain raiser" might be a juster term—since, Cmdr. Wilson will recall, the performance was stopped by superior military orders before it had got properly under way. This helps to explain the challenge of my *B.M.J.* letter (1941, loc. cit.), which challenge still remains open.

Finally, Cmdr. Wilson reports that by the introduction of sulphaguanidine in the spring of 1941 a reduction in the duration of illness to 11 days from the onset was achieved, which result "appeared to make the further trial of bacteriophage superfluous." I hope Cmdr. Wilson will forgive my disillusioning him, but the facts are that statistical analysis of the recent authoritative Army figures of Cols. N. Hamilton Fairley and J. S. K. Boyd (*Lancet*, 1942, **1**, 20) and of my own figures of 13 years ago (*Lancet*, 1929, **2**, 273) reveals that sulphaguanidine presents no advantage whatsoever over phage in its rate of cure of the acute disease. Moreover, can the sulphonamides be administered with impunity to provide "preventive development" of full-blown dysentery in the same way that phage can? If so, why then, as to-day's "favourite," are they not made available at once and used (which in vain I have advocated should be done with phage) where they are most needed—the front line of all three fighting Services?—I am, etc.,

ARTHUR COMPTON,
Director of Laboratory Service, Alexandria Municipality.

First-aid for Fractured Spine

SIR,—It is with deep regret that I read of the tendency to instruct first-aiders to carry cases of fractured spine in the supine position. There is, of course, no doubt that, if carefully handled, a fractured spine can be transported safely in this position, but it entails expert handling on every occasion by skilled first-aiders. The question arises, Is this expert attention always present, and, if so, are there always the time and the facilities (e.g., during air raids) to ensure that the natural contour of the spine is rigidly maintained and that no flexion movements of any kind take place? My own experience tells me that often there is no time for attention to small details of this sort and that consequently irreparable damage may be done by injudicious handling. Should not, therefore, the first-aider be instructed to carry the patient in that position where harm is less likely to result—namely, the prone position? The whole value of this method lies in the fact that the dangerous movement of flexion is guarded against during transport. This danger is always present, and its liability to occur can well be appreciated when one considers all the movements often necessary to remove a patient from a demolished or partly demolished building on to the stretcher outside. It is these manipulations that may have such serious consequences should transport be carried out in any position other than the prone.

As regards the difficulty in diagnosis, the main duty of the first-aider is to treat the most important condition arising out of the accident. He is not concerned with accurate diagnosis. In the case in question, the patient will readily inform the first-aider as to the site of his pain, and should this be anywhere along the vertebral column no further investigation should be necessary; the patient should immediately be turned into the prone position. Quite apart from the advantages detailed above, considerable relief from pain and much comfort are attained by this change of posture.

To all rules there are, of course, exceptions, and in this case one might argue that patients with fracture of the cervical spine are better carried on their backs. This is quite true, but there is still little difficulty for the first-aider as regards diagnosis because these cases fall into two simple groups: first the fracture-dislocation, where the patient is usually unconscious and beyond treatment; and, secondly, the subluxation, where the main complaint is pain in the neck and limitation of movement. In the latter case the first-aider should have no difficulty in instructing the patient to lie flat on his back with a small pillow in the nape of his neck.—I am, etc.,

DESMOND K. MULVANY,
Hospital of St. John and St. Elizabeth Surgeon, E.M.S

SIR,—The prone position in the emergency treatment of fractured spine has always given me the impression of being of more theoretical than practical value, and I was interested to read about Lieut.-Col. J. L. Moir's method of transport in the supine posture (Oct. 31, p. 529), which appears to be of definite advantage to the first-aid worker.

The supine position is, I think, the method of choice not only because it is simpler from the first-aider's point of view but it is much safer and more comfortable for the patient. The diagnosis at the time of injury or in the casualty department of a hospital is often difficult and therefore often incorrect. Fractured pelvis, with or without abdominal complications, and fractured ribs are frequently the cause of error, and in such cases the prone position can only be harmful. Fractures of the spine may be complicated by head injuries, fractured limbs, and visceral injuries; transport of these patients in the prone position is contraindicated. At a recent large-scale Home Guard exercise I attended, many "fractures of the spine" were admitted in the prone position, which was difficult to maintain even in these uninjured "patients." Others treated in the supine posture were much more comfortable.

I consider it to be an advantage if the patient on arrival in hospital is fixed on a special frame such as the one I described (*Journal*, March 4, 1939, p. 444), which holds the spine in a moderate degree of extension and yet allows nursing and transport without disturbing the fracture. The principle is similar to that of the Thomas splint in the first-aid treatment of fractures of the femur. Unless some form of splintage is adopted the patient is moved bodily on several occasions from one site to another without adequate fixation of the spine; four transferences are needed for *x*-ray purposes alone.

Watson-Jones first advocated the prone position in the emergency treatment of fractured spine in 1931, and it has been widely adopted since. I feel that after this extended trial the time has come to assess its practical significance in first-aid work.—I am, etc.,

Pinderfields Emergency Hospital. GEOFFREY HYMAN.

SIR,—As a "mere" physician whose waning energies wartime conditions have directed to the task of teaching first aid to Home Guard and A.R.P. personnel, I was interested to read the letter of Mr. Thomas Stowell on first aid for fractured spine in the *Journal* of Nov. 21. I think many will regret that he did not ask for space for details of his methods. I hope he will also give us the benefit of his experience in teaching first-aiders how to diagnose the presence of fracture. It is very difficult to teach diagnosis of any injury; that of spinal injury is the most difficult of all. I am sure that Mr. Stowell does not intend to imply that first-aiders ought to diagnose fractures which "in the absence of repeated *x*-ray examinations are overlooked until later disabilities arise."—I am, etc.,

Downton, Wilts. J. C. MATTHEWS, M.D., F.R.C.P.

Sulphonamides for Gonorrhoea

SIR,—Dr. M. R. Soni (Nov. 21, p. 617) says that a few years ago I "stated that it is better to wait until the attack [of gonorrhoea] has lasted three weeks before starting treatment with any of the remedies [i.e., sulphonamides]." It is not strictly correct to say that I "stated, etc." In my letter to which Dr. Soni refers (*Journal*, 1938, 2, 91), I said, "On the strength of this evidence, I suggest that, etc.," and the conclusion of the same paragraph indicated, I hoped, that the recommendation was rather tentative and put forward as a basis for discussion. I still believe that the suggestion was sound as *applied to any sulphonamide remedy which had been tested at all extensively then*, but very soon afterwards it became clear that sulphapyridine was so far superior to sulphanilamide and uleron that no wait was necessary. As I had felt that the suggestion or recommendation was tentative, no public recantation seemed necessary. I hope to profit by this error of omission in future.

Dr. Soni challenges my statement that there is good evidence that administration of 5 g. sulphathiazole on two successive days eradicates gonorrhoea, in males at least, in over 90% of cases, and to prevent any misunderstanding I should like here to cite briefly the evidence which I had in mind: I had already circularized it to directors of V.D. clinics in England.

Prof. G. Miescher, Zurich (1940), as a result of a systematic trial of nine schemes of dosage, arrived first at a one-dose cure and later (1941), in collaboration with Schnetz in a paper which disclosed very careful study of the cases, recommended 5 doses of 1 g. each at intervals of two hours on each of two successive days. With this scheme they claimed 55 cures in 56 cases. Miescher's work was evidently taken seriously by some German Army medical officers. B. Mörschhäuser (1942) reported that with 10 tablets on each of two successive days the relapse-rate in 731 cases had been 5.4%. W. Heyn (1942), in 250 cases treated with 10 tablets the first day and 8 the next, had 10% of relapses. Taggeselle (1942) reported 12% relapses in 110 cases treated with 9 tablets a day for 2 days.

Since dispatch of the letter criticized by Dr. Soni I have found three other references which testify to the powerful effect of sulphathiazole in sufficient dosage. H. Haxthausen, Denmark (1941), reporting on 310 cases of complicated and uncomplicated gonorrhoea, said that in the uncomplicated ones 6 g. daily for two days had yielded 87% of cures in males and 93% in females. J. P. Pappas, U.S.A. (1942), claimed cures in 23 of 28 cases of previously untreated acute gonorrhoea in soldiers treated each with a single dose ranging from 5 to 7 g. H. Pfisterer (1941) reported 95 cures in 100 cases treated by Miescher's two-day method.

The cases in the reports quoted above appear to have been under close control, and this probably eliminated one source of error in many civilian observations—the patients' failure to take the prescribed doses.—I am, etc.,

London, S.W.1. L. W. HARRISON.

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Reporting of Deaths to Coroner

SIR,—In the *Supplement* of Sept. 12 (p. 25) there appeared a most interesting opinion as to the reporting of deaths to the coroner. I am not concerned with the circumstances that led to that opinion being sought or given, but I venture to submit that, without careful appreciation of the words used, the opinion may be misunderstood.

The preamble that leads to the opinion states that the coroner *asked* for certain cases to be reported to him; the opinion deals with the matter in terms of the coroner having or not having a lawful right to require the information. The answer given does not exactly correspond with the question that appears to have been asked, and it is in that aspect of the matter that confusion of thought may arise.

It is fundamental to a coroner's jurisdiction that he be informed of a death: before being informed he has no powers. As the opinion points out, apart from a few statutory examples (deaths in mental institutions, foster children, etc.), there is no statutory duty imposed on any person to report deaths to the coroner. By common law, however, there is a duty on any person who knows that a death should be investigated by the coroner to report the fact of that death to the coroner or to the police. And in this connexion it should be remembered that a medical man, with his scientific knowledge and his keener appreciation of the facts, is in a better position to exercise this common-law duty than the average layman.

Under the law relating to the registration of deaths a doctor is required to give a medical certificate as to the cause of death to the best of his knowledge and belief; it is said that he should give a certificate even though the death be violent, since there is no legal sanction that makes any provision absolving him from the duty that statute law has cast upon him. Strict adherence to legal procedure, then, would require that the practitioner on the death of a patient whom he has attended during his last illness should issue a certificate of the cause of death (if he knows it) and at the same time report the case to the coroner if it is one which should be reported. If he does not know the cause of death he cannot issue a certificate, for the wording of Section 3 of the Coroners Act of 1887 casts upon the coroner the duty to inquire into all deaths the cause of which is unknown. If the doctor gives a certificate in a case that should be, but has not been, reported to the coroner, the registrar of deaths, when he receives the certificate from the relatives, is unable to register the death, but has a duty to report it to the coroner. In such a case he cannot register the death until he obtains from the coroner the latter's decision and conclusion. Failure on the part of the medical man to report direct to the coroner will, therefore, involve a delay which may aggravate and distress the relatives of the deceased.

Recognition of this avoidable cause of delay led to the initiation some 12 years ago in my district in London of a system whereby hospitals (a few at first) were asked if they would report to me certain classes of cases direct, instead of sending the relatives with an indifferent certificate to the registrar, who might feel unable to accept it. This system has worked well and has gradually been extended, but it is essentially voluntary and it has never been suggested that there is any legal compulsion behind it.

The effect of reporting to the coroner deaths occurring within 24 hours of the administration of an anaesthetic places upon his (the coroner's) shoulders the responsibility of decision. In the opinion of the learned counsel, the coroner rightly "requires" the information. This is higher than I assessed it and I am grateful to find that I am so well supported and, indeed, carried forward. The reporting of deaths which occur within 24 hours of admission to hospital is a valuable safeguard against unexpected elements and contingencies. It need hardly be pointed out that it is in no sense a reflection upon a hospital that a patient should die soon after admission, but it may well be that a patient should have been sent in much earlier, or that prior treatment has been inadequate, or that there may have been neglect of the patient by himself or others before his admission to hospital. From the coroner's point of view all these are matters of much importance. Incidentally, I have known many cases of criminal abortion, suicide, etc., which have unexpectedly been brought to light in this way.

While, therefore, I think we must all be grateful for the publication of counsel's opinion, it would be wrong to encourage any thought that it indicates a serious divergence of outlook between the coroner and the medical profession. Both of them have their parts to play in a public service that has a great public value, and voluntary co-operation within the legal framework between doctor and coroner is as much to be welcomed in this as in any other sphere of public activity.—I am, etc.,

W. B. Purchase,
London, N.W.1. Coroner, Northern District, County of London

Tetanus

Sir,—In his recent letter (Nov. 21, p. 619) Dr. J. H Hannan suggests that it is unnecessary to give antitoxin in tetanus because if the spasms can be controlled the body will produce its own antitoxin in due course. I should like to comment on this view, because, although it is true of some mild cases, it would be unwise to assume that it applies to more than a minority.

When a case of tetanus is first seen some toxin is acting on the nervous system (I will call this "fraction A") and there is no evidence that this can be neutralized by antitoxin, more is circulating in the blood and lymph (fraction B) and can probably be neutralized by antitoxin, and still more is being formed in the wound (fraction C), where its potential threat can be met if, when it is absorbed, there is plenty of circulating antitoxin to meet it. The danger of continued absorption from the wound is real and depends on its nature, severity, and the degree of infection. Recovery depends first on whether a lethal dose of fraction A is already acting on the nervous system before antitoxin is given. If this is so the prognosis is hopeless and death will occur whatever is done to control the spasms. Happily in a high proportion of cases this is not so, and it is probable that a large dose of antitoxin neutralizes fraction B and stops further absorption of fraction C, so preventing a lethal dose. After this, if spasms can be controlled and death by exhaustion prevented the patient should recover.

When a patient is first seen it is impossible to say how much toxin has already been absorbed and how much is still present and being formed in the wound. Some cases, of which the one quoted by Dr. Hannan is an interesting example, have only absorbed a sublethal dose, and if no more is absorbed from the wound the patients will recover by their own powers of resistance. Because it is not possible to distinguish these with certainty when they are first seen it is desirable to give a large dose of antitoxin as soon as possible to every case of tetanus. I think that to try to pick and choose those which need and do not need antitoxin will increase the mortality.—I am, etc.,

Cambridge Leslie Cole.

Prevention of Small-pox

Sir,—Dr. Arthur Howard (Nov. 14, p. 587) says: "The letter on vaccination against small-pox from Dr. Killick Millard (Oct. 31, p. 530) is typical of the prejudiced point of view of present-day anti-vaccinationists. It contains several misstatements which should be corrected." If Dr. Howard really thinks that I am an anti-vaccinationist he is certainly much mistaken. Few living men can have spent longer hours pleading with persons who were opposed to vaccination to get vaccinated—I refer of course to actual small-pox contacts—than I have done. Very many of these I have succeeded in convincing and have personally vaccinated them.

As regards my alleged misstatements, Dr. Howard specially emphasizes my contention that vaccination is a much more serious operation than immunization against diphtheria. He claims that in his experience "it causes considerably less discomfort and incapacity than the usual injections for immunization against diphtheria." I can only reply that Dr. Howard's experience is quite contrary to my own, and I have had much personal experience of both forms of inoculation. I can only imagine that his experience has been either very small or very exceptional. I think that few medical men will agree with him.

Dr. Howard concludes by urging that a campaign should be started for universal vaccination on the same lines as that now being conducted for immunization. Has it ever occurred to him that for nearly a century this country attempted to control small-pox by universal vaccination and signally failed; that India is still attempting to do so and has failed even more signally, so that small-pox in India is still a terrible scourge, causing many thousands of deaths every year; that for the past half-century we in this country have virtually abandoned the attempt to secure universal vaccination, yet small-pox has all but disappeared and has quite ceased to affect our mortality returns? Diphtheria, on the other hand, still causes thousands of deaths every year, and immunization is still on its trial. The case for universal vaccination against small-pox is, therefore, entirely different from that for mass immunization against diphtheria.—I am, etc.,

Leicester. C. Killick Millard

Riboflavin Deficiency

Sir,—I was interested to read Dr. H. Scarborough's account (Nov. 21, p. 601) of his investigations of the ocular signs in riboflavin deficiency, and his description of three cases showing the fully developed ariboflavinosis syndrome. It seems probable that cases of this deficiency are now more common than a review of the literature would indicate. May this not be due to the fact that under wartime conditions we are eating far more carbohydrates and far less proteins and fats than before, and that our vitamin intake is also reduced to a minimum? In all three cases described there appears to have been either some deficiency in absorption or a failure of storage or utilization of the vitamin, the first patient having had a gastric ulcer, the second steatorrhoea, and the third pernicious anaemia superadded.

According to Dr. V. P. Sydenstricker (*Amer. J. publ. Hlth.*, **31**, 344) when you get an excessive carbohydrate intake with a deficient absorption of vitamin or a failure of storage or utilization, the stage is set for a deficiency in one or other of the co-enzymes necessary for starch metabolism.

Apparently the ocular symptoms are among the earliest evidence of riboflavin deficiency, and the striking result of replacement therapy is well illustrated in a case which I saw recently. A married woman aged 43 consulted me in September last complaining of double ptosis, photophobia, progressive dimness of vision, and ocular fatigue; her eyes itched and felt "heavy," and she herself felt nervous and irritable and was easily tired. She had none of the classical signs (fissured lips, cheilosis, glossitis, seborrhoea, etc.) of ariboflavinosis, but had recurrent styes and "ulcers of the gums at about the period times." She had a well-marked cutaneous rosacea, and had complained of dyspepsia for some time. Nine months ago she underwent *x*-ray examination and a benign duodenal ulcer was revealed. She had been put on a diet and had very little meat but plenty of bread-and-butter, potatoes, and Benger's food. Mr. Harold Levy was consulted for her eye symptoms; he diagnosed superficial keratitis and suggested riboflavin therapy. She was given 2 mg. riboflavin orally and 1 mg. riboflavin by injection daily. The response was immediate, and after one week her ocular symptoms improved. Within a fortnight she felt perfectly well in every way and herself volunteered the statement that she had more energy and the greatest sense of well-being that she had had for months. The cutaneous rosacea was only slightly affected.—I am, etc.,

Muswell Hill, N.10. I. S. FOX.

Shock Treatment in Psychiatry

SIR,—I have read your leading article on shock treatment in psychiatry (Oct. 3, p. 397) and followed the correspondence with great interest, and fully agree with those who deplore this form of treatment as a panacea. I feel it is misleading to compare shock treatment with malarial treatment of G.P.I., for in the latter the pathology is reasonably well defined, while in the former it is still an unknown factor.

If we assume that the symptom is the "total" reaction of the individual towards the "total" environment, then an isolated form of treatment such as E.C.T. without any psychotherapeutic intervention is liable to be of only temporary value.

We have all been able to observe how in any form of shock treatment the patient becomes more accessible and able to form a transference relationship with the physician. This point is stressed by Dr. H. Pullar-Strecker (Nov. 21, p. 619) when discussing insulin treatment, and he also emphasizes the value of psychotherapeutic encouragement.

May not one of the factors in convulsive therapy be a psychological one—i.e., the patient has experienced and successfully passed through a "catastrophic experience," which may be interpreted by him as an atonement for the fantasied unforgivable sin which he has committed.—I am, etc.,

Bishop's Stortford. D. N. HARDCASTLE.

SIR,—Dr. F.-T. Thorpe says (Sept. 5, p. 281) that the "beneficial effect of shock therapy in the treatment of the emotional mental disorders is now so firmly established," etc. May I refer him to your annotation on "Brain Damage in Shock Treatment" (May 30, p. 674) and also to Dr. William Sargant's letter (*Lancet*, Sept. 5, p. 293) under the heading of "Recoverable Schizophrenia." In the New York State Hospital "a thousand schizophrenics treated with convulsive therapy did even worse than an equivalent control group left untreated, while over a thousand cases treated with insulin did three times as well." There is much more to the point. I understand from Dr. Sargant's letter that he thinks that, if it is suggested that insulin is now superseded by convulsive therapy, it would be disastrous for the patients concerned. If that is his opinion, I heartily agree with him.—I am, etc.,

Salisbury. HORACE HILL.

Convulsions under Trilene Anaesthesia

SIR,—Dr. Ysobel Garland's account of convulsions under trilene anaesthesia (Nov. 21, p. 607) resembles in some ways a recent experience of mine. The patient was a woman of 58 who had had no previous operation or illness of note. She had morphine 1/4 grain and atropine 1/100 grain an hour before operation, which was for removal of a simple cyst from the right breast. Trilene was the only anaesthetic given, and was administered by the open method on a single layer of Turkish towelling on a Schimmelbusch mask. About 2 drachms were required for induction, which took five minutes. When the patient reached stage 3, plane 1, a layer of Gamgee tissue was interposed between the mask and the face and a pharyngeal airway inserted. Ten minutes after beginning the anaesthetic, when 2½ drachms had been given and the patient was still in the same plane of anaesthesia, cyanosis suddenly developed, respiration stopped, and clonic contractions, confined to the right side of the body, started and lasted about ten seconds. The anaesthetic was stopped, the head lowered, artificial respiration started, and O_2 and CO_2 administered. Breathing was resumed in about 1½ minutes; the operation was finished in a further 20 minutes, anaesthesia being maintained with a further 1½ drachms of trilene without further untoward incident. The pulse was steady and full during the time of respiratory arrest, though somewhat rapid. The patient's temperature was normal throughout both before and after operation, and recovery and convalescence were completely uneventful. It is my impression that such incidents with trilene are due to the effect on the respiratory centre of too strong a concentration of the anaesthetic suddenly inhaled.—I am, etc.,

Nelson, Lancs T. D. CULBERT.

Tonsillectomy

SIR,—One must agree with Mr. T. B. Jobson (Oct. 31, p. 512) that the use of the guillotine requires long practice and that there are still cases which may defeat even the most expert. To reduce this number to the minimum I have found the following procedure, which I have not seen described, very useful in adults and occasionally in children.

The smallest guillotine through which the tonsil can be everted is used and placed so as to avoid both pillars. The tonsil is pushed through with thumb or forefinger and the guillotine is closed. If then a dimple appears when traction is applied one recognizes possible danger of tearing or of buttonholing to the anterior pillar. With a fairly sharp instrument one can break or cut through the strong fibrous bands. The instrument is kept close against the lateral surface of the guillotine and the bands cut through until the dimple disappears. One may then shell out the tonsil as one does in a child without danger of doing damage. A useful instrument for the purpose is a septum separator sharpened with a file. My results with this method are definitely better as regards haemorrhage, appearance, and after-pain than by dissection.

Mr. Norman Patterson's plea (Nov. 14, p. 589) for complete removal of the adenoids is a timely one. It is sometimes said that removal of tonsils and adenoids does not stop the constant succession of "colds" which many of these children suffer from. I would suggest that if a surgeon has more than 1 or 2% of children continuing with colds he should conclude that he is leaving some adenoid tissue behind. A small percentage of these cases are due to sinusitis, which, in the absence of adenoids, clears up as a rule with appropriate treatment. The important thing is to put a finger in the nasopharynx and feel that all the adenoid has been removed. If some is left it can be removed by whatever method the surgeon prefers. Very often the small soft portion at the entrance to the posterior nares can be most easily removed with the gloved finger-nail.

Whatever anaesthetic is given it should allow time for the surgeon to *see* that the tonsils are completely removed and to *feel* that the adenoids are also completely removed.—I am, etc.,

Manchester. E. S. BURT HAMILTON.

Sedimentation Rate

SIR,—During the last twelve months, while I was masquerading as a rural practitioner in Norfolk, I took the opportunity of exploring the usefulness of the sedimentin index in general practice. I found, *inter alia*, that although theoretically the joggling of a car travelling along country lanes is not ideal for the peaceful process of sedimentation, in practice it was amazing how little it affected the maximum velocities. Maximum velocities begun in the peace and warmth of my consulting-room continued unaltered when taken for a ride, and others begun during a round of visits continued unaltered when brought home to rest. True, I never compared the behaviour of a sample of blood taken to market with that of its brother who stayed at home. I hadn't the time or petrol for experiment. But even had I found some disparity between them, it wouldn't have worried me; for I place far more reliance on the trend of serial readings in any case than upon any single reading.

Dr. Della Vida, usually so accurate, has slipped up in one of his statements (Nov. 14, p. 591). When 4 parts of blood are diluted with 1 part of citrate, the original undiluted blood would be 25% "stronger" than the diluted sample; for five of any object is 25% and *not* 20% more than four of any object. I myself discovered this only quite recently, but among mathematicians it appears to have been known for some time.

No extravagant claims for the sedimentin index have appeared in print—yet (although some are on their way). Its wholesale condemnation by Drs. Edwards, Penman, and Cutbill (Nov. 14, p. 591) would therefore appear a trifle proleptic. This attitude of mind is not without glorious precedent, however. The White Queen screamed loudly before the brooch flew open and pricked her; and the King of Hearts, unless my memory is at fault, was all in favour of verdict and sentence before hearing the evidence. One gathers from their letter that they have failed to gain satisfaction from the sedimentin index; and I cannot help feeling that they are wise in sticking to the simplicities of the Westergren technique, which is, after all, better than nothing. Half a moment, though—is it as simple as all that, involving as it apparently does the use of a constant-temperature chamber? That wouldn't suit me, I'm afraid, nor many other practitioners similarly ill equipped.—I am, etc.,

Hartford, Cheshire. GEORGE DAY.

Obituary

J. G. McCUTCHEON, M.B., Ch.B.

Scottish members of the Association, as well as many of their English colleagues, will learn with deep regret of the death of Dr. J. G. McCutcheon of Glasgow. He had for some time been in indifferent health, but he was taken seriously ill while returning from Blackpool to Scotland, and died in a hotel at Carlisle on Nov. 22. Dr. McCutcheon, who attended the recent Annual Representative Meeting, was to his great pride and pleasure re-elected after an interval of thirteen years to the Central Council of the B.M.A. He was previously a member of Council for five years, and he had rendered long and conspicuous service on many committees, especially the Insurance Acts Committee, the old Medico-Political and Parliamentary Committee, and the Central War Emergency Committee, of which he was a member for ten years. He was also a prominent member of the Scottish Committee and had been its chairman. In 1933-4 he was chairman of the Glasgow Division, and in 1936-7 president of the Glasgow and West of Scotland Branch, of which for several years he had been honorary secretary. He was also deputy chairman of the Scottish Central Medical War Committee.

Joseph Glaister McCutcheon, a native of Lanark, was born in October, 1880. In the Boer War he served with the Scots Greys, and after his return to medical study graduated M.B., Ch.B. of Glasgow in 1908. For many years he carried on a large practice in the Townhead district of Glasgow, and later in the West End. During the last war he served with the R.A.M.C. in France and reached the rank of lieut.-colonel. For a number of years he was a member of the Glasgow Corporation; he was also a justice of the peace, and in 1937 was appointed deputy lieutenant for the City of Glasgow. He was chairman of his Panel Committee, chairman of the Medical and Dental Defence Union of Scotland, and a member of the Scottish Blood Transfusion Council. Recently he had been made a medical referee under the Ministry of Pensions.

McCutcheon will be remembered in Association meetings for his interventions in debate, always marked by vigour and good sense, and often by pawky humour. His last speech in London was in praise of health centres and group practice, and he said how much he and his family would look forward, when that came about, to living in a small private house and saving the carpets and the furniture! A genuine spirit of kindliness shone in him, and a love of fun twinkled in his rugged features. He will be greatly missed.

J. L. writes:

The sudden and tragic death of Joe McCutcheon has come as a great shock to his intimate friends, and he had many such. Though poor health, following on serious illness a few years ago, had compelled him to retire from general practice, he had yet been able to undertake work under the Ministry of Pensions, and there was nothing to indicate that his end might be so near. If such were known to him, it was characteristic of the man not to share the knowledge with others. I have enjoyed his intimate friendship for many years. The acquaintance began with a casual meeting on an embarkation wharf in August, 1914, when Capt McCutcheon, R.A.M.C, Special Reserve, as he was then, was attached to a field ambulance of the B.E.F. By the curious chances of war, we were fated subsequently to be often thrown together, first when I was attached later to the same field ambulance. After nearly a year in that unit Joe was transferred to the Home Establishment and was appointed to the medical charge of the Household Battalion, which he accompanied over-seas. Once again fate brought us together and, from personal acquaintance with the officers of that regiment, I learned of the very high regard in which Joe was held and of the great confidence reposed in him by all ranks; the expression "white man," used of him by one of the officers, perhaps aptly describes their regard. After some months he was transferred once more, and later was appointed D.A.D.M S. of the Division, wit the rank of major. In this position his ability, tact, and cheerful ness made him *persona grata* with all. His final appointment a lieut.-colonel commanding a field ambulance in the same Divisio maintained our close association up to, and after, the cessation o hostilities.

In his home life Joe was the devoted husband and ideal fathe But to the burden of his own poor health there was lately adde distress and concern occasioned by his wife's severe and painf illness, so bravely borne by her. In this, perhaps more than i anything else, was displayed the most lovable aspect of his characte while his indomitable cheerfulness was both an encouragement t her and a support to himself. Joe was a man of high ideals and strong sense of duty. Combined with these were a remarkable powe of understanding others, an infinite capacity for taking pains, an an unlimited kindliness of heart. Consideration of self would hav been his last thought, and nothing was too great a trouble if h could be of help to others

EDGAR HAYDON, M.B.

Dr. Edgar Haydon, who died at Newton Abbot, Devonshir on Nov. 16, was in his 84th year. For 55 of them he was member of the B.M.A., and in 1922-3 president of the South Western Branch. He graduated M.B., C.M. with honours a Glasgow in 1881, and held house appointments at the Glasgo Western Infirmary.

Quite apart from his professional practice (writes a colleagu few men have won the affection of a community to a greater exten than Dr. Haydon. He radiated friendliness and encouragemen towards everybody and gave himself and his substance to all goo works, notably the growth and development of Newton Abbo Hospital; indeed, its whole history from the smallest beginnings i private rooms to its present commodious and up-to-date buildin is epitomized in Dr. Haydon's life. He sponsored appeals fro public and private sources that produced thousands of pounds th the public might have the best possible treatment on their doorstep Before the last war he secured over £4,000 (a large sum for thos days), which purchased radium for the treatment of malignan disease. The war over, the need for further building extension aros and Dr. Haydon went boldly out for £16,000, which was forthcomin in less than two years. He found time, too, for much public work and served on the Newton Abbot Urban Council for some years He was a prominent Freemason, and among his honours he wa P M. Devon Lodge 1138 in 1905 and held the rank of P.P.J.G.W He was thrice president of the local Rotary Club, and for years o the Y.M.C.A. In a country area it was natural, too, that hi interest should be linked to agriculture, and in 1923 he becam chairman of Devon Agricultural Show Committee. It is difficul to find in the district any aspect of community life that he did no touch in generous and practical ways.

Another colleague writes: The name of Haydon is familiar al over this countryside and beyond, and Edgar Haydon was its mos conspicuous representative. For his kindly sympathy and medica skill he was trusted and honoured by all sorts and conditions o men, rich and poor alike. In a way he was a typical family doctor He came to the town as a young university graduate and succeede his brother, who died soon after. He took up with enthusiasm th medical and public life of the town and neighbourhood. From it small beginnings the Newton Abbot Hospital was really his chief life work; and he had a marvellous gift for enlisting the help of ric and poor in its progress The response of all classes to it needs has been due more to him than to anyone else. He wa undaunted by difficulties that would have discouraged many men and was full of resource, determination, and courage. The las months of his life were clouded by the fact that his only survivin son, Brigadier C. Haydon, was reported to be a prisoner of war His loss will be felt by his colleagues and friends for many year to come.

Mr W. SAMPSON HANDLEY writes:

In the country towns of England are often to be found practitioners who, by force of character and by long and efficient service to their patients, have become little kings in their own district, known and trusted by everyone. Such a one was Edgar Haydon. The son of a Devon doctor, he had the inestimable advantage of a country upbringing As a boy he roamed over Dartmoor and acquired that love of the moor and of horses, and that keen appreciation of Devon character and humour, which in later years gave him the key to so many hearts. His own forebears came from Cornwall, and it was perhaps from some adventurous sailor with his eyes fixed on the horizon that he inherited his wide outlook over the fields of medicine, and the spirit of exploration that to his latest days made him receptive of new methods of treatment

About 1882 he settled in Newton Abbot, and to that town and district he gave sixty years of strenuous service, only terminated a fortnight before his death In his earlier years he had medical charge of the local infirmary, and he used to attribute his success in practice to the recommendations of his Poor Law patients. It was perhaps due equally to the persistence with which, through the years, he pursued his postgraduate education by constant visits to London hospitals, and especially to the Middlesex Hospital, but most of all to his kindly and breezy personality and to his clinical acumen. He became surgeon to the Newton Abbot Cottage Hospital, and it is largely owing to his initiative that it has become an important general hospital. He equipped a new *x*-ray department at his own expense. Impressed with the value of radium for the treatment of cancer he, more than twenty years ago, collected a fund for its purchase, which gave to Newton Abbot the largest stock of radium, for its size, of any town in England. Thus equipped, the Newton Abbot Hospital, mainly through Haydon, has done valuable pioneer work in the use of radium by implantation, attracting cases from a wide district. When the present war began he had just retired from active practice, but upon the calling up of one of his partners he returned to work and seemed for a time to become a younger man, though he was then over 80. More recently acute anxiety about the fate of his only surviving son, a distinguished soldier, after the fall of Tobruk, aged him rapidly. Three of his sons died during the last war, two of them on active service.

Haydon's work did not receive the public recognition it well deserved, nor did he seek it. His house possessed one of the most beautiful gardens, for its size, in England, and is surrounded by a high granite wall within which many rare shrubs flourish. The view extends to his beloved Hey Tor. In this happy setting he passed his useful life, and he has well earned his rest. He was twice married, and leaves a widow to mourn him.

Dr. **ARTHUR BIRT** died at Halifax, Nova Scotia, on Nov. 19. He was born on Dec. 31, 1864, and was educated at Edinburgh Collegiate School, where he won the gold medal and was Dux of the school. He graduated M.B., C.M. at the University of Edinburgh in 1887 with distinction, and was house-physician at the Edinburgh Royal Infirmary. After serving five years as deputy superintendent at the Durham County Asylum he settled in Nova Scotia, where he became well known as a consulting physician, and published numerous articles in the Canadian medical journals. He proceeded M.D.Ed. with honours in 1898, and was elected a Fellow of the Royal College of Physicians of Canada in 1931.

The Services

The King has approved the award of the R.N.V.R. Officers' Decoration to Surg. Cmdrs. E. A. Gerrard and J. L. Cox and Acting Surg. Cmdr. E. I. Puddy, R.N.V.R.

CASUALTIES IN THE MEDICAL SERVICES

Temp. Surg. Lieut. **DOUGLAS JAMES NAUGHTON**, R.N.V.R., is included as "missing, believed killed" in an Admiralty Casualty List published on Nov. 19. He was born on May 15, 1913, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., B.A.O. in 1941. He held a house post at Hull Royal Infirmary before entering the R.N.V.R. this year.

Surg. Lieut. **ALASTAIR BAIRD KENNEDY**, R.N.V.R., is reported "missing, presumed killed" on active service. He was born on Aug. 3, 1906, the only son of Mr. and Mrs. A. A. Kennedy of Seaton, Devon, and qualified L.M.S.S.A. in 1940. After holding a resident post at Wellhouse Hospital, Barnet, he entered the R.N.V.R. last January. He leaves a widow.

Lieut.-Col. **DELVINE BELL**, M.C., R.A.M.C., died at Netley on Nov. 3. He was born on Oct. 22, 1888, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1911. After serving as resident surgical officer at the Schiff Home and as house-surgeon at the Swansea General and Eye Hospital he entered the R.A.M.C. as lieut. in Oct., 1914. He became lieut.-col. in 1938. He served in the war of 1914-18, was twice mentioned in dispatches, and was awarded the M.C. He had recently been stationed at Cairo.

War Subs. Capt. **JOHN WALLS GIBSON**, R.A.M.C., was killed in action in the Middle East in November. He was born on April 21, 1917, the only son of Mr. and Mrs. Andrew Gibson of Uphall, Broxburn; West Lothian, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1939. After working as an assistant to a Leeds firm of doctors he entered the R.A.M.C. as temp. lieut. He was a member of the B.M.A.

Prisoners of War.—War Subs. Capt. J. K. Drucquer, R.A.M.C., War Subs. Capt. J. H. McLaughlin, R.A.M.C., War Subs. Capt. F. J. Murray, R.A.M.C., War Subs Capt. R. J. S. Walker, R.A.M.C.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on Nov. 20 the degrees of M.B., B.Chir were conferred by proxy on J. C. N. Westwood and W. K. S Moore.

UNIVERSITY OF EDINBURGH

At the last meeting of the University Court it was agreed, on the recommendation of the Faculty of Medicine and the Senatus, to invite Prof. E. D. Adrian, O.M., M.D., F.R.S., to deliver the Sharpey-Schafer memorial lecture for 1943.

UNIVERSITY OF GLASGOW

The University Court has accepted an offer from Mr. Fred H. Young, a Glasgow carpet manufacturer, of a sum of £22,000 to endow a lectureship in orthopaedics within the department of the Regius Professor of Surgery. At the request of the donor and with a view to providing clinical facilities, the Court has invited the co-operation of the managers of the Western Infirmary and, at least during the war, of the Department of Health for Scotland. The lectureship will be associated with the post of orthopaedic surgeon (with charge of the out-patient casualty department) at the Western Infirmary and with the post of visiting orthopaedic surgeon to a country emergency hospital in the West of Scotland.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Annual Meeting of Fellows and Members

The annual meeting of Fellows and Members of the Royal College of Surgeons was held at Lincoln's Inn Fields on Nov 19. The President, Sir Alfred Webb-Johnson, presented the general report of the Council for 1942. In doing so he referred to a marked quickening of interest on the part of the Fellows and Members in the doings of the College. Many of the concerns now occupying the Council might very largely affect the future of the younger Fellows and Members. In participating in the work of the Medical Planning Commission particularly the Council was desirous of gathering the feeling of the younger surgeons.

The President went on to say that it had been decided that the time had come when changes were needed in the College examinations. The Council had applied for permission to alter the by-laws so as to make the Primary Fellowship examination postgraduate and to add pathology as one of the subjects. A hardship had been experienced in respect to the Final Fellowship examination, whereby many candidates from over-seas could not be admitted to the examination until four years after qualification, or, to avoid this period of waiting, they must take the examinations for the L.R.C.P., M.R.C.S. diplomas, though they were already in possession of university degrees. It had therefore been decided to seek an alteration whereby there would be required from such candidates for the Final examination evidence of training and experience which the Council might from time to time deem necessary in order to maintain the high standard of the Fellowship. Another innovation was the establishment of a research chair in ophthalmology. Finally, he referred to the working together of the three Royal Colleges There was already a standing joint committee, and the question of post-war building had been considered. Each of the Colleges had shown a desire that all three should be housed on one site, but although sites, including Lincoln's Inn Fields, had been considered, no conclusion had yet been reached. It must be better for all three to work together than to be in different parts of London. One of the Colleges had asked for the drawing up of criteria concerning the training and status of consultants, and this had been done.

In some brief discussion following the President's remarks, Mr. R. M. Handfield-Jones referred to a certain apathy which had existed among Fellows concerning College affairs. In the sister College there was a Comitia which was open to Fellows and at which the Council was able to gather their opinions on matters of internal and external policy. It would be a good thing to elicit the opinion of the general body of Fellows on matters of importance, and meetings for this purpose, while having no status and being quite informal, might strengthen the hands of the Council. Mr. E. A. Crook thanked the President and Council for the anxiety they had shown to learn the feelings of the younger surgeons. Mr. D. H Patey spoke of the reconstruction of the museum, and suggested that the emphasis in the re-formed collection should be on quality rather than on quantity. The amount of material in the past had been a weakness rather than a strength.

The President, in replying, said that strong reasons would certainly have to be forthcoming if the College consented to move from Lincoln's Inn Fields. It had still about £200,000 worth of building standing, which was not adaptable to any other purpose.

The usual resolution calling for representation of Members on the Council was not taken at this meeting, because since the war there has been no possibility of obtaining any change in the Charter of the College.

Medical Notes in Parliament

Acting Rank in the Army

Sir J. Grigg, replying to questions on the subject of acting and temporary rank in the Army, said he had reviewed the rules under which officers had been required to relinquish temporary rank on ceasing to perform the duties for which the rank was granted. He had come to the conclusion that there were good grounds for giving the holder of temporary rank, which might have been held for long periods, a greater degree of security in his rank. In future an officer holding temporary rank would be permitted to retain it while on a course of instruction. He would retain it during the interval between being posted away from one unit and joining his new unit, provided he was fit and available for duty during the whole period and any delay in his joining his new unit was due solely to the exigencies of the Service; this would cover the voyage period in the case of officers ordered over-seas. In addition officers would be permitted to retain temporary rank while absent sick up to a period of two months (provided that the sickness was not their fault), and, as previously, for three months if wounded in action.

Venereal Disease

On Nov. 17 Mr. Boothby asked the Secretary of State for Scotland what steps were being taken to combat the menace of venereal disease by means of propaganda designed to encourage preventive measures and to secure immediate treatment in cases of infection. Mr. Johnston said he hoped to issue to local health authorities this week a circular reminding them of the continuing need for enlightenment of the public about venereal disease and urging them to consider at once an expansion of their arrangements in this respect.

Dr. Summerskill asked if the Minister was aware that the Government had introduced a regulation on this subject which, from a medical point of view, was so limited in character that it would be quite ineffective in stamping out venereal disease. Mr. Johnston: That regulation has been drafted on the advice of our skilled medical officers.

On Nov. 17 Major Lloyd asked the Secretary of State for Scotland whether, to combat the increase in venereal disease in certain areas in Scotland, he would take immediate steps to make this disease compulsorily notifiable, empowering local authorities to follow up and treat the victims of the disease. Mr. Johnston said that the first part of the question raised highly controversial issues, but powers had been taken by Defence Regulation under which medical officers of health might require any person who had been reported by two separate patients as the source of infection to undergo medical examination and any necessary treatment, and to remain under treatment until certified free from infection. He was bringing these powers to the attention of local health authorities and their medical officers of health. The result of the operation of the Regulation would be kept under regular review.

Industrial Medicine

Sir David Munro, addressing the Conservative Health and Housing Committee on Nov. 17, referred to what he termed the charter of the works medical service given by Mr. Bevin in his Order of July, 1940, in which it was laid down that factory managements were to engage doctors and/or nurses in circumstances recommended by the Factory Department. Not all firms could engage a whole-time doctor, but the larger number of part-time doctors thus drawn in would promote the education—badly needed—of general practitioners in occupational disease. With illustrations from the Royal Ordnance Factory Medical Service, Sir David indicated what a State service might do in the selection of operatives for their suitable occupations, in improving their health and efficiency at work, and in rehabilitating them after injury or illness. He envisaged an institute of industrial medicine, at which, for instance, all toxic substances should be examined for their harmful effects before being taken into industrial use, and a diploma of industrial medicine, perhaps even a membership and fellowship under the aegis of such a body as the Royal College of Physicians. The medical services were part of welfare, and there should be in every factory a fusion between production, management, and health and welfare services. All were a function of management. This was achieved at the Ministry of Supply by a Welfare Board.

Pensions Appeal Tribunals

The Debate on the Address was resumed in the House of Commons on Nov. 18 and succeeding days.

Major Milner said the delay in setting up pensions appeal tribunals was inexcusable. He understood that if the Medical Personnel Priority Committee were directed by the Governme it could find the doctors for the staffing of these tribunals- a matter of 50. Sir Stafford Cripps replied that t desirability of these tribunals was not an issue. The so question was whether at present it was possible to constitu them. All the suggestions for temporary or alternative pr cedure had not been approved by the organizations representin ex-Service men. The Ministry of Pensions found great dif culty in getting sufficient medical men for its current need Those coming forward were not suitable, or those suitab were not sufficient. Not the Central Medical War Committe nor the Services Departments, nor the Priority Committee cou provide a sufficient number of highly qualified medical men carry on the purposes of these tribunals. These bodies had bee asked, and that was their answer.

Dr. Haden Guest interposed to say the chairman of t Priority Committee had told him he might say this was not s Sir Stafford said that, granted priority, medical men could taken away from the Services, but to get medical personnel sufficiently high standard for final tribunals was, at the prese time, impossible.

War Workers and Hours of Work

Mr. Brown told Sir Robert Young on Nov. 19 that he ha seen a Press report of the proceedings of the Annual Pan Conference, and particularly the statements made by medic men regarding the health conditions of war workers, and alleg tions of physical and mental exhaustion as the result excessive hours of work. The conference had not made a reference to him on the matter. Should it do so, he would ce tainly consider what action on his part appeared to be called fo

Nutritional Anaemia

Replying to Dr. Summerskill on Nov. 19, Mr. Brown sa his attention had been called to an article in the medical pre which stated that evidence of nutritional anaemia had bee found among certain groups of women and young childre He had therefore arranged for iron preparations to be availab in all day and residential nurseries and in emergency materni homes. The majority of welfare authorities already provide similar preparations at their centres for expectant mothers an young children found to require them.

Panel Capitation Fee

Sir Leonard Lyle asked on Nov. 19 if Mr. Brown kne that since the start of the war the general body of insuranc practitioners had tried to secure an increase in the capitatio fees adequate to enable them to meet the extra cost of wartim conditions and the increased work involved, the increase su gested being 2s., of which only 9d. was approved; and whethe he had reached a decision on the representations made to hi on this subject by the Insurance Acts Committee of the B.M. Mr. Brown said he had received representations from the com mittee to this effect. He had agreed that from the beginnin of this year the capitation fee should be increased from 9s. 9s. 9d. a year to meet the increase in practice expenses and th loss of private fees from the new class of insured persons. H had considered the request made this year for a further increas and on Oct. 17 he informed the committee that he was no able to accede to it.

Medical Advisory Committee

Sir Francis Fremantle on Nov. 26 asked what steps th Minister of Health was taking to keep in touch with representa tive medical opinion in regard to the planning of the future o health services. Miss Horsbrugh said Mr. Brown had for som time felt the need for associating with the work of the Ministr of Health a representative body of medical men and wome engaged mainly in the clinical practice of their profession. H had therefore set up a Medical Advisory Committee whos terms of reference were to advise him on the medical aspect of problems relating to the health of the people. [The name of the members of the committee are published on page 670.

Nurses' Eligibility for Workmen's Compensation.—On Nov. 1 Mr. William Brown asked the Home Secretary whether he woul take steps to ensure that the nursing profession came within th scope of the Workmen's Compensation Acts. Mr Peake replie that Mr. Brown was under a misapprehension in thinking that th nursing profession as such was outside the scope of the Act. I any individual case it depended on whether the nurse worked unde a contract of service, and from a decision of the Court of Appeal i 1938 it appeared that, generally speaking, nurses in hospitals an similar institutions came within the Act.

Committee on Medical Schools.—On Nov. 24 Mr. Mander aske the Minister of Health the position with regard to the Committe on Medical Schools which was considering the desirability of increas ing the facilities for women to study in medical schools in London and when a report was expected. Miss Horsbrugh replied that sh could not give a date for the report, but the issues involved were o first-rate importance and would demand some time for examination

No. 45

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 14.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	50	5	25	—	5	113	6	24	2	9
Deaths		1	—				2	4		
Diphtheria	940	42	213	65	10	1,069	43	275	28	32
Deaths	17	1	6	4	—	24	6	7	4	3
Dysentery	148	21	50	—	2	148	12	58	—	—
Deaths		—	—	—	—		2	—	—	—
Encephalitis lethargica, acute	2	—	1	1	—	3	—	1	—	—
Deaths		—	—				—	—		
Erysipelas		—	68	11	—		—	80	14	5
Deaths			—					—		
Infective enteritis or diarrhoea under 2 years				71						
Deaths	66	10	18	18	8	41	2	16	16	8
Measles	7,731	244	409	6	42	747	52	29	32	2
Deaths	7	—	—	—	—	1	—	—	2	—
Ophthalmia neonatorum	83	2	14	1	—	84	2	8	—	—
Deaths										
Paratyphoid fever ..	3	2	2	—		31	4	2	—	
Deaths	—	—	—	—	—	1	—	—	—	
Pneumonia, influenzal*	556	28	15	2	8	731	27	15	1	5
Deaths (from influenza)	22	1	2	—	—	20	—	5	1	5
Pneumonia, primary ..			165	14				214	5	
Deaths		—		10	11		25		9	—
Polio-encephalitis, acute	—	—				4	—			
Deaths		—					—			
Poliomyelitis, acute ..	16	1	1	22	—	33	2	2	4	1
Deaths		—	—	—			—	—	—	
Puerperal fever ..	—	2	16	4	—	1	1	16	2	1
Deaths		—					—			
Puerperal pyrexia ..	153	9	12		2	107	6	13		—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	2,880	176	392	58	54	1,366	36	229	51	30
Deaths	—	—	—	—	—	1	—	—	1	—
Small-pox	—	—	10		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever† ..	13	—	1	7	2	12	1	2	14	3
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough ..	1,155	75	28	86	6	2,029	206	69	31	8
Deaths	4	—	2	—	—	2	—	—	—	—
Deaths (0–1 year) ..	355	35	62	43	22	332	32	51	41	26
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,133	628	618	192	142	4,296	602	564	211	140
Annual death rate (per 1,000 persons living)			13·9	12·8	‡			12·3	14 0	‡
Live births	5,794	674	841	415	254	4,840	462	719	271	213
Annual rate per 1,000 persons living ..			17·4	27 7	‡			14·6	18·0	‡
Stillbirths	208	24	40			164	13	33		
Rate per 1,000 total births (including stillborn)			45					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week a sharp rise occurred in the incidence of measles 347, whooping-cough 190, scarlet fever 144, and diphtheria 59. Cerebrospinal fever, with a drop of 15 in notifications, is now at the lowest level since 1939.

Yorks West Riding had the largest rise in the notifications of scarlet fever 71, and of diphtheria 31; while Lancashire, with 23 more cases than last week, had the greatest increase in whooping-cough.

The notifications of dysentery were 6 more than last week. Outbreaks were reported during the week from Yorks West Riding (Leeds C.B. 18) and in Hertfordshire, where 11 cases were recorded in the adjacent rural districts of Berkhamsted and Watford; 21 more cases were recorded in the outbreak in Yorks North Riding, Middlesbrough C.B. In London the cases rose from 14 to 21, and in Wales from 8 to 14. Other important centres of infection were Durham 12, and Surrey 10.

In *Scotland* a rise again occurred in the incidence of measles, 30 cases, while a fall was registered for diphtheria, 46, and for scarlet fever, 61. Notifications of measles were high in the burghs of Dundee and Kirkcaldy—in the former rising from 47 to 104, and in the latter from 29 to 56.

In *Eire* there were a few more cases of poliomyelitis; during the past ten weeks 226 cases have been notified. The outbreak of typhus in Galway, 13 cases, has resulted in 1 death. The increasing incidence of scabies is causing concern to the local authorities.

Small-pox

No fresh cases have been confirmed in Edinburgh during the last week. At present there are 20 patients and 1 under observation in the small-pox wards. No further cases have been reported from Cowdenbeath. A suspected case in Perth was not confirmed, but small-pox has appeared in a new area—the case of a young male in Inverurie, Aberdeenshire, having been reported.

Measles

The notifications of measles in England and Wales are higher than they have been for over a year. The largest increases recorded during the week under review were those of Yorks West Riding 282, and Lancashire 75. These two counties had almost half—3,840 out of 7,731—of the total cases in the country, and their recent experience has influenced to a considerable extent the general trend of this disease. Since the beginning of September the weekly notifications have been more than doubled in Lancashire, and a six-fold increase has occurred in Yorks West Riding. Particularly severe outbreaks have been recorded in some of the county boroughs of these counties. The largest totals during the week reviewed were: Yorks West Riding, Bradford C.B. 505, Leeds C.B. 386, Huddersfield C.B. 167, Sheffield C.B. 120; Lancashire, Manchester C.B. 282, St. Helens C.B. 206, Blackpool C.B. 146.

Returns for the Week Ending November 21

The returns of infectious diseases in England and Wales included the following: scarlet fever 2,914, whooping-cough 1,246, diphtheria 1,001, measles 8,816, acute pneumonia 645, cerebrospinal fever 68, dysentery 117, paratyphoid 5, typhoid 6

Medical News

Dr. Donald Hunter, F.R.C.P., will deliver the Finlayson Memorial Lecture on "Generalized Diseases of the Skeleton" in the hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, on Wednesday, Dec. 9, at 4 p.m

At a meeting of the Section of Therapeutics of the Royal Society of Medicine on Dec. 8, at 2.30 p.m, a discussion on "The Aetiology of Erythroblastosis Foetalis on Certain Haemolytic Transfusion Reactions, with Special Reference to the Rh Factor" will be opened by Drs. P. L. Mollison and G. L. Taylor.

The last lecture in this year's autumn programme of Chadwick Public Lectures will be given on Tuesday, Dec. 8, at 2.30 p.m., at the Royal Society of Tropical Medicine, 26, Portland Place, W., by Dr. W. Norwood East on "The Differentiation, Prevention, and Treatment of Anti-social Behaviour Disorders." Admission is free; tickets are not required.

A meeting of the Pharmaceutical Society will be held at Friends House, Euston Road, N.W., on Thursday, Dec. 10, at 2.30 p.m., when Dr. R. Melville will deliver a lecture on "Medicinal Indigenous Plants."

On Nov. 25 Mr. Arthur W. Down celebrated his 90th birthday. Throughout its existence he has been the guiding spirit of Down Bros. Ltd., surgical instrument manufacturers.

An appointments bureau for out-patients, open from 9 a.m. to 5 p.m., came into operation at the Charing Cross Hospital on Dec. 1. Doctors are invited to telephone or write for appointments Members of the public also may write for an appointment or apply personally at the hospital. The creation of this bureau is in line with the general policy of the big London general hospitals, which are using the appointments system in an effort to save the time of patients and to enable the hospital authorities to organize a schedule of working.

The Council of the National Association for the Prevention of Tuberculosis passed the following resolution on Oct. 19: "The Government declaration on tuberculosis is a great step forward which all interested in the eradication of this disease will most heartily welcome. The National Association desires also to congratulate the Minister of Health and the Secretary of State for Scotland on having brought forward this great reform and offers its whole-hearted co-operation in the practical working of the scheme. The National Association is taking the earliest possible opportunity of obtaining further information about the scheme."

Dr. B A. Thomas (Gray's Inn) was called to the Bar on Nov. 17.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TELEPHONE No.—B.M.A. and *B M J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Sulphonamides for Leukaemia?

Dr. J. HARTON RAYNER writes to ask if drugs of the sulphonamide group have been used with any effect in the leukaemias by reason of their known leucopenic action.

Intractable Urticaria

C. B. suggests that J. R. (Nov 28, p. 654) should minutely investigate the possibility of the condition being due to dental sepsis or infection of nasal sinuses. The association is not unusual.

First-aid Treatment of Wounds

Dr. CYRIL GOULD (Corps Surgeon, Luton Corps, St. John Ambulance Brigade) writes: In reply to J. R. L. (Oct. 31, p. 534), first aid is not treatment, but *assistance* rendered at the time of the emergency with such material as may be available until medical aid is procurable. Candidates for the B.R.C. or St. John Ambulance Association exams are, or should be, examined on the manuals, and therefore lecturers should keep strictly to the books. Having passed their first-aid exam, personnel of first-aid posts, etc., may be taught the particular treatment of wounds, burns, etc., the M.O. i/c prefers.

Income Tax

Consultant. Entertainment Expenses

XX has been assessed as a consultant for some years and has been allowed to deduct an estimated amount (15s. per week) for expenditure incurred in entertaining general practitioners at his house in order to maintain the personal contacts which he regards as necessary for his practice. A new inspector of taxes now says that he knows of no authority for the deduction and proposes to discontinue it.

*** The question of entertainment expenses is a difficult one. To be allowable expenses must come within the description "money wholly and exclusively laid out or expended for the purposes of the . . . profession." In applying this rule some bodies of Commissioners take a more stringent line than others. Broadly speaking, such allowances are made, on reasonable evidence being produced, in the case of ordinary business people, or commercial travellers, but some of the more important bodies of Commissioners refuse to make such deductions in the case of professions—e.g. barristers, or even stockbrokers. The ground of refusal is usually that the expense is too indirect to justify it being charged against professional profits. If XX feels satisfie as to his facts and is prepared to support his claim by oral testimony, we suggest that he should appeal, preferably to the Specia Commissioners rather than to the local Commissioners.

LETTERS, NOTES, ETC.

Unusual Skin Sensitivity

Dr. ZIKMUND WINTER (London, W.C.1) writes: Dr. Allan Bigham' report (Nov. 14, p. 578) of a recent case of abnormal skin sensitivity is of great interest. It seems to me the only appropriat explanation that could be given is the pressure with stimuli o different temperature and not the negative sensitivity to gold. Hi observation proves that the mechanical stimulus of pressure i certain sensitive subjects does not produce the typical tripl response (Lewis) if its temperature is lower than the skin. On must conclude that in areas where the wedding ring had bee pressed against the skin the liberation of "H substance" did nc take place; consequently the complex vascular response wit vesicle formation failed to appear This patient apparentl belonged to the group of subjects where pressure elicits the tripl response only if applied with stimuli of body temperature. It i very difficult to assume a negative sensitivity of skin to gold, bu easier the negative sensitivity to pressure with cold objects.

Control of Venereal Disease: Correction

In our leading article on Nov. 21 (p. 611) it was said that "th arguments adduced by the British commission against compulsor measures were that they (1) may induce the infected to conce the disease from fear of exposure, (2) are not easy to apply i such a densely populated country as this on account of the diff culty in tracing those who try to evade the law, (3) may open th way to blackmail, and (4) are not consonant with the British ide of the liberty of the subject." The arguments thus quoted wer not in fact put forward by the British commission of experts sen to Holland and Scandinavia in 1937 by the Minister of Healtl but appeared in some preliminary remarks in our issue of June 11 1938, before summarizing the report of that commission.

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journa* of Dec. 3, 1842:

"The condition of the dwelling-houses of the poorer classe whether as regards their internal economy or external situation forms a most important object of inquiry to the philanthropist an the physician. When we reflect upon the influence which the varying circumstances of site and elevation, and exposure to air an moisture, must exercise upon the health and comfort of the artisa and the cottager—when it is considered that the free circulation o air, the access of light, and protection from cold and damp, an from noxious exhalations and impurities, whether of the ai respired or the water employed in the various branches of domesti economy, are important to all, but doubly so to those who are fron poverty deprived of the means of guarding against many of th inlets to disease—there is little need of labored argument to shov the importance of such inquiries. No reflecting person, who i conversant with the habits, and, from personal inspection, familia with the dwellings of the working population of this country, wil hesitate to admit that there is great room for improvement in both The site of the houses of the manufacturing portion of our population, in particular, has been too generally chosen with reference t the one only view of proximity to the factory, regardless alike o the comfort and the health of the inmates. These houses are fo the most part situated in the midst of the noxious effluvia generate by the various processes carried on at the manufactory, because i is considered advantageous that the workman should be near a hand; they are crowded into a small space, the value of the groun not allowing of sufficient room for much attention to ventilation or to the admission of light. The banks of rivers and canals bein desirable situations for factories, as well on account of the suppl of water for working the machinery, as for the convenience o transporting the products of labor, the ground is very frequentl swampy, and drainage, or other means of providing again accumulation of dirt and filth, rarely enters into the contemplatio either of owner or occupier of the miserable tenements with whic such places abound. Can it then be a matter of surprise that th population reared under such circumstances should be squalid stinted in growth, scrofulous in constitution, and careless of thos decencies of every-day life in the absence of which there is no chec to the development of vicious tastes, no impediment to the indulgence of vicious appetites? Can it be a matter of surprise that i such places scrofula, pulmonic affections, and rheumatism ar endemic, and that fever and scarlatina, cholera, diarrhoea, an dysentery are frequent in their visitations and assume their mos fearful and fatal characters?"

BRITISH MEDICAL JOURNAL

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THE PAIN PATHWAYS IN MIGRAINE

BY

G. F. ROWBOTHAM, B.Sc., F.R.C.S.

Surgeon-in-Charge, Neurosurgical Service, Newcastle-upon-Tyne; E.M.S. Consultant in Neurosurgery, Region 1

The term "migraine," the derivation of which has been stated by Kinnier Wilson (1940),* is probably best used in a clinical sense to denote a particular variety of headache and not with a pathological implication suggesting that the physio-pathological processes which cause the head pains are known. The characteristic features of migrainous headaches are unilaterality and periodicity, the pain starting slowly, reaching a peak of severity, continuing at this degree of severity for a varying period of time, and then slowly receding. Most typically, the headache is associated with black spots in front of the eyes, with flashes of light, or with formed and coloured visual hallucinations. There are, of course, many variations. In particular, the pains may be mild or severe: they may or may not be accompanied by visual phenomena: they are often bilateral, and they may radiate into the face or neck.

Headaches of a migrainous type may be divided into two distinct groups: (i) those associated with a demonstrable pathological lesion, such as a cerebral aneurysm; (ii) those which cannot be accounted for by local cerebral change or by gross metabolic disturbance. It is with the latter group only that this communication is concerned.

In migraine, as in other painful conditions, before treatment can be instituted the clinician must have some conception of the nature of the disturbance which initiates the pain cycle, of the site at which the painful impulses arise, and of the anatomical pathways by which painful impulses are conveyed to the brain.

First let us consider the site at which the painful impulse arises. This may be in the brain tissue itself or in one of those structures of the head—the scalp, periosteum, meningeal vessels, the large arteries at the base of the brain, and the dural sinuses—which are known to be capable of reacting in a painful way to an adequate stimulus (Penfield, 1940). From all these possibilities—and, of course, there may be others unknown—the pain of migraine is believed to arise in the arteries of the scalp and dura mater. The reasons for this belief are as follows:

(1) The walls of large blood vessels have been proved to be painful, and some to possess local sign. When operating under local anaesthesia, crushing of the trunk or of the large branches of the meningeal artery will cause extreme discomfort, and the patient will be able at least to "lateralize" the pain.

(2) Spasm of a large artery will lead to pain. Once when dissecting in the neck under local anaesthesia, in order to carry out cerebral angiography, the internal and external carotid arteries went into extreme spasm. Immediately severe pains were complained of in the same side of the head and face, and the patient slowly developed a contralateral hemiplegia, which equally slowly receded.

(3) Extreme dilatation of an artery will lead to pain. This can be proved by isolating a segment of a large artery in the scalp and by injecting saline forcibly into its lumen.

(4) The vascular changes which accompany migraine. The skin of the forehead in an attack is often deadly pale, the temporal arteries are distended, and there may be associated neurological signs which can only be accounted for by cerebral ischaemia. Occasionally a retinal vessel can be seen to be in spasm.

(5) The experiments on headaches produced by histamine (Clark, Hough, and Wolff, 1936).

(6) The relief of migraine by injections of ergotamine tartrate.

If the vascular origin of migrainous pains is accepted, then it is easy to conjecture on the essential disturbance which starts the pain cycle.

A popular theory is "neurosis of the cerebral autonomic nervous system." This postulates that there is an unstable equilibrium (Hughlings Jackson, 1931) in one or other of the central mechanisms of the autonomic nervous system, such as the hypothalamus, which reacts abnormally to some of the many stimuli that reach it from other parts of the nervous system or blood stream, thereby discharging abnormal impulses to the more peripheral parts of the sympathetic and parasympathetic nervous system (Fig. 1). This theory may explain why the so-called causes of migraine already described are legion. It will be seen, however, that the nature of the original disturbance which causes migraine and the site at which the painful impulse arises are essentially matters of speculation.

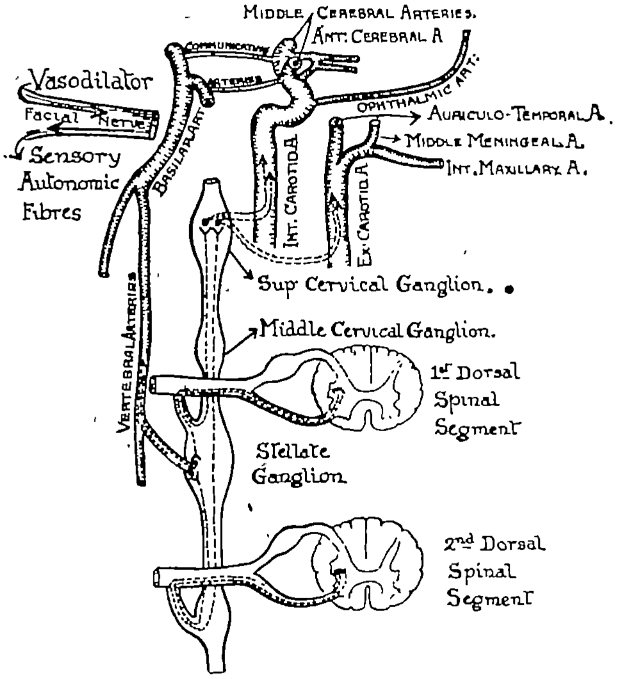

FIG. 1.—The sympathetic innervation of the blood vessels of the brain, dura, and scalp.

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* "Migraine is derived from Galen's ἡμικρανία through L. hemicranium and L.L. hemigranea, later migranea. In England hemigranea became mygrame, myegrym, migrim, and megrim. Migraine itself is French."

The last point to be considered is the pathway by which the painful impulses are conveyed to the brain. Do these impulses pass to the brain stem by way of the known or rather by way of the described autonomic pathways or otherwise? An attempt to answer this question will be found in the following series of cases.

Case I

Mrs. J. S. reported to me at the Salford Royal Hospital on July 12, 1940, complaining of migraine which she had had for many years and for which she had received treatment by Dr. Don and Prof. Jefferson. Her pain was chiefly right-sided, but occasionally the left side was affected. Typically, it would come on suddenly in the region of the forehead, rapidly spreading to the eye and to the back of the head. Often it would travel down into the cheek but never as far as the lip. In severe attacks she would vomit and the sight in the right eye would become dim. The pain often lasted for a week or more, when she might be incapacitated for several days and be confined to bed.

On examination she proved to be a well-built little woman, aged 40, with no emotional complexes and of good average intelligence. There were no abnormal neurological signs, and special investigations failed to reveal any pathological change to account for her pain. The diagnosis of migraine, made by other competent observers, was confirmed, and later I saw her in a typical attack. She insisted that something surgical must be done to give her relief, as all kinds of medical therapy had failed. Therefore I discussed with her the possibilities of thoraco-cervical sympathectomy and trigeminal root section, but before deciding to operate persuaded her to submit to a further course of medical therapy, including injections of ergotamine tartrate. Again the recognized forms of treatment, adequately administered, failed to satisfy her.

On the afternoon of Sept. 3, 1940, I operated on her under general anaesthesia in the sitting position, and divided the upper and inner third of the right trigeminal root, through the lateral extradural approach of Frazier. At the end of the operation she was conscious, and the next morning was perfectly well and fully co-operative. The denervation was satisfactory, the anterior two-thirds of the scalp on the operated side being numb, as well as the upper part of the cheek. A Buller's shield was fixed in position to protect the insensitive cornea. The immediate result was excellent; she felt easy and confident. From the time of the operation she has not had another attack of migraine, although she does complain of tingling pains at the junction of the numb and sensitive areas in the cheek. The following is an extract of a report from Mr. Wyse, resident surgical officer of the Salford Royal Hospital, dated June 18, 1942:

"I saw Mrs. S. yesterday. She has had a very worrying time recently, having lost her mother, and she states that she would never have been able to carry on had she not had her operation. She has never had migraine since, she states; and says that the operation has been a wonderful success. She gets occasional pains in the right side of the forehead in the form of hot stabs, but these do not worry her. She has practically no pain on the left side. She feels her face a bit numb and stiff, of course, and says the cheeks swell badly at times, but she has had no trouble with the right eye."

Case II

Miss D. R., aged 25, first came to see me on Nov. 23, 1935, at my out-patient department of the Christie Hospital at the request of her general practitioner, Dr. Friedlander. She was complaining of pains in her head, which were so severe that she had been completely disabled and off work for several weeks. The pain was so bad that her doctor thought in the early stages that she might have a cerebral tumour, or an obstructive hydrocephalus due to meningeal adhesions. Typically, the pain started low in the right temple as an indefinite ache, then travelled across the eyebrow to the middle line, at which time it became exceedingly severe. She likened the pain to the sensation that might be felt if something were being driven hard into the frontal bone. At no time did she have visual hallucinations, but in some attacks felt so ill and nauseated that she would lose several pounds in weight. Occasionally she had pains on the left side of the head, but these were much less severe than those on the right and certainly were much less frequent.

Examination showed her to be a thin little woman who looked about 18 rather than her 25 years, and weighed only 6 stone. Intellectually she was well above the average. She was rather highly strung, but enjoyed life and had no psychoneurotic tendencies. Apart from a moderate degree of hyperreflexia, there were no abnormal neurological signs to point to any focus of organic disease in her brain; also special investigations revealed no abnormality. A diagnosis was made o migraine, and she was put on a further course of medica therapy, including injections of ergotamine tartrate. In May 1939, she declared that medical treatment, which I believe wa correctly administered, had not given her satisfactory relie and she asked for something further to be done. I therefor discussed with her the possibilities of fractional trigeminal roc section, alcohol injection into the Gasserian ganglion, an thoraco-cervical sympathectomy. It was decided to divide th upper fibres of the posterior trigeminal root.

On May 11, 1939, under general anaesthesia, I divided th ophthalmic fibres in the right trigeminal root and also th second division of the trigeminus at the foramen rotundum b the lateral extradural approach of Frazier (Fig. 2). A rapi

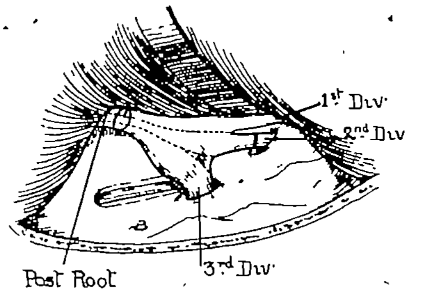

FIG. 2.—The trigeminus in the middle fossa. For the treatment of migraine usually the ophthalmic fibres only in the posterior root are divided. In some cases, however, it is also necessary to divide the second division at the foramen rotundum.

and uninterrupted recovery was made from the operation. Th trigeminal denervation was satisfactory. Anaesthesia wa present in the first and second divisions of the trigeminal fiel the third division being spared.

Since the operation, in spite of loss of sensation in the corne there has never been any suggestion of keratitis (ulceration o the cornea), and this is due to the eye remaining moist, th nerve of tear secretion—the great superficial petrosal nerve— having been spared at the time of the operation (Rowbotham 1939).

There was complete relief of pain until Sept. 20, 1939, whe at the end of a period of menstruation a pain was experience on the right side of the head (that is, the side operated on The pain was much less severe than before the operation, an lasted for a shorter time. Moreover, it was changed i character, being now described as a hot rather than as a dee pressing sensation. In spite of this recurrence of pain Miss F stated that she "was a different girl" and quite able to do he work, whereas before the operation she had been seriousl incapacitated. In Oct., 1940, she was still very satisfied wit the results of the operation. The following is the latest repo from her, dated Aug. 1, 1942:

"You will, I know, be just as pleased to hear, as I am t write, that I am quite a different and happier person fro what I was a little over three years ago, thanks to the comple relief from pain effected by the operation which yo performed."

Case III

Miss M. U., aged 48, reported to me at the Christie Hospit in April, 1939, complaining of severe pains in the right side the head, from which she had suffered periodically for thr years. In character the pain was a severe ache, and at its pea would affect the whole of the right side of the head, radiatin into the eye and upper part of the cheek. The headaches we accompanied by nausea, although she never vomited; som times she noticed black spots in front of her eyes. On ra occasions she had attacks of pain on the left side of the hea

On examination she was seen to be a thin miserable-lookin woman of an obviously neurotic disposition. Moreover, sh was a spinster, and it was suspected that the pain might b psychogenic in origin. Clinically, there were no abnorm neurological signs to point to any cerebral change to accou for her pain, and special investigations were negative.

A provisional diagnosis was made of migraine, and this w confirmed by keeping her under observation in hospita Medical therapy failed to give her any lasting relief. Wit some hesitancy I decided to sever the upper fibres of the rig trigeminal root. On April 27, 1939, under general anaesthesi I divided the ophthalmic fibres in the trigeminal root and als the second division of the trigeminus at the foramen rotundu via the lateral extradural approach of Frazier. After the opera tion she was anaesthetic in the first and second divisions of th trigeminus, the third division being spared.

The right cornea remained healthy until investigations into the problems of tear secretion were carried out. After this a keratitis developed which necessitated closure of the lids by tarsorrhaphy. For many months this woman was completely relieved of the pain in the right side of the head, but later began to complain of pains elsewhere in the body and, according to her doctor, was beginning to show distinct mental changes.

On Jan. 24, 1942, Prof. Jefferson wrote to me to say that he had seen the patient again. He told me that my operation had completely relieved the pain on the right side of the head but that obvious migrainous pains were starting on the left side. Moreover, she complained of pains elsewhere in the body.

Discussion

The possible criticism that, in my posterior root section cases, the relief of pain might be due to division of the auriculo-temporal and meningeal arteries is vitiated by the fact that injection of the Gasserian ganglion (Harris, 1936) will give relief, and this does not interfere with the blood vessels concerned. Also, division of the meningeal artery, and presumably also of the auriculo-temporal artery, in some cases of migraine has proved not to give relief (Craig, 1935). Moreover, the auriculo-temporal artery is not necessarily divided in posterior trigeminal root section, and certainly in two of my cases the large trunk of this vessel was not ligatured or diathermized. In any case, the ophthalmic artery is not involved in the lateral approach to the posterior trigeminal root, and it is along this vessel that many migrainous pains presumably arise. Finally, it is unlikely that local interference with a distal mechanism will ease pain of an extensive distribution.

If it is correct that the painful impulses in migraine do, in fact, enter the brain stem along the posterior trigeminal root, then it is still necessary to discuss how they reach the ganglion from the periphery. There are two possibilities—either they enter the ganglion from the autonomic plexus in the region of the foramen lacerum medium or they course along the ophthalmic and maxillary trunks of the trigeminus (first and second divisions). Probably the trigeminal trunks are the anatomical pathways concerned. This opinion is difficult to prove because the critical operation of section of the first and second divisions themselves in a suitable case has never been carried out, for the reason that section of the ophthalmic division (not the ophthalmic fibres in the posterior root) is a very difficult manœuvre, although it can be done (Rowbotham, 1939). In two of my cases, when the pain extended into the face, I sectioned the ophthalmic fibres only in the posterior nerve root, and the second division at the foramen rotundum, with the relief of pain. It must, however, be realized that it is impossible to know precisely how many fibres are being divided when fractional section of the posterior trigeminal root is being performed.

In one case, when a migrainous pain was confined to one side of the forehead, I divided the supra-orbital and supratrochlear nerves without dividing the supra-orbital vessels, with relief of pain. This is a very simple operation, and is worthy of trial when severe pains are localized to the forehead.

At this point it would be profitable to inquire into the results of thoraco-cervical sympathectomy in the relief of migrainous pains. Unfortunately very few such operations have been carried out for the deliberate relief of headaches, but in cases done chiefly for vasospastic states in the arm, Love and Adson (1936) found that of 16 cases of concomitant headache the headaches were relieved in 12. The efficiency of this method in relieving pain, I find, has been questioned by White (1942) and Telford (personal communication). Whether or not relief is obtained by sympathectomy does not help in settling the route of conduction of the painful impulse, because relief when it is obtained by this operation can easily be explained by destruction of those pathways along which the original disturbance that initiates the painful impulse is conveyed. In other terms, sympathectomy destroys the motor and not the sensory arc of the mechanism of migraine.

My series of cases at least suggest that the painful impulse in migraine passes through the posterior trigeminal root, but they do not prove by any means that this is the main sensory pathway of the autonomic system of the head. Possibly the trigeminal pathway acts purely as a special defence mechanism. The main problem of the sensory pathways of the autonomic system still remains an enigma, and will possibly remain so until better methods of staining autonomic fibres have been discovered.

I have published these cases at this time because they throw light on the state of post-concussional headache, which is one of the main problems in His Majesty's Forces to-day. In many cases of post-concussional headaches no organic cause is demonstrable, either clinically or by encephalography, and many are labelled psychoneurotic or nervous. Possibly in many so-called nervous headaches the pain is not purely one of perception but is due to an unstable mechanism resulting from the injury, leading to atypical migrainous pains. This type of headache in Service cases is, I believe, much more common than the headache due to dural traction the result of adhesions.

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THE SYNDROME OF HAEMORRHAGIC SUPRARENAL INFARCTION

BY

DORIS V. KEELE

AND

KENNETH D. KEELE, M.D., M.R.C.P.

Major, R.A.M.C.

The syndrome of primary infarction of the suprarenals is very rare, and unilateral infarction has not been described at all. There are only some 14 cases of haemorrhage into the suprarenals in adults recorded in the literature in which any description is made of the clinical picture. None of them were diagnosed in life, even at laparotomy, and all were fatal. The syndrome described in this paper is that produced by thrombosis of the suprarenal vein with resulting haemorrhagic infarction of the suprarenal gland, in an adult. Other causes of haemorrhage into the suprarenal are: (*a*) in the newborn; (*b*) in meningococcal and other acute infections, in which the picture clinically is that of the acute infection: the Friderichsen-Waterhouse syndrome is discussed in differential diagnosis here, and another case added to the 60 already described; (*c*) as a part of a general haemorrhagic state. The thesis put forward is that the suprarenal infarction syndrome is recognizable in life, and possibly treatable.

Case History

The patient (D. V. K.), an intelligent woman aged 32, was 8 months pregnant. The pregnancy had been normal except for occasional morning vomits, in some of which there had been streaks of blood. Two days previous to the illness the urine was albumin-free and the blood pressure 120/80. On March 28, 1941, at 12.30 p.m., she complained of feeling cold, after which she walked half a mile with no further complaint. Half an hour later pain appeared in the right side below the ribs—persistent, "like a stitch"—which made her put her right hand to the side and bend over to the right. This pain was exacerbated by the movement of the car and by walking. The pain below the right costal margin steadily increased in severity. There was no nausea, and the appetite was good. Pallor and sweating now became evident in spite of a strong pulse of 70 a minute.

2 p.m.—Patient restless in bed, in severe pain, which remained the whole time localized to a spot over the fundus of the uterus to the right of the umbilicus about 2 in. below the costal margin in front. There was no pain in the loin. Vomiting began at this time—copious, free, and sudden. This continued repeatedly until the end. Micturition was natural, and urine showed no haematuria. On examination there was some coldness of skin. Pulse 80, temperature 98°, respirations 20. Patient mentally quite clear. Abdominal tenderness was present at the site of the pain, which was located by her accurately with the finger-tips. There was no rigidity. Pressure on the tender region induced nausea and vomiting. The pain did not radiate or shift in any direction. It was very severe, and restlessness was marked, but it was described as "bearable."

5 p.m.—Admitted to the Radcliffe Infirmary and examined by Prof. Chassar Moir and Mr. D. C. Corry. The symptoms and signs remained the same. No abnormal signs were found elsewhere. White cells, 24,000.

10.30 p.m.—Laparotomy performed. A scarred adherent appendix was removed. Patient's condition was quite satisfactory until the skin sutures were being inserted, when mucus flowed into the trachea. This became blood-stained, and was followed by a profuse pulmonary haemorrhage, from which she died in spite of cardiac massage and tracheotomy. Caesarean section was performed, but the infant was dead.

Post-mortem Examination by Dr. Robb-Smith.—No abnormality was found apart from the lungs and the right suprarenal. Lungs showed diffuse haemorrhage filling the bronchioles in the substance of both. No evidence of active tuberculosis was found, though there was the scar of an old healed focus at the right apex. The heart was normal, the right ventricle empty. The right suprarenal was the size and colour of a large plum. The tissues surrounding this were very tense, so that when the organ was cut with a knife there was a sudden spurt of blood-stained fluid under pressure. The left suprarenal gland was normal. On examining the veins a thrombus was found extending along the suprarenal vein from its protrusion into the inferior vena cava. The thrombus in the large vein was older than that in the smaller branches by some 2 to 3 days. Blood culture was negative.

Summary of the Case.—The outstanding points are: (1) the gradual onset with "feeling cold"; (2) the ingravescent nature of the pain, growing in about two hours to great severity, and its accurate location; (3) the severity of vomiting, such that intestinal obstruction was seriously considered; (4) the absence of shock and of purpura; (5) exploratory laparotomy failing to make a diagnosis; (6) the death through pulmonary oedema progressing to profuse haemorrhage. Pathologically the case is unique in that there is none described with infarction of the suprarenal on the right side only, consequent on primary thrombosis of the suprarenal vein.

Diagnostic Criteria

The salient question is that of diagnosis. Is there a picture on which diagnosis of infarction of the suprarenal can be based? On retrospect it is my belief that in this case, and in some others collected from the literature, diagnosis is possible—that there is a clear-cut syndrome here which is not yet generally recognized. This rests mainly on: (1) the characteristics of the pain; (2) the severity of vomiting; (3) the surprising absence of "shock."

1. *Characteristics of the Pain.*—Both authors of this paper had been interested in the subject of pain over a period of some years. For this reason the description given by D. V. K. at the time of her illness was deliberately shaped to comply with Ryle's ten points (Ryle, 1936), which form the standard clinical description of pain. In the production of pain as a symptom, sensitivity is obviously a factor to be taken into consideration. For some years sensitivity to pressure pain has been used as a clinical guide to this factor, which it is believed is of definite significance (unpublished work). In the case of D. V. K. many tests had been made at various intervals of time, including four during the 8-months period of pregnancy designed to ascertain whether there was any detectable alteration in sensitivity during that period. Sensitivity to pain measured thus was near the average of 100 normal people in the case of D. V. K. For this reason, and because of her knowledge of the relevant features of pain, her evidence is of singular value from the diagnostic point of view. The pain in this case had the following characteristics:

Onset was gradual, not sudden, accompanied by a feeling of coldness. *Site:* From the first and during the whole 12 hours of the illness it was localized to a point to the right of the umbilicus about 2 in. below the costal margin. Location was accurate to an area about the size of a half-crown. There was no *shift* or *radiation*. *Severity:* At first mild in degree, it steadily increased until it was of great severity; but at its worst it was described as "bearable" by D. V. K. *Character:* First described as a "stitch"; later the word "cramp" was used. *Duration:* At all times it was persistent. And from its commencement until she was anaesthetized the pain never left her, except at the end of two hours for a brief period of about 2 minutes, when she surprisedly exclaimed that it had vanished. Then it returned with increased intensity. *Relief:* Nothing relieved completely. At first bending to the right appeared to be a more comfortable position. Veganin gr. 10 failed. Heroin gr. 1/12 gave some relief. *Aggravation:* Pain was made worse by any movement such as walking or the movement of the car. Pressure on the fundus of the uterus produced acute pain and nausea with vomiting. *Accompanying symptoms:* A feeling of cold preceded the pain. Vomiting occurred after about 3 hours, becoming persistent and repeated until operation. It had no marked effect on the pain. Micturition was free. There was no dysuria. The temperature remained between 98° and 99° F. throughout, the pulse about 80. *Tenderness* was located with the finger-tips to the area previously described, to the right of the umbilicus. There was hyperalgesia of the skin in this region. No rigidity was detected at any time. No pain or tenderness was present in the loin or in the region of the posterior renal angle.

2. *Vomiting.*—This was a symptom which obscured diagnosis. Starting about 3 hours from the onset, it was copious without retching, almost projectile in character, and repeated; there appeared to be little nausea between, when fluids were well taken. And in spite of it dehydration was not marked. Its character and persistence suggested intestinal obstruction.

3. *Absence of "Shock."*—This is so surprising as to merit a prominent part in the clinical picture: it is a finding so completely opposed to expectations in a patient with suprarenal disease, and with vomiting of the severity mentioned. Blood pressure was unfortunately not recorded during the few available hours, but three observers remarked on the full normality of the pulse at the wrist. Two days previously blood pressure was 120/80, and there was little detectable difference on palpating the pulse then and during the illness. The pulse rate never exceeded 88 in the half-hourly records taken over the last 6 hours. A white cell count showed a leucocytosis of 24,000.

The Clinical Picture in Other Recorded Cases

The above clinical picture is confirmed when analysis is made of the few available clinical records of similar cases, though it will be seen from the Table that many points are unfortunately omitted in these descriptions. Only one case, Arnaud's (1900), has been found which is comparable (Case 2)—that of a girl of 17 who developed symptoms 11 days after a severe burn. Here the pain is described as "epigastric." One feels that the word covers a wide area of abdominal wall which might well include the site described in the present case. Apart from this possible discrepancy there is similarity in the picture, so far as it is described, in the severity of the pain, the vomiting, and the duration of some hours.

In Case 3, described in detail by Pearl and Brunn (1928), there was haemorrhage into the right suprarenal, followed 7 days later by haemorrhage into the left. For its first phase this case, therefore, is similar: there was sudden onset of severe pain, which was first in "the right kidney region" and on the second day "under the ribs," with tenderness "in the region of gall-bladder." The advent of the left-sided haemorrhage was indicated by pain in "the left flank and under the ribs." Other points of similarity about this case are the absence of abdominal rigidity and of shock. Even on the 12th day of the illness the blood pressure was 120/80, and both suprarenals had by then been affected. Temperature, pulse, and respirations were all normal during the first day. In Cases 4 to 10 both suprarenals were involved. It is obvious that in these cases the combined areas of pain each side of the umbilicus might be described as "epigastric." Actually it will be seen that 3 are so described—one as "diffuse," one as in the "left kidney region," and one as under the costal margin, left first and then right. The last—Case 10—had no pain, but was tender under the costal margin.

Now to summarize regarding the characteristics of the pain. The localization was definite and in an unusual site in the present case. From the 10 cases quoted, in 4 this same site is described and identifiable; in 5 others the word "epigastric" or "diffuse" is used. These words at least localize the pain to the front of the abdomen rather than the flanks, and inaccuracy of observation may well account for lack of more precise siting. In one the pain is described as in "the kidney region" only. It is my opinion that this area of suprarenal pain is definite and probably of as much diagnostic value as pain and tenderness over MacBurney's point in the right iliac fossa. Observation of further cases will of course settle the issue. Pain in the loin is not as constant as in the anterior site.

The absence of rigidity is almost a constant finding in all the cases even after some days' duration, at a time when other abdominal catastrophes are almost certainly productive of this sign. Temperature, pulse, and respiration rate all remained normal in the majority of those cases in which they are recorded. In Pearl and Brunn's (1928) case fever is recorded on the 7th day. In Hall and Hemken's (1936) case fever of 104° F. was present terminally. The pulse rate remained below 100 in 5 out of 7 cases. In the one case (No. 8) where it was 120 there was accompanying pancreatitis.

	Right Suprarenal		Right Suprarenal followed by Left		Both Suprarenals						
Case:	1	2	3		4	5	6	7	8	9	10
Sex	F	F	M		M	M	M	M	F	M	M
Age	32	17	45		72	30	46	40	44	?	74
Pain site	Below rt. C.M.	Epigastric	Rt. kidney Rt. C.M.	Lt. kidney Lt. ribs	Epig.	"Diffuse"	Epig.	Lt. kidney	Epig.	Lt. C.M. Rt. C.M.	Nil
„ degree	V. sev.	V. sev.	V. sev.	V. sev.	V. sev.	Sev.	V. sev.	V. sev.	Sev.	Mod.	—
„ nature	Persistent	Persist.	Persist.	Persist.	Persist.	Persist.	Sharp	—	—	Persist.	—
Tenderness site	Below rt. C.M.	Epig.	Present C.M.	Lt. C.M.	Epig.	Diffuse	—		Epig.	Under C.M s	Under C.M.s
Rigidity	Nil	—	Nil	Nil	Marked	Slt.	—	Lt. abdo.	Slt.	—	Nil
Temperature	98°	—	102° } 9th	102°	98°	99°	—	104° (2nd day)	95°	97°	99°
Pulse	80	—	90 } day	90	104	90	—	—	120	100	80
Respirations	20	—	—	50	32	—	—	—	45	—	—
Vomiting	++	+	—	+	++	+	+	+	++	+	Nil
B.P.	120/80	—	120/80	120/80	140/95	—	—	—	—	—	—
Lungs	N.A.D.	—	—	—	Rales	—	—	—	Rales	—	—
Mental	Clear	Syncope	Clear	Dull	Clear	—	Clear	Clear	—	Clear	Clear
White cells	22,000	—	—	16,000	20,000	—	—	—	52,000	—	—
Haemorrhage { Purpura	Nil	—	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Haemorrhage { Elsewhere	Pulmonary	—	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Duration	12 hrs.	Hours	7 days	6 days	10 hrs.	4 days	? mths.	2 days	36 hrs	21 days	14 hrs.
Remarks		11th day after burn			Carc. of bronch.				Pancreatitis too		Ch. nephritis
Reference	Keele	Arnaud	Pearl and Brunn		Altschule	Barsoum (1936)	Goolden (1857)	Hall and Hemken	Lavenson	Hektoen (1909)	Michaux and Marsset

Add 2 cases found in coma—both adrenals involved—and 2 cases in lunatics. C.M.—Costal margin.

Respirations in the present case were not raised until operation, when the patient showed distress under the anaesthetic. In the only other cases in which the rate is quoted it was 50, 32, and 45 per minute. These high rates suggest the presence of pulmonary congestion, though limited to a stage not revealed, as in the present instance, by profuse pulmonary haemorrhage. Basal rales were found in 2 cases. Vomiting of severe degree formed a prominent feature of the syndrome in 8 of the cases. It is mentioned as severe in 3 cases, and in only 2 is it omitted. Blood pressure is recorded in only 2 instances. Such readings as 120/80 and 145/95 correspond with the absence of the signs of shock found in most cases. In the present case it is probable that there was little change from the pressure of 120/80 taken before the illness. The mental state of all patients was clear, except in Case 2 after a week's illness. This contrasts with 4 other cases quoted—two by Arnaud and Laignel-Lavastine in which the patients were found in coma, and two occurring in lunatics (Munson, 1907; Severn, 1923)—a melancholic and an idiot. The white cell count has been found raised in all 4 cases in which it has been recorded. Figures of 24,000, 16,000, 20,000, and 52,000 raise the question of infection, but are equally well accounted for by infarction. Haemorrhage, either purpuric or from other organs, has been absent in all cases, except in the present one, in which it was terminal from the lungs. There was no evidence of any haemorrhagic diathesis in the case of D. V. K. Tonsillectomy had been performed 8 years previously, being followed by a miscarriage without abnormal haemorrhage. The absence of purpura in all cases is a point of interest, bearing in mind its constancy as a part of the Friderichsen-Waterhouse syndrome.

The duration of the illness has been variable. In 4 of the 10 cases death has occurred in less than 24 hours. In the others the illness has lasted from 36 hours to a period of months. This indicates that there must be all degrees of infarction. In fact, it is known that sometimes blood cysts are formed. Arnaud quotes a case in which a cyst weighing 4 lb. was found post mortem. The suprarenal tissue was entirely destroyed. The patient had had attacks of pain for a period of years, presumably due to repeated haemorrhages.

Differential Diagnosis

The main diagnostic problem is anatomical. In the case of infarction into the right suprarenal, diseases of the pleura, the gall-bladder, kidney, appendix, and alimentary tract are possible sources of diagnostic difficulty. In the case here described the uterus was enlarged by 8 months' pregnancy, and the provisional diagnosis made before laparotomy was that of a twisted ovarian cyst, or degenerating or twisted fibroid. A comparison of the picture described in the case history shows on retrospect the differences between most of these conditions and suprarenal infarction. These differences lie in the characteristics of the pain, which is not like a colic, and the site of which does not correspond to gall-bladder or renal pain, and is too high for the pain of appendicitis. The strict localization and the absence of radiation are both positive evidence of the suprarenal origin of the pain. The vomiting suggests intestinal obstruction, and such a diagnosis may be disproved only by laparotomy.

Exploratory laparotomy was performed in 4 cases. In none was the diagnosis made at this time. This raises, in my opinion, the most important feature of all. In an exploratory laparotomy, if the usual sites of acute abdominal conditions are found to be normal then the suprarenals should be examined. In most cases palpation alone will suffice, since when there has been haemorrhage the gland is the size and consistency of a large plum. If doubt still remains it would be possible to inspect the region. Retroperitoneal haemorrhage will be visible as well as the plum colour of the infarcted gland itself.

Arnaud, in his classification of the picture of suprarenal haemorrhage in adults, describes three clinical types: (1) Peritoneal type, into which fall the cases here discussed with abdominal pain and vomiting. (2) Asthenic type, characterized by asthenia alone, leading to death: the exitus of the two psychotic cases suggests this type. (3) Nervous type, in which the patient is found in coma or delirium, and is seen post mortem to have no cerebral lesion, but bilateral suprarenal haemorrhages: into this group fall the two cases of Arnaud and Laignel-Lavastine mentioned above. Differential diagnosis in Groups 2 and 3 must be considered impossible. Lavenson (1908) and Keith Simpson (1937) add the type in which sudden death occurs with no ascertainable cause and in which bilateral suprarenal haemorrhages are found post mortem. All these types occur in adults. In none of the cases quoted is there evidence of infection being the causative factor.

Causes of suprarenal haemorrhage may be classified as follows: In children two main types occur:

1. *Haemorrhage into the Suprarenals in the Newborn.*—Birth trauma is undoubtedly the cause here. Of 8 cases described by Levinson (1935) 6 were breech deliveries and 2 Caesarean sections: the latter two infants had been slapped on the loins to revive them. Owing to the involution of foetal cortex about the time of birth and its replacement by vascular tissue in a

loose stroma, haemorrhage is facilitated at that stage by trauma. Even in this type, however, operation proved successful in the case of Corcoran and Strauss (1924), in which laparotomy was done for a mass palpated in the left loin and left iliac fossa, and a bleeding-point ligated. This case establishes the fact that operation is feasible in cases of haemorrhage into the suprarenal. It is probable that small haemorrhages occur which heal and finally end in calcification of the suprarenal or in fibrotic change.

2. *Friderichsen-Waterhouse Syndrome.* — This syndrome occurs in older children. It is typified by the following case, the first of its kind to be seen by me.

> L. R., aged 5 months, was noticed by the mother to be restless and feverish in the night. In the morning a blotchy rash was observed on the forehead; no vomiting; drowsiness was present during the last hour. Examination showed extreme cyanosis, large purpuric patches all over the body; pupils unequal and fixed; tachycardia about 150; vomiting. Within an hour the child went into coma and died. Necropsy showed bilateral haemorrhage into both suprarenals. The brain and other organs were normal, except that there was congestion of both lungs. Blood culture was not done and the veins were not examined for thrombosis.

This clinical picture is in contrast to the syndrome in the adult due to infarction where there is no purpura, cyanosis, or delirium. The Friderichsen-Waterhouse syndrome occurs also in adults, and recently I have seen a typical case in a man aged 23, who came into hospital with purpuric patches, confluent on the feet and some 2 in. in diameter on legs and arms. This patient became comatose while being examined, at which time his blood pressure was only 70 mm. Hg systolic. Blood culture showed meningococci. He recovered on sulphapyridine therapy. This picture cannot be confused with the cases of primary infarction of the suprarenal gland. The purpura is in these cases the result of injury to capillary walls by the meningococci, which can be cultured from the purpuric patches. The two comatose cases described by Arnaud and Laignel-Lavastine might well fall into this fulminating meningococcal group.

Thrombosis of the suprarenal veins may occur in such patients and give rise to abdominal symptoms, which, however, will be obscured by the patients' mental state. Other organisms besides the meningococcus may produce suprarenal haemorrhage with purpura—but very rarely.

3. *Thrombosis of the Suprarenal Vein.*—This, according to Hall and Hemken, is the commonest cause of suprarenal haemorrhage in adults. It presents the syndrome of suprarenal infarction here described.

4. *Any Generalized "Haemorrhagic" Condition.*—This may show haemorrhage into the suprarenals. Such is the case, described by Lewis (1921), in an infant of 3 weeks which died of convulsions 5 hours after an operation for hare-lip. At necropsy, haemorrhage was found into pancreas, lungs, suprarenals, and other organs.

From this description of the types of suprarenal haemorrhage it will be seen that each presents a fairly distinctive clinical picture. These four groups summarize the clinical pictures in cases of fatal suprarenal haemorrhage. It has been shown by Snelling and Erb (1935) that in the newborn death does not always ensue on haemorrhage. Suprarenal glands examined later in life have shown calcification and haemosiderin deposition—i.e., evidence of previous haemorrhage. This calcification may be visible radiologically.

No similar case has been reported in adults, but now that cases of fulminating meningococcal septicaemia can be saved, as in the case described above, such haemorrhages may be expected, possibly with subsequent calcification visible radiologically. It should not be assumed that all cases of calcified suprarenal glands result from tuberculosis. The suggestion is tentatively put forward here that some cases of Addison's disease with "atrophic" or even calcified suprarenals are the result of old haemorrhage into the gland. No such case, so far as is known, has been recorded, but in a case of Addison's disease treated by grafting foetal suprarenal glands into the rectus sheath (Bailey and Keele, 1936) there was dramatic and successful response of blood pressure and symptoms, though not of pigmentation. This patient was last seen 6 years later, quite well. Relevant to the present thesis is that 6 months before her symptoms developed she had had cholecystectomy for abdominal pain. The gall-bladder appeared normal and the patient's symptoms were not improved. Were the symptoms produced by disease of the suprarenals?

Pathology

Post-mortem findings have been limited to changes in the suprarenals in most cases. Carcinoma of the bronchus was an associated finding in Case 4 (Altschule, 1939). Pancreatitis obscured the clinical picture in Case 8 (Lavenson's). "Chronic nephritis" was found in 2—those of Michaux and Marsset and of Lavenson. This association has probably more than coincidental significance, as it has been noticed by French workers (Michaux and Marsset, 1923), and recently such a case has been found by Dr. Robb-Smith (personal communication). Pulmonary haemorrhage was observed only in the present case though congestion was mentioned in Case 8.

Unilateral infarction of the suprarenal has been found only in the present case and one other (Arnaud), in both instances on the right side. In Case 3 the right side was involved first. In Cases 7 and 9, however, the history suggests that the left side was involved before the right. In all cases the suprarenal glands have been replaced by blood, often clotted, contained inside a capsular layer, or (in 5 cases) infiltrating into the retroperitoneal tissues to a varying extent. This infiltration may be extensive and produce a palpable tumour in the flank. Such a case in an infant was operated on and cured (Corcoran and Strauss, 1924).

Histologically the medulla of the gland is completely replaced by blood. In most instances a layer of cortex remains. Thrombosis of the suprarenal vein is an important and frequent finding. In 6 of the 10 cases it is specifically described, and is not mentioned in the others. That this thrombosis of the vein is not a sudden event is shown by the fact that in the present case the thrombus in the main suprarenal vein projected into the inferior vena cava, and was estimated to be from 2 to 3 days old, whereas that in the small venous radicles was more recent. Thrombus had spread, therefore, from large vein to small, and infarction of the gland was so produced.

The cause of death in the present case was the diffuse bilateral pulmonary haemorrhage; in the other cases it presumably was acute suprarenal insufficiency. In the post-mortem findings of cases of Friderichsen-Waterhouse syndrome pulmonary congestion is commonly mentioned, and in view of the present case it would seem that suprarenal insufficiency does produce some change in pulmonary circulation.

Pathological Physiology in Suprarenal Infarction

Symptom production in suprarenal infarction and biochemical changes that ensue are shrouded in mystery and complexity. The pain in the right side is of the "referred" type. Its accurate location corresponds with thoracic segment 10. It results either from afferent stimuli passing up from the medulla of the gland itself or from retroperitoneal irritation. The state of tension of the gland from which blood spurted post mortem and the mild degree of retroperitoneal infiltration would favour the first hypothesis in the present case. The medulla of the suprarenal receives a large number of sympathetic fibres that come from the coeliac ganglion and plexus, which incorporates the two splanchnic nerves on each side. Fibres to the suprarenal are plentiful and mostly preganglionic, and medullated. From the site of pain in the present case it seems justifiable to suggest that the segment from which the outflow occurs is Th. 10.

The vomiting is remarkable, and no easy explanation is available. One can only compare it with the crisis in Addison's disease, the mechanism of which is imperfectly understood. Pulmonary haemorrhage is even more difficult to account for, though it is obviously related in some way to the acute suprarenal insufficiency. To try to say how related would be merely to indulge in guesswork. It does appear, however, that there is no reason why this patient should have died if pulmonary haemorrhage had not occurred, since the other suprarenal was intact. But possibly it, too, would have become infarcted, as happened in Pearl and Brunn's case.

Biochemically there is no evidence at all as to what changes are taking place in such acute suprarenal disease. In adrenalectomized dogs detectable changes in blood chemistry do not occur until the second day at the earliest. This applies to values of blood cholesterol, sugar, urea, sodium, potassium, and chloride; nor does blood pressure fall or pulse rate rise until the second or third day. These findings are curiously confirmed by the clinical normality of blood pressure and pulse in these cases of suprarenal infarction described.

The vascular supply of the suprarenal gland is remarkable. Three arteries converge to produce the most vascular organ per gramme in the body. The vein arises from sinusoids in the medulla. Its walls contain a considerable quantity of muscle, and the blood in it is oxygenated, being "arterial" rather than "venous." Occlusion of this large vein results in a haemorrhagic infarction of the gland, which starts in the loose medullary tissue, destroying it completely. The cortex is also destroyed, but often a thin rind of it escapes, helping to form a capsule round the haemorrhagic area. Later this may rupture, the blood spreading down into the perirenal fat and into the retroperitoneal tissues.

The cause of primary venous thrombosis is unknown, though it occurs as a rarity, the portal vein being the commonest of the visceral veins to be affected.

Pregnancy as a Factor.—One other case occurring in pregnancy has been found—in a girl aged 18 with hyperemesis gravidarum. No other clinical facts are given; but at necropsy it was seen that haemorrhage was into the left suprarenal more than the right. Thrombosis of the suprarenal vein was marked.

Summary

A case of haemorrhagic infarction of the right suprarenal gland is described. The clinical picture is compared with that of cases in the literature, and it is considered that this rare condition may be diagnosed in life. The characteristics of the pain—particularly its site, the repeated vomiting, and the remarkable absence of shock—present a well-defined but hitherto unrecognized syndrome.

Differential diagnosis is discussed, with particular attention to other clinical types of suprarenal haemorrhage: (1) haemorrhage in the newborn; (2) Friderichsen-Waterhouse syndrome; (3) haemorrhagic disease. Examples of these are described.

The failure of laparotomy to diagnose cases is noted and a plea put in for exploration of the suprarenals at operation if no other adequate pathological change is found; ligation of a bleeding-point or excision of the gland are measures which might be adopted.

I would like to put on record my deepest gratitude to Prof. Chassar Moir for his great skill and for his kindness to my wife in her illness and to me afterwards. He made available to me all his case notes, and his help has been invaluable. Dr. A. H. T. Robb-Smith has also been most generous in permitting me to have full details of the pathological findings, and in discussing them with me.—K. D. K.

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F. E. Maisel and E. Somkin (*J. Allergy*, 1942, **13**, 397) have published a preliminary report on the treatment of the asthmatic paroxysm with nicotinic acid. They found that (*a*) severe asthmatic attacks were controlled within 3 to 5 minutes, and improvement lasted 3 to 15 hours, in 16 of 21 patients by the intravenous injection of 0.1 g. of nicotinic acid; (*b*) 5 of 9 chronic asthmatic patients were benefited by 0.2-g. doses given orally three times a day before meals and on retiring; and (*c*) 11 of 18 patients receiving intravenous therapy followed by oral therapy showed decided improvement in their asthma. The patients experience a flush and a sensation of heat, then often begin to cough, and expel tenacious mucous plugs. The beneficial effect is thought to be produced by the strong vasodilator properties of nicotinic acid, relieving the bronchospasm or directly affecting the pulmonary vessels, and has no bearing on vitamin deficiency. The patients were mostly beyond middle life, often with a well-marked infective element and not responsive to ordinary allergic methods of therapy. No patient developed any disturbing symptom.

THE HERRING AS A SOURCE OF VITAMINS A AND D

A COLLABORATIVE INVESTIGATION

BY

A. L. BACHARACH
Biochemical Department, Glaxo Laboratories Ltd.

E. M. CRUICKSHANK
Dunn Nutritional Laboratory, Cambridge University and Medical Research Council

K. M. HENRY
National Institute for Research in Dairying, Reading University

S. K. KON
National Institute for Research in Dairying

J. A. LOVERN
Torry Research Station, Department of Scientific and Industrial Research, Aberdeen

T. MOORE
Dunn Nutritional Laboratory, Cambridge

R. A. MORTON
Department of Organic Chemistry, Liverpool University

Conditions determining Food Value

The importance of a food as a source of any particular nutrient depends primarily on two factors—the amount of the nutrient present and the quantity of the food eaten. Most recent books on dietetics and nutrition include the herring among the "protective foodstuffs," and justify this by referring to its excellence as a source of fat-soluble vitamins (cf. Plimmer and Plimmer, 1938; Bourne, 1941; McDonald, 1938; Mottram, 1938, 1940; McCarrison, 1941). Only Wokes (1941) appears to have had doubts.

Examination of the evidence for this belief is rather disconcerting. In the tables of Fixsen and Roscoe (1937-8, 1938-9) four references are given, and they derive from only three authors, one of whom was reviewing the physiology of the sterols and gave no experimental data of his own. More recent papers have been exceedingly scanty, both in number and in informativeness, though an exception on the latter score may be made for that by Lunde *et al.* (1937), who give values for the body oil of herring as under.

Condition of Herring	Vitamin (I U. per 100 g. Oil)	
	A	D
Fresh, winter	200 to 2,800	9,000 to 15,000
Kippered	Unaffected	11,500 to 14,500
Canned and stored	Decreased	7,000 to 14,000
Canned, kippered	Trace	

These authors do not clearly differentiate between canned herrings that have been submitted to preliminary kippering and those that have not, but they remark that "since kippered herring contains about 12 to 13% of oil, the canned product is a food with . . . a high vitamin D potency." This seems to us to be a conclusion of little practical bearing unless consumption data are also taken into account, so enabling us to assess the importance of the herring as a source of vitamins A and D in the national diet.

From certain figures published by the Herring Industry Board for the year 1937, and made available to us by the kindness of Dr. Magnus Pyke of the Ministry of Food, an idea is to be had of the *per capita* consumption of herrings in this country. It amounted to approximately 1¼ oz. a week, of which just under 0.6 oz. was fresh herring. One of us (J. A. L.) has been able independently to obtain a check on these figures, with very satisfactory agreement. The figures for the vitamin D content of herring-flesh oil have little nutritional significance without an accompanying statement as to the oil content of the flesh, which is known to vary considerably. Our own findings, given below, confirm this and cover a range from 3.6 to 20.2% in fresh herring.

The contribution to their average intake of vitamins A and D obtained by the population from herrings clearly cannot be satisfactorily calculated on the basis of published data. We therefore decided to reinvestigate the matter, examining both canned and fresh herrings.

Methods of Testing

Vitamin A was determined by the spectrophotometric technique on the unsaponifiable matter separated from the glycerides of the oil; vitamin D was estimated by one or other of the recognized methods of biological assay. The determinations of vitamin A were all carried out in laboratory L. The biological assays for vitamin D were carried out in three different laboratories, though not on any one sample at all of them. In two the line test was used, in the third a radiographic technique; one assay in laboratory R was done by the chemical method of bone analysis. The details of technique and experimental design resembled those recommended in the *British Pharmacopoeia, 1932,* and minor modifications and differences are quite unlikely to have introduced differences in result falling outside the usual range of experimental error encountered in such tests.

Vitamin D Tests

Two main series of samples and certain special oils were examined. The first series consisted of oils expressed from five different brands of canned herrings, some with and others without tomatoes. All were examined in laboratory C, and two in laboratory G (one of them in two independent assays). Exploratory tests had been carried out at levels based on the vitamin D values reported in the literature for herring body oil, and all produced in the test animals healing quite insufficient for assay purposes. Tests were then made at higher dose levels, the oils being separated in laboratory C by pressing the fish in muslin and removing water by centrifuging. (The exploratory samples had been separated by ether extraction of the tissue, after grinding it with sodium sulphate.) The results obtained with these samples are given in Table I. The discrepancy between the values found by laboratories C and G for oil 4 has not been resolved: of the two assays carried out on that sample in laboratory G, the second (the lower) is the more accurate, the limits of error, for P=0.05, being 84% to 119%. The error was calculated from a variance analysis: this assay, which was conducted on 40 animals, exclusive of negative controls, is probably the most accurate of those made on the first series of samples 1 to 5.

TABLE I.—*Vitamin D in Canned Herring*

Sample	Brand	Tomato	Oil in Flesh (%)	Vitamin D (I.U.)		Laboratory
				Per 100 g. Oil	Per oz * Flesh	
1	A	+	23 0	750	48	C
2	B	+	10 0	550	15	C
3	C	+	16 5	1,720	80	C
				1,980	92	G
4	C	—	18 8	730	35	C
				2,300 : 1,940	120 · 106	G
5	D	—	18 0	650	33	C

* By calculation from preceding two columns.

It is clear that the values found for the body oil of canned herrings are much below the figures reported in the literature for canned or fresh herrings. This raises the question whether the discrepancy is due to variation in the antirachitic value of the fresh fish, to losses during canning, or to the error of biological assay. In view of the relative consistency of these results, both in themselves and with those reported below, we consider that our values are reasonably correct for the samples examined by us. The results with fresh herrings, given later in this paper, do indeed point to a real difference between the vitamin D contents of canned and fresh herrings, for which we are not able to offer an explanation.

In order to establish that the method of extracting the oil with ether does not give rise to any misleading results, a batch of August herrings containing 15.5% of oil was divided, one fillet from each fish being used for solvent (diethyl ether; S.G. 0.735) extraction of the oil and one for pressure extraction. The resultant oils (samples 6 and 7), which were so prepared in laboratory T, were examined in laboratories R and G. In laboratory R they were compared with the international standard preparation in the usual way, and gave values of 1,800 I.U. per 100 g. (expressed oil, sample 6) and 2,000 I.U. per 100 g. (extracted oil, sample 7). The errors of the logarithms of the potency ratios of oil and standard in the two tests were ±0.00726 and ±0.00758; the difference is perhaps suggestive, but it was found not to be significant (t=0.37, P=0.7). A more elaborate comparison was made in laboratory G, where each oil was fed at 3 doses to 16 animals, so distributed that 96 animals were used in six strictly comparable litter-mate groups. It was found that the relative activities of the two oils were as 1.66 : 1 in favour, curiously enough, of the extracted oil. This confirms the result suggested by the finding in laboratory R; for in this more extensive comparison the error was estimated by means of a full variance analysis, and calculation showed that the difference just has statistical significance (t=2.0, P=sl. > 0.05). The reason for the higher activity of the extracted oil is unknown, although one of us (J. A. L.) has encountered a similar phenomenon with the vitamin A of liver oils. A possibility is partial denaturation of the protein by the alcohol in the ether used for extraction, with a resultant liberation of vitamin D held in some kind of combination with protein. However this may be, the results dispose of any fear that ether extraction, as carried out, had appreciably reduced the vitamin content of the oils tested.

Next, two samples of herring oil were extracted in laboratory T from fresh fish, the method used being identical with that employed in preparing sample 7. The results of the tests on these two samples—8 and 9—are included with others in Table II. The discrepancy between the two assays of sample 8 is rather large, but evaluation of its significance has not been possible. The assay in laboratory G had limits of error, for P=0.95, of 84.5% to 118%. In spite, however, of the discrepancy noted, the amounts of vitamin D in these fresh herrings are clearly considerably greater than those found in the five samples of canned herring, or in the two samples (6 and 7) of fresh-herring oil, expressed and extracted, assayed in laboratory R.

TABLE II.—*Vitamin D in Fresh Herring*

Sample	Mth.	Condition, etc., of Fish	Stage of Fish	Oil in Flesh (%)	Vitamin D (I.U.)		Limits of Error for P=0·95 (%)	Lab.
					Per 100 g. Oil	Per oz.*		
6, 7	Aug.	Expressed or extracted oil		15·5	1,900	84	87 to 114·5	R
8	„	Oil cold-stored for 14 months	?	15·2	8,300	353	n.e p.	C
					3,600	153	85 to 118	G
10	Sept.	+ ¼ ripe	+ II	17·0	7,000	343	76 to 132	R
					5,150	258	95 to 105	R
11	„	½ ripe	III -	15·5	6,300	273	78 to 128	R
12	„	Spent	VII to I	7·7	22,200	479	70 to 143	R
					16,500	354	59 to 169	R
9	Nov.		?	12·2	6,100	210	n.e.p.	C
13	Dec.	Recovered spents		3·6	26,000	277	75 to 136	R
					15,800	169	70 to 143	R
14	„	„ „	More advanced than 13	7·7	16,800	363	66 to 152	R
15	Mar.	Ripe	V to VI	4·2	12,600	149	63 to 159	R
16	July	½ to ¾ ripe	III to IV	17·9	3,900	196	72 to 138	R
17	„	„ „	III to IV	20 2	3,400	190	73 to 139	R

n.e.p.=no evaluation possible.
* By calculation from preceding two columns.

The samples in the second main series were prepared in laboratory T from fresh herrings caught at different seasons. Again only the fillets were used (that is, the skin and small bones were retained, but head, tail, and backbone were rejected); they were, like the previous samples, minced, dried with anhydrous sodium sulphate, and rapidly extracted with ether. As will be seen from Table II, they represent fish in various stages; these are indicated in the table by numbers based on the classification of Lovern and Wood (1937). These samples were assayed in laboratory R; the second assay on sample 10 was conducted by the bone analysis (prophylactic) procedure. The figures for samples 6 to 9 are also included in the table for completeness and comparison. Incidentally, it should be noted that the probable limits of error for the assays carried out in laboratory R are likely to have been somewhat underestimated, as no account could be taken of the error of the slope of the dosage-response curve in each test: the calculated limits of error for all assays carried out in laboratory G take this into account. The results obtained in laboratory C were not suitable for the usual type of statistical analysis, and may be a little more inaccurate than those carried out in laboratories R and G.

In spite of certain inconsistencies encountered in these tests, a moderately clear picture is presented by the fresh-herring oils, which appear, as might be expected, to increase in vitamin D content as they decrease in amount (per unit weight of tissue). This tends to level out the vitamin D contents of the flesh, although these still show a range of 84 to 480 units per oz. The average of all eleven samples is 9,400 I.U. (range 1,900 to 26,000 I.U.) per 100 g. oil and 240 I.U. per oz. of flesh.

It is perhaps worth noting that whenever an assay was repeated in laboratory R on a sample of oil previously assayed there a lower value was obtained (samples 10, 12, and 13). The differences were statistically significant for oil 10 (three months' interval, P=0.02) and for oil 13 (1 month's interval, P=0.03), but not for oil 12 (1 month's interval). It is probably not justifiable to take these figures as in any way proof of the instability of vitamin D in ether-extracted herring body oil, held, like these samples, at 0° C., but they may perhaps suggest the need for care and speed in handling samples of such oils intended for vitamin assay.

Vitamin A Tests

The figures for vitamin A content are shown in Table III. They were obtained spectrophotometrically at wave-length 617 mμ, using the blue colour produced with antimony trichloride, and calculated from the formula

Table III.—*Vitamin A in Herring*

Sample	Description*	Oil in Flesh (%)	Vitamin A (I.U.)	
			Per 100 g. Oil	Per oz. Flesh†
3	Canned, with tomato	16·5	300†	15‡
4	Canned	18·8	530†	28‡
16	Canadian, canned	*ca.* 7·0	*ca.* 2,500	30 to 60‡
17	Canada seal, canned with tomatoes	Not determined		15 to 30‡
8	Fresh—Aug. (14 months stored)	15·2	<5,000	<215
10	Fresh—Sept.	17·0	1,400	68
11	" "	15·5	1,100	48
12	" "	7·7	2,500	55
13	" Dec.	3·6	1,020	10
14	" "	7·7	1,280	28
15	" March	4·2	2,100	25

* For further details see Tables I and II.

† By calculation from other columns, except those marked ‡, which are results of direct determinations.

$$\text{I.U. per g.} = E^{1\%}_{1\ \text{cm.}}\ 617\ \text{m}\mu \times 510.$$

Two purely qualitative tests in laboratory G on the oils from samples 4 and 8 gave results for absorption in the ultra-violet at 325 mμ consistent with those obtained by the more precise assays at laboratory L. When the samples of canned herring with tomatoes were examined a phase separation of lycopene had to be included to prevent interference with the antimony trichloride reaction of the vitamin A: apart from this the test, like the others, was carried out on the unsaponifiable matter of the oil previously separated by means of sodium sulphate and ether from the flesh. There may be some significance in the fact that the values for canned herring all fall at the lower end of the range for fresh herring; but the number of results obtained is not, in our opinion, sufficient to justify any definite conclusion about the effect of canning on vitamin A in herring flesh.

Discussion and Conclusions

If the results obtained by us are genuinely representative of herring body oil, they tell a somewhat different story from what published figures might have suggested. A paper by Ranganathan (1941), though concerned mainly with Indian fish and shark-liver oils, gave a few figures for (presumably) body oils from sardine, mackerel, ray, and plough-fish: these range from 16,000 to 25,000 I.U. of vitamin D per 100 g.—round about the higher limit found by us for herring oil: no information is given about the oil contents of the fish or as to the presence or absence of liver and gut oil. A recent paper by Holmes *et al.* (1941) also gives some data for the body oils of eel, sardine, herring, menhaden, and rose-fish. Figures of 5,000 to 20,000 I.U. of vitamin D and 34,000 I.U. of vitamin A per 100 g. of oil are quoted, again without reference to the amount of oil in the whole fish. Further, Pugsley (1942) gives some figures for the Pacific species, *Clupea pallasii*, which is closely related to our own *Clupea harengus*. He found 7.3% of body oil in one sample of the fish, and the oil contained 3,300 I.U. of vitamin D per 100 g. (68 I.U. per oz. flesh), but no vitamin A. We ourselves are not, however, claiming to have made any exhaustive study of the factors affecting the fat-soluble vitamins in herring muscle, or to have encountered the whole normal range of values, so that the figures reported by other workers should be useful as a reminder that our conclusions apply only to herrings having vitamin contents that fall among the values found by us.

However, in calculating the contributions made by herrings to the daily human intake of vitamins, the figures given by these authors are of no very great assistance. In estimating the value of herring as sources of vitamins A and D, therefore, we have thought it best to rely on our own figures. Assuming that the average amounts of vitamins A and D per oz. of fresh herring are 40 and 250 I.U. respectively, that vitamins A and D are lower in the canned fish by the same proportion, so that the respective values per oz. are 8 and 50 I.U., and taking the average weekly consumption per head as 0.7 oz. of fresh herring and 1.2 oz. of canned, bloatered, or kippered herring—both slight overestimates; ignoring, furthermore, the high probability that smoking and curing involve greater losses of fat-soluble vitamins than does canning, we are able to estimate an outside value for the average individual daily intake of vitamins from these sources:

	Units per oz.		Units consumed per Day	
	Vitamin A	Vitamin D	Vitamin A	Vitamin D
Canned, etc.	8	50	2	10
Fresh	40	250	4	25
Total			6	35

It is of course admitted that some individuals with a relatively high consumption of herring may obtain from them a useful proportion of their requirements of vitamin D, but this will only be at the expense of others who are deriving no appreciable amount from the same source.

Considered as an item in the national dietary, apart from such individual exceptions, it would appear, therefore, that the undoubted value of this fish as food must be due rather to its content of protein and of adventitious calcium from unavoidable herring bones than to its vitamin contents—at any rate, when consumed on what appears to be the usual scale in this country. It may be pertinent to add that available recent information as to the amount of vitamins A and D in salmon, canned or fresh, seems to indicate that the same considerations apply (cf. Pyke and Wright, 1941).

Such conclusions seem to us to be relevant not only to the problem of designing diets adequate for normal or optimal nutrition but also to the concept of adequacy itself, in so far as this is to any extent based on a study of actual dietaries, for which the nutrient analyses must generally, perforce, be taken from averaged published figures.

Summary

The average amounts of vitamins A and D in fresh herring were of the order of 40 and 250 I.U. per oz., and in canned herring may be about 8 and 50 I.U. respectively. The average daily contribution made by herrings to individual human intakes of vitamins A and D in this country is insignificant—namely, about 6 and 35 I.U. respectively.

Some of the statistical data included in this paper were calculated by Dr. K. H. Coward, and Dr. J. O. Irwin assisted with advice on variance analysis. To both of these we are much indebted.

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SICK ABSENCE AMONG MUNITION WORKERS

BY

A. MASSEY, C.B.E., M.D., D.P.H., D.P.A.
Medical Officer of Health

AND

R. C. M. PEARSON, M.D., M.R.C.P.Ed., D.P.H.
Deputy Medical Officer of Health
City of Coventry

The medical profession has a vital contribution to make at the present time in the battle of production. In the fourth year of war, factory workers may begin to feel the strain unless working hours and conditions continue to be determined on scientific lines to ensure compatibility with optimum output. In this and allied matters medical opinion is indispensable. Moreover, it is of course important to minimize loss of working time due to manifest sickness, and for this reason continued research into the medical aspects of absenteeism is necessary. In this connexion the figures relating to a recent inquiry we have made may be of interest.

TABLE I.—*Incidence of Sickness causing Absence from Work—Percentages of All Workers. (Figures relate to Seven Engineering Firms—Total Employees: M., 8,049; F., 3,397—during Period Nov., 1941, to April, 1942)*

Nature of Disability causing Absence	Firm 1		Firm 2		Firm 3		Firm 4		Firm 5		Firm 6		Firm 7	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1. Colds and influenza	11 4	10 7	9·9	14 3	10·0	5 4	8 3	10 4	23·4	66·7	11·1	17 4	13 4	3·4
2. Respiratory conditions	8·9	3·5	8·4	6 2	3·3	1·8	13 0	18·8	8·1	8·3	7 5	6·8	8·5	2·7
3. Gastric affections	7·5	3 4	5·1	2·6	3·6	—	6·5	8·8	3·4	20 4	4 6	2·1	3·8	1·2
4. Heart and circulatory conditions ..	1·2	2·4	1·2	0·6	0 3	—	2·7	1 0	3·1	2 3	2·2	1·7	0·2	0 2
5. Nervous conditions	2·2	5·8	1·2	2·3	0·9	—	2·0	4·7	0 9	6·8	1 9	7·6	3·5	3·6
6. Rheumatism	5·0	5·0	3·5	3·6	3·3	5 4	2·0	3·1	5·0	4·5	1 0	0·8	2·0	0·4
7. Occupational dermatitis	—	—	0 1	—	—	—	0 3	—	—	3 8	—	—	0·1	—
8. Other occupational diseases	—	—	0·1	0·3	—	—	—	—	—	—	—	—	—	—
9. Skin conditions (excluding 7)	1·0	1·3	2 9	2·6	0·6	—	2 9	1·0	0·3	0 8	0·5	3·0	1·0	0·3
10. Eye affections	0 1	0 8	0·3	0·3	0 6	—	0 8	—	0·6	0·8	—	0 4	0 1	—
11. Ear, nose, and throat	2 1	4·2	3·0	4 9	1·2	—	0·2	1 0	3·1	9·1	1·7	3 8	1·9	1·7
12. Infectious diseases	0 8	0 6	0·7	2 9	—	—	1·0	0 5	—	—	—	—	0·1	—
13. Accidents	3 6	1 5	3·4	1·9	3·0	1 8	14·4	22·9	0·9	3 0	5 5	0·4	0 3	0·2
14. Dental conditions	0 1	0 8	0 4	—	—	—	0 7	0 5	0 6	5 3	—	0 8	0·5	0·1
15. Pregnancy		2·0		1·0		—		3 1		—		0·4		0·5
16. Other conditions	4 4	7 2	6·5	5·9	3·9	1·8	3·5	9·4	7 5	20 4	5·8	8 0	19·1	7·6
Totals	48·3	49 2	46·7	49·4	30 7	16 2	58·3	85 2	56·9	152·2	41·8	53 2	54 5	21 9
Total employees (average) ..	1,556	1,297	1,856	307	331	56	602	192	321	132	416	236	2,967	1,177

The inquiry covered seven engineering firms the managements of which agreed to supply information covering the period Nov., 1941, to April, 1942, in regard to the causes and extent of loss of working time on account of sickness. Special forms were supplied for the purpose, and our thanks are due to the firms and to the industrial medical officers concerned for their helpful co-operation. The firms were of all sizes, and thus represent a fair cross-section. The information collected has been analysed and is briefly set out in the tables.

TABLE II.—*Percentages of Sick Absence due to Various Forms of Disability (All Firms)*

	Nature of Disability causing Absence. (See Key in Table I)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Males ..	23·7	17·1	10 0	2·0	4 5	6 1	0·1	0·0	3 0	0·4	4·0	0·8	6·2	0 8	—	21·3
Females ..	24·0	10·4	7·4	2·9	10·4	6·3	0·3	0 1	2·5	0 9	7·4	1·1	5·1	1·3	2·5	17·4

Comments on the Tables

The tables are more or less self-explanatory, but a few comments on them may be useful. The equivalent of 50% of all male employees lost some working time on account of sickness during the six months under review. The figure for females was 45%. In explaining the higher absentee figure for males, the age factor may have a bearing. The average age of male employees is probably greater because of the partial comb-out of younger men for the fighting Forces, whereas among females the young preponderate. It is conceivable that the increasing recruitment to industry of older, married women, made possible by the large-scale wartime nursery provision, may tend in future to increase somewhat the percentage of sickness absenteeism among females. The greater physical demands generally made of males by the nature of their work is also a relevant factor, although this is set off to some extent by the greater liability of females to nervous disabilities connected with the repetitive work allotted to them.

As usual the "colds and influenza" group is shown to be the greatest single time-loser, and in both males and females nearly a quarter of all absentees are sufferers under this heading. A notable exception is provided by the females in Firm 7 (Table I). This firm is liberal in its provision of prophylactics against colds, and it appears that the women and girls avail themselves more readily than the men. At four of the other firms, however, vitamin concentrates are also made available. But the figures concerning absence due to colds and influenza at these firms are not particularly favourable, although it is agreed by each firm that the incidence of colds is lower among the employees regularly taking vitamin concentrate than among those not so doing.

Males are in a majority under the heading of respiratory affections, and females show the greater incidence of nervous conditions. There is a notable paucity of strictly occupational diseases. Accidents account for 6% of all absences in males and 5% in females. Certainly there appears to be no evidence that women are generally more "accident-prone" than men. The high accident figures in Firm 4 (Table I) are probably explained by the inclusion under the heading of accidents of comparatively small injuries which elsewhere have been categorized as "other conditions." Although comparative pre-war figures are not available it is clear that there is an increase in factory accidents, due to wartime pressure of work, the larger proportion of inexperienced persons at work, and like considerations. According to the figures, little time is being lost by workers on account of dental conditions. It is

TABLE III.—*Percentages of Workers Absent Sick (All Causes) Month by Month (All Firms)*

	Nov.	Dec.	Jan.	Feb.	March	April
Males	8·2	7·1	9 1	8 5	8 5	8·7
Females	7·5	6 4	8·0	6·8	7·5	8·6

TABLE IV.—*Average Numbers of Working Hours Lost per Absentee (All Firms) in Respect of Each Disability Group*

	Nature of Disability causing Absence. (See Key in Table I)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Males ..	65 8	106 9	82·1	148·8	102·5	100 4	113·2	10 0	100·0	65·6	75·6	142·3	95·0	126·4	—	98·0
Females ..	66·3	112·0	69·1	106·8	110 2	82 0	240·0	250·0	72·8	77·5	78·5	131·3	75·0	83 3	193·2	104·2

kely that in many cases lengthy dental work is being neglected nder the pressure of essential war work. It will be noted at "other conditions" constitute a considerable proportion f the causes of absence. This is due in part to the vague ature of some of the medical certificates received at the actories in respect of absentees.

Conclusion

In connexion with the health of factory workers, home ircumstances play at least as big a part as working conditions, nd it is ordinary sickness that is the chief time-loser. The roblem thus overflows from the field of industrial medicine nto the spheres of public health and general practice. The nquiry here reported brings out the need for improved and tandardized sickness records relating to factories, and underines the importance of explicit certification by medical ractitioners. In preventive medicine, all possible measures gainst the winter incidence of colds and influenza in the actories are a first requisite. A consideration of factory vorking hours is inseparable from the problem of sick absence. he health of munition workers, as of the general population, s on the whole being well maintained.

SUDDEN DEATH IN UNSUSPECTED RHEUMATIC CARDITIS

BY

J. T. QUINLAN, M.B., B.Ch., D.C.P.

(From the Department of Pathology, Torbay Hospital, Torquay)

udden death in unsuspected rheumatic carditis is a rare vent, and very few cases have been reported (Géraudel *t al.*, 1928 ; Thatcher, 1929 ; Breitenecker, 1931 ; Laplace, 939 ; Lisa, 1939 ; McNamara, 1941). The following is he record of a case occurring in an apparently healthy nfant.

Case History

An only child aged 2 years 8 months was apparently in xcellent health, playing with his toys, when he suddenly cried ut in distress and ran a short distance to his mother in an djoining room. He continued to cry loudly for a few minutes, nd then became faint. Death occurred within half an hour.

Necropsy.—The gross pathological findings were confined to he heart and right lung. Two infarcts were seen in the lung—ne near the apex, and the other, slightly smaller, on the lateral urface of the lower lobe. The base of the larger infarct neasured 1½ in. in diameter, and the cut surface in each case howed a characteristic triangular outline and a sharp demarcaion from the surrounding lung, in which there was no evidence f consolidation. Unfortunately, a careful dissection, with lemonstration of the emboli, was not attempted. Examination f the heart showed a general enlargement to 120 g. (normal 5 to 75 g.), as well as rheumatic mitral and tricuspid alvulitis. The vegetations on the mitral cusps were characterisically bead-like, firm, and pale, in contrast to those on the tricuspid, which were soft and pink, and evidently of a more recent origin. There was no evidence of pericarditis, and the cut surface of the myocardium did not appear unusual.

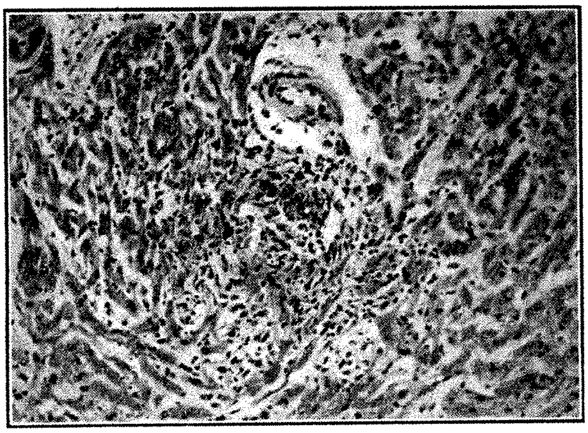

FIG. 1.—Typical Aschoff body in myocardium.

Histology.—The histological changes were focal in distribution, and several areas of myocardium showed no recognizable variation from normal. A few characteristic Aschoff bodies (Aschoff, 1904) were seen in the interstitial tissue (Fig. 1), and in some sections there was a diffuse infiltration by lymphocytes and polymorphonuclears between the muscle fibres. Some fibres in these areas were swollen and fragmented, with large irregular hyperchromatic nuclei, giving the impression of a rather acute degenerative process (Fig. 2). Bacteria were not seen in any of the sections examined.

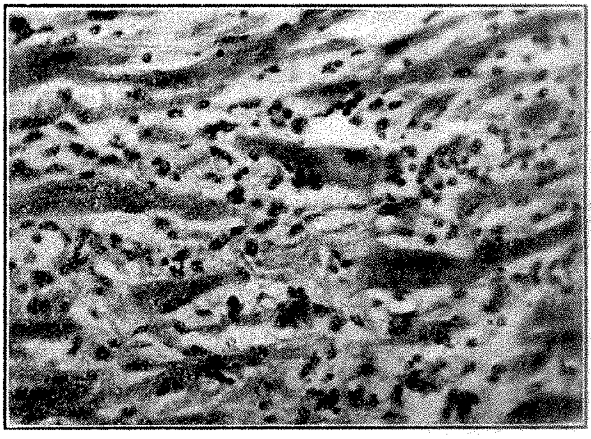

FIG. 2.—Myocardial fibres disintegrating.

Commentary

Severe fulminating carditis is becoming very rare in children (Miller, 1937), although subclinical rheumatism is common. The heart itself, when acutely invaded by the rheumatic process, only rarely gives rise to symptoms (White, 1937), and in this case it is probable that the urgent symptoms preceding death were due to the pulmonary infarctions.

The aetiology of lung infarction in general has been exhaustively studied (Belt, 1939), and embolic manifestations in rheumatic heart disease have also been investigated (Weiss and Davis, 1933). In a group of 174 cases of rheumatic heart disease infarction of one or more organs occurred in 45%, the lung being the organ most often affected, and in 21% of the series embolism played a chief or contributory part in the death of the patient.

An interesting feature of this case is the possible relation between the only previous illness and the fatal termination. The appearance of the heart at necropsy, as well as the histological findings, indicates that the disease had existed for some time before death, and it is possible that the attack of bronchitis from which the child had suffered six months previously may have been the initial manifestation of invasion by the rheumatic process.

The relation between upper respiratory infection and rheumatic fever has been studied by several workers (Wilson, 1940), and it appears that in some cases a severe cold or bronchial catarrh may usher in or precede by a variable interval the development of clinical rheumatism. The opinion of most workers in this field, however, is that respiratory infections are not a specific provocative agent in the occurrence of rheumatic fever (Hench, 1938).

In the histological examination the finding of characteristic Aschoff bodies was accepted as proof of the rheumatic nature of the infection, and the other components of the microscopical picture provided additional evidence in support of this conclusion.

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Medical Memoranda

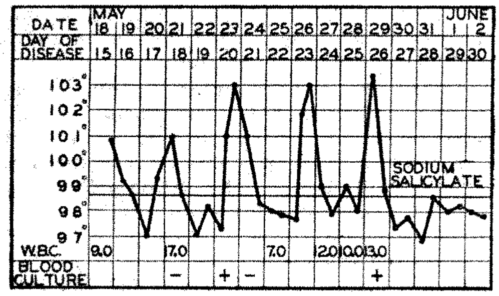
Meningococcal Septicaemia with a Malarial Type of Fever

A case with a regular and intermittent type of fever suggestive of malaria, but which proved to be meningococcal in origin, has recently been observed by me. The case resembles one reported in the *Journal* (Aug. 1, 1942, p. 129) by Dr. R. Priest.

Case Report

A 23-year-old soldier was admitted to hospital on May 18, 1942, complaining of soreness in the back. Two weeks previously he had had a fairly sudden onset of chilly sensations, followed by the appearance of tender red lumps, 1 to 2 cm. in diameter, on his shins, thighs, and elbow regions. A few days later symmetrical swellings developed below both knee-caps, and both knee-joints were painful. These lesions gradually subsided in a week. Three days before admission he developed a dull low-back pain.

On admission the patient's oral temperature was 101° F., and he appeared ill. The positive physical findings consisted of a few faint brownish non-tender blotches over both thighs and shins, point tenderness over the second lumbar vertebra, and enlarged tender inguinal lymph nodes. Urine and prostatic smears were essentially negative. The haemoglobin was 14.85 g. per 100 c.cm., and the total leucocyte count 9,000 per c.mm., with 75% polymorphonuclears. Over the first 12 hospital days there was a fairly abrupt temperature rise every two or three days, the peaks varying between 101° and 103° F. and falling rapidly. The elevations were accompanied by pulse rates of 70 to 80. A smear for malarial parasites was negative. Blood cultures, taken on four occasions, were twice positive for *N. meningitidis*, Group 2. The positive cultures were obtained just before the peak of a temperature elevation, the negative cultures at a time when the temperature was falling. Leucocyte counts made during pyrexial periods ranged from 12,000 to 17,000 and in the afebrile periods from 7,000 to 10,000 per c.mm.



The respirations remained normal, except that a rise occurred during one febrile episode. Sedimentation rates, taken over the first 17 hospital days, were nearly constant at 34 to 36 mm./hr. (Wintrobe). Nasopharyngeal cultures were negative for *N. meningitidis*.

Two tender red lumps developed on the inner aspect of the patient's right arm on the 7th day in hospital. These persisted 4 days. He complained of considerable stiffness in the knees and hips. Positive blood cultures were taken on May 23 and 29; but the first blood took 7 days and the second 4 days of incubation before *N. meningitidis*, Group 2, was definitely isolated. While awaiting a laboratory report on these cultures rheumatic fever was considered. The patient was given 4 to 5 g. of sodium salicylate daily for 5 days, beginning on the 13th hospital day. He thereafter was symptom-free and his temperature remained normal. Cultures of blood and sternal bone marrow taken on the 22nd hospital day were negative. However, beginning on the 23rd hospital day, the patient was given a total of 48.5 g. of sulphadiazine over a week's period, to lessen the chance of any relapse. Nuchal rigidity and splenomegaly were absent throughout the course of the disease.

Although meningococcaemia was early suspected in this case, repeated blood cultures and a prolonged incubation of them were required to establish the diagnosis. Before the aetiology of the disease was definite, malaria was considered owing to the regularity of the pyrexia, and rheumatic fever in view of the joint manifestations. Gonococci were sought for in association with the arthritic symptoms.

This case illustrates the bizarre picture which may be presented in meningococcal septicaemia. The malarial type of periodicity, together with the erythema nodosum lesions, makes it likely that both the present case and that reported by Priest had the same diagnosis, although no positive blood cultures were obtained in the latter.

Lawrence Kilham, M.D.,
Physician to the American Red Cross,
Harvard Field Unit Hospital.

Reviews

PARASITOLOGY

Textbook of Clinical Parasitology: Including Laboratory Identification and Technic. By David L. Belding, M.D. (45s.) New York and London: D. Appleton-Century Company. 1942.

This book will make an instant appeal to all those who ar interested in medical zoology—protozoology, helminthology and entomology—whether from the point of view of th student of parasitology, the pathologist working in a laborator where clinical material comes for examination, or the clinicia who is occupied with the diagnosis and treatment of cases o infection. Within its 888 pages will be found adequate information regarding the structure and life history of the variou animal parasites which assail man and the arthropod vector responsible for the transmission of many of them. The subject matter is clearly set forth, a notable feature being a series o tables giving at a glance the distribution of the parasites, thei localization in the body, the symptoms produced by them, th method of their transmission, the remedies to be employed fo their eradication, and other information.

The book is profusely illustrated with drawings which ar admittedly schematic but which depict the essential feature of each parasite or arthropod described, and by their excellenc render identification much simpler than it otherwise would be There are four coloured plates of intestinal protozoal cyst stained by iodine and of malarial and other blood parasite coloured by Leishman stain.

After an introduction (70 pages) dealing with such subject as nomenclature, evolution of animal parasites, hosts o parasites, pathological changes brought about by infection immunity, serological methods of diagnosis, treatment of parasitic diseases, and other general matters, a series of chapter (151 pages) describe the protozoa which may give rise t human infections. There then follow 21 chapters (366 pages on the helminthic parasites and 14 chapters (180 pages) o entomology. These chapters are distributed among a serie of six sections, and a final section deals with technical method for the diagnosis of parasitic infections and the chief drug employed in their treatment. References to relevant literatur are given throughout the book, while a good index enable any desired subject to be quickly turned up.

The book is comprehensive and reliable. It is unquestionabl a good one, and will prove to be of the greatest use to student of parasitology and an invaluable book of reference i laboratories which have to deal with the animal parasites o man and the pathological conditions they produce. We ca thoroughly recommend it to students of tropical medicine an medical men and laboratory workers in this and other countries

INTESTINAL OBSTRUCTION

Intestinal Obstructions. A Physiological and Clinical Consideration with Emphasis on Therapy, Including Description of Operative Procedures. By Owen H. Wangensteen, M.D. Second edition. (Pp. 484; illustrated. $7.00 post paid, or 38s. 6d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1942.

Treves once wrote, "Those who are enamoured of statistic could, I have little doubt, show that it is less dangerous t leap from the Clifton Suspension Bridge, than to suffer fro acute intestinal obstruction and decline operation." If thi statement requires some modification to-day it is largely because of the present practice of intestinal decompression by suction following duodenal intubation. It is no longer true to say that high intestinal obstructions are more dangerous than low. The replacement of fluid and electrolyte loss, and duodenal tube drainage, have altered all that. In the introduction and development of duodenal suction drainage the author of this book has played a large part, for it was in 1931 that he first practised the procedure in the case of a patient aged 72 who had been obstructed for three days. Among much valuable experimental work relating to intestinal obstruction which Dr. Wangensteen has carried out since must be included his demonstration of the value of suction over mere siphonage. Adhesive obstructions are to-day especially amenable to treatment by conservative decompression, which in many cases brings about an automatic re-establishment of intestinal continuity; but Dr. Wangensteen insists that if a patient with mechanical obstruction is thus treated conservatively the progress of the decompression must be followed by *x*-ray films, because clinical data alone are insufficient evidence. With the advent of duodenal suction also the dread prospect of post-operative acute gastric dilatation ceases to disturb the surgeon. For this and many other benefits which duodenal suction has conferred we are grateful to the author of this monograph. We are further grateful for his production of the book itself, and now particularly of the second edition. It is in many respects a new book as compared with the original work, which consisted of the published winning essay for the Samuel D. Gross Prize of the Philadelphia Academy of Surgery for 1935. The Miller-Abbott tube, which appeared after the issue of the first edition, is adequately dealt with in the present edition, which contains much new matter.

This is probably the most complete treatise on the subject of intestinal obstruction that has yet appeared. Some idea of its scope may be gathered from the fact that it is arranged in four sections, the first being devoted to physiological and clinical aspects, the second dealing with diagnosis, the third with treatment and management of cases, and the last part with a consideration of the special obstructions such as congenital and obturator lesions, adhesions, tumours, herniae, intussusception, and obstructions due to vascular causes. Authors and subjects are indexed separately; illustrations and printing are good. We predict that the work will become a classic.

INDUSTRIAL HEALTH

Health Services in Industry. (Pp. 60. 2s. 6d.) Industrial Welfare Society, 14, Hobart Place, London, S.W.1.

The Industrial Welfare Society, which exists primarily as an information and propaganda medium for employers, has published an interesting booklet on health services in industry. The contents include reasons for the need for this service and how to set it up, staff and accommodation required, the position and duties of the medical officer and his relation with outside health services, records, ancillary services such as dental and ophthalmic, and a short final chapter on general health and working conditions.

While this booklet contains much useful information for the employer who is interested in the problem, there are certain statements which need comment. Stress is laid, for example, on the importance of rest rooms in factory medical departments. In our view they lead to abuse just because they are called rest rooms; rest is obviously part of treatment, but why not call it treatment? The suggested layouts for health service departments given in an appendix are hardly up to modern standards. The importance of medical examination of new entrants to industry is emphasized and taken for granted rather than considered critically on its merits in relation to labour turnover and present-day conditions of employment. Except for specific occupations, many hours can be wasted in wartime in carrying out such examinations as a routine, not only because of the labour position generally but also because of the lack of physical standards and the large margin of error in one medical opinion. The use of foot baths for shock will be a form of treatment new to many surgeons. The important fact, in relation to the prevention of sepsis, that exemption from the duty to provide first-aid boxes can be obtained from the factory inspectorate in factories with approved ambulance rooms is not mentioned. Beyond the need for light work and rehabilitation facilities for fracture cases there might have been some mention of the even greater need for organized treatment and rehabilitation services for other types of injury, which in factories outnumber fractures by 10 to 1. In connexion with sickness absenteeism we would have liked to see some practical suggestions on how the factory doctor could apply statistics in an attempt to reduce its incidence—for example, what should be his approach to the problem where he finds a high rate in a certain department or occupational group?

On the whole, however, the booklet contains much interesting information and should be read by all industrial medical officers. It is gratifying to know that the Industrial Welfare Society is still pressing actively for an extension of medical supervision in industry; its pioneer work in this direction is well known and must be fully acknowledged by the medical profession.

Notes on Books

Minor Surgery, by Dr. CHARLES M. OMAN, is another member of the Oxford Medical Outline Series (12s. 6d. each) and consists of pages of headings and rather terse comments interleaved with blanks, presumably for the student's remarks. The author tells us that it must not be forgotten that all minor surgery is potentially major surgery, and the inclusion in this book of such conditions as gas gangrene, acute osteomyelitis, abdominal injury, and compound fractures gives ample ground for his remark. As an example of the "make-up" we may quote from a comment on tourniquets (p. 145): "B. General consideration as to their use: 1. Frequently they are less necessary than is imagined." Most of us would agree with that. This little book covers the subject well and should be of service to students, provided they remember, as its author points out, that it has no pretence to being a textbook but is merely a practical working guide. Its chief use will obviously be in the casualty and out-patient departments and wards, and full use should be made of the blank sheets for amplification and notes of cases.

The seventh edition of the popular textbook *Diseases of Women,* by Ten Teachers (Edward Arnold; 18s.), is a good one and, like its companion volume on midwifery, it has been completely revised. With the advent of specific chemotherapy it has been found necessary to rewrite those sections dealing with pelvic inflammation. General principles more than details of treatment are discussed throughout the book. The student is thus given a concise guide to his studies rather than an exhaustive textbook of reference.

The great popularity among students of Dr. R. W. FAIRBROTHER'S *Text-book of Bacteriology* (William Heinemann; 17s. 6d.) is shown by the publication of a fourth edition only five years after its original appearance: each of the earlier editions also had to be reprinted. The principal change made is the addition of a new chapter on chemotherapy.

The late Mrs. J. LANGTON HEWER'S popular handbook *Our Baby for Mothers and Nurses* has now reached a 22nd edition and 213th thousand since its first appearance half a century ago. The text has been revised from the medical point of view by Dr. Margaret Scott-Brown, who has made it her aim to leave Mrs. Hewer's fundamental teaching unaltered. The publishers are John Wright and Sons, Ltd., and the price is 5s.

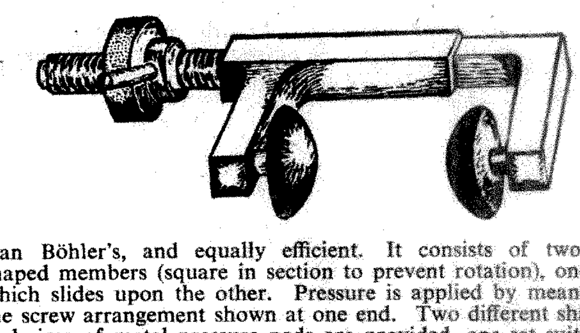
A pamphlet that will be useful to many general practitioners is *War-time Information for Pharmacists* compiled by the *Pharmaceutical Journal* and published by the Pharmaceutical Press (17, Bloomsbury Square, W.C.1) at 1s. The contents are arranged in the alphabetical order of their headings and there is a convenient list of addresses at the end.

Preparations and Appliances

A SIMPLE FRACTURE REDRESSOR

Major G. A. G. Mitchell, R.A.M.C., O.C. No. 1 Orthopaedic Centre, M.E.F., writes:

Crush fractures of the tibial head and os calcis are common results of land and sea mine explosions and of aeroplane and parachute accidents. Manual reduction of these injuries is often difficult, and then a redressor is valuable. The instrument illustrated in the line drawing (1/4 scale) is simpler in design than Böhler's, and equally efficient. It consists of two L-shaped members (square in section to prevent rotation), one of which slides upon the other. Pressure is applied by means of the screw arrangement shown at one end. Two different shapes and sizes of metal pressure pads are provided, one set suitable for the os calcis and the other for the tibial head; they are supported on short columns with screw ends, so that they are easily interchangeable. The original instrument was made for me in an R.A.O.C. workshop.



THE STUDY OF NUTRITION IN LATIN AMERICA

BY

PEDRO ALBERTO ESCUDERO, M.D.
Assistant Chief, Nutrition Department, National School for Dietitians, Buenos Aires

(ABRIDGED)

The National Institute of Nutrition at Buenos Aires has come about as a gradual development over a period of ten years. In 1921 Prof. P. Escudero,* professor of clinical medicine at the National University, started a scientific movement for the study of nutrition. Three years later he suggested to the Director of Public Assistance the desirability of a survey of nutritional diseases, to be carried out at the Rawson Hospital. The services so created were the origin of the Municipal Institute of Nutrition in 1928, at which systematized studies were undertaken. Here the first dietetic kitchen in Argentina was established. A survey of nutrition was made at the municipal hospitals in 1931 under the guidance of Prof. Escudero, and its results were summarized in a report to the fourth National Congress of Medicine in Argentina.

A School of Dietitians was started in 1935; and in 1938, by a decree of the then President, General Justo, the National Institute of Nutrition was founded. This included the School of Dietitians and also a residential college for students from the provinces and territories, whereby the benefits of the foundation were extended to the interior of the country. To enter the Institute the candidate must show the same standard of secondary education as is required for entrance to the Medical Faculty. Almost every province and national territory now has graduates from the Institute. In 1939 scholarships were instituted to promote the study of dietetics as a medical specialty, and during the present year doctors from four provinces have graduated. In the course of the next decade or two it is expected that a considerable number of medical specialists in nutrition will be practising in the country.

The third International Conference on Nutrition under the auspices of the League of Nations—the first to be held outside Geneva—assembled at Buenos Aires in 1939, and its conclusions were so startling that in October of that year the late President of the Republic, Dr. Ortiz, opened the doors of the Institute to all Latin-American countries, with a grant of scholarships for dietitians and dietetic specialists. Fellows from six South American countries apart from Argentina itself have now graduated from or are students at the Institute. Thus the Institute has become a Latin-American university centre for the study of nutrition. It has a staff of over 300, and its present provisional budget is for 1,200,000 pesos (about £70,000). An Act conferring full autonomy on the Institute and providing for its resources is expected shortly to be passed by the Argentine Senate.

Aims of the Institute of Nutrition

Prof. Escudero has given the following definition of the work of his Institute: "The basis for the conservation of the human being is nutrition; life, strength, reproduction, mental energy, and social and moral progress are dependent upon it. The Institute of Nutrition includes the study both of the life of the individual as a physical and moral entity and of the society of which he forms a part. The Institute is not merely a hospital, although it treats patients; not merely a laboratory, although it examines biological processes; not merely a centre for social studies, although it investigates sociological phenomena; not merely an office for social welfare, although it helps those in need; nor is it merely a school or a pulpit, although it teaches and preaches. It is all these things, with investigation of facts, causes, and remedies as its central aim." In other words, it is a centre for social, economic, and hygienic survey. It co-ordinates all these branches of activity with a view to maintaining and improving the physical and moral health of the individual, the family, and the community. In studying the patient and the causes of disease it has always the prophylactic aim in view.

In many quarters there exists a narrow and therefore mistaken notion of what is understood by nutrition. The Director of the Institute divides nutrition into three stages: (1) alimentation, or intake of matter and energy, beginning from the time the food is chosen; (2) metabolism, or exchange of matter and of energy, beginning from the moment of absorption of the alimentary substance; (3) excretion, or the elimination of the used or unusable. Nutrition, he says, is not a single function, but the result of correctly harmonized functions which complement one another, and the aim is to maintain the normal integrity of living matter and to ensure life. Too often nutrition is considered only as metabolism. Prof. Escudero has similarly enlarged the notion of nutritional disease, which to most authors is a synonym for metabolic disorder. He divides all nutritional diseases into three main groups: alimentary, metabolic, and excretory.

Some special forms of study and of approach to the subject have been adopted at the Institute. One of these is "alimentary anamnesis"—to assist in the judgment of the existing alimentation and to furnish information of the effect of past and present dietary habits on the disease or the state of the patient. A formulary has been worked out for the examination and comparison of different dietaries so that adjustments can be made and prescriptions given for the food required and the way it should be prepared and consumed. By these various methods and formularies it is possible to prescribe, examine, and compare the diets advised.

Character of the Studies

In its studies the Institute works in six divisions, co-ordinated by a general direction. These divisions are: education, social work, alimentation, research, educational work, and medical assistance. The general direction undertakes the administrative and technical control of the Institute, which has a general and a technical secretary. The problems which come before the general direction can be divided into three—health, economic, and social—always, of course, related to nutrition. For the solution of such problems a technical council or board is formed by the heads of the divisions, with the general director as chairman.

The educational division is concerned with the training of technicians in food and alimentation. The teaching of this discipline is officially assigned to the Institute by the Faculty of Medicine of the University, and there is perfect understanding between the two bodies, as the General Director of the Institute is also Professor of Nutrition. Training is given in the Nutrition Clinic for undergraduates of the School of Medicine in their final year (the seventh), also finishing courses for graduates who are to become dietitians, a title awarded by the Faculty. By decree of the National Executive Board all official technical posts related to food and alimentation must be preferentially filled by those who have followed these courses. The students are first instructed in the alimentation of the normal individual and the community and afterwards in the alimentation of sick persons.

The training of dietitians is of a university type, claimed to be far superior to the similar disciplines at other American and at European schools. The plan of studies is divided into two cycles. The first includes normal alimentation from the biological and economic points of view for the individual at different ages and for the community; the second considers alimentation in sickness. Two scholastic years are occupied with the first—or normal—studies, and the third with alimentation in disease. For admission to this training a college course degree is required, such as Bachelorship of Arts or Commerce. The occupation of dietitian (non-medical) is reserved to women.

The School also trains auxiliaries and nurses specializing in food problems; the studies undertaken in these cases are more restricted. The medical dietetic specialist, the dietitian, and their co-workers—the auxiliary and the nurse—form a unit ready to solve any nutritional problems. As already stated the School has a residential quarter where students from the provinces or from other Latin-American countries may be boarded during their training.

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* Father of the author.

Sociological Studies

The division of the Institute which deals with social work is subdivided into research, prevention, and social assistance sections. The research section has two branches, one of which is concerned with the social and economic condition of the families investigated, making inquiries regarding income, food consumption, and health conditions; the other branch is concerned with the moral condition of families through a survey of social behaviour and mental health.

The section dealing with prevention is entrusted with the care and protection of normal individuals. It has nothing in common with the so-called health centres in other countries. Its work is carried out by means of clinics or consultations at which advice is given on matters of health, food, and the influence of work and home in relation to the age and condition of the individual. Periodical examinations are made, patients being given appointments at the day and hour most suitable to them. Food is studied from the hygienic and economic points of view, and advice is given regarding the best kinds of food to choose, bearing in mind the family budget and the individual requirements. Eugenics, care and protection of pregnant women and nursing mothers, care of children, popular education on food questions, and social records, all come within the scope of this section.

In the section of social assistance various moral problems and problems of behaviour concerning the individual and the family come forward for consideration. Occupation is provided for the workless, and material help, mainly in the form of food, is also provided. In this connexion the Institute endeavours to preserve family life. It does not rely on popular restaurants or canteens, which disturb the normal family relations. The meal-time is the occasion for the gathering of the family, the time when the existence of the family as a unit is best manifested. The provision of canteens is accepted as a necessary accompaniment of industrial or business life, but it is not regarded as anything like the ideal approach to the nutritional problem. A more discriminating assistance is sought to be given, requiring knowledge of the family and its means, and calling for the teaching of cooking and the best means of utilizing food, and in necessitous cases the giving of foodstuffs.

Help is still more generous in the case of pregnant or nursing women and mothers of small children. A lactarium for the free provision of mothers' milk, regardless of the family budget, for the first month of the infant's life, has been set up, and so far has proved extremely successful. The extra milk is purchased from the donor mothers, and both their babies and those of the receiving mothers are supervised.

Alimentation, Research, and Propaganda

The alimentation division of the Institute includes various technical studies, and maintains and controls free refectories for sick people and school canteens; dietetic restaurants, too, are shortly to be provided for sick persons who can afford to pay. The work of the division is undertaken by a number of medical dietetic specialists, lay dietitians, auxiliaries, and nurses. The research division includes various chemical and biological laboratories; laboratories of alimentary technology and an experimental farm are projected.

In the sphere of propaganda one division undertakes the service of the Press and wireless to popularize basic knowledge about nutrition. Lectures are given to teachers and to housewives on kitchen cookery and on the best utilization of the food they purchase, with brief explanations of the hygiene of alimentation. These lectures and courses are given by women dietitians who are well acquainted with this kind of social and educational work.

Finally, a sixth division undertakes medical assistance in nutritional diseases. It is estimated that 80% of such chronic patients do not require complete institutional treatment. They can be assisted as out-patients by means of a refectory, receiving, in fact, everything that they would have received in an institution except the bed. The patient sleeps at home, carries on his work, and has his meals at the Institute. The acute cases or cases in the acute stage of a chronic condition are received at a residence having 60 beds, to which also are admitted cases requiring special study. Usually the patients who need a special diet and have their meals at the refectory are suffering from diseases of metabolism and imbalance, diseases of the digestive tract and its glands, of the urinary and renal system, and of the skin. The assistance given is supplemented by the service of consultants in dermatology, gynaecology, urinary diseases, and otology and laryngology. Physiotherapy and massage are administered. There are also a small surgical service, a radiological department, and pathological laboratories.

The service given to in-patients and out-patients extends to all ages and both sexes, and is organized on the lines of a general hospital. Between 6,500 and 7,000 patients are treated every year.

Future Work of the Institute

It should be borne in mind, however, that the Institute is principally a centre of investigation and teaching. The direct assistance given to patients is only of limited extent; the aim of the Institute is to ascertain the best form of assistance, not to fulfil it as a routine. The same is true of the social assistance which it affords. It avoids mere extension due to the multiplication of the routine of its services; it looks for the cause of the phenomena studied and endeavours to find the remedy or the means of avoiding them.

Its social and educational work is equally important. Until 1921 studies on nutrition were regarded with indifference by the scientific world of Argentina. Until 1930 the Government, the Legislature, and the people were generally ignorant of alimentary problems, although the main source of the revenue of the country is food production. But the question of popular alimentation has awakened a legislative, social, and economic movement, the more marked since the third International Conference on Nutrition under the auspices of the League of Nations was held at Buenos Aires in 1939.

Over a period of eighteen months—from June, 1936, to November, 1937—the Institute conducted a survey of health conditions in Buenos Aires in relation to the family budget. The expenditure on food and the minimum budget required to live modestly but decently and to be correctly fed were estimated. A similar survey has just been completed at the industrial town of Avellaneda, a suburb of Buenos Aires, and another is being carried out at the town of Mendoza. Prof. Escudero resigned his professorship of clinical medicine, which he had held since 1921, to become professor of nutrition when the Faculty of Medicine included a clinic of nutrition in its plan of studies.

The work already done in the training of medical dietologists, dietitians—a new profession which may be said to have been created by the Institute—and their auxiliaries is expected to have further developments in the Argentine Republic. Already the province of Mendoza in Western Argentina has set up a department of nutrition as a branch of its health direction, involving a certain modification of its hospitals and an economic-social survey of its population. The Institute has also started to draw up an "alimentary geography" of the country, including a study of alimentary folklore and of present food production. By the time the work of the Institute reaches its full development it is hoped that health conditions in Argentina will have manifested very great improvement owing to a recognition of what the founder of the Institute has called the "non-specific prophylaxis" of diseases whose onset is due to simple maladjustments in living rather than to any specific cause.

H. P. Fernandez (*Tubercle*, 1942, 23, 50) records six cases in patients aged from 20 to 39 who developed symptoms of distress after aspiration. The onset of these symptoms was attended by a fall in blood pressure, associated with high negative intrapleural pressures, mediastinal displacement, and lung re-expansion. In all cases relief of distress followed injection of adrenaline and pituitrin. The relief was accompanied by a rise in blood pressure and occurred at a time when mediastinal displacement, lung re-expansion, and high negative intrapleural pressure had not been adjusted. Fernandez comes to the following conclusions: (1) The symptoms of distress after aspiration were due to a high negative intrapleural pressure; lung re-expansion produced by this led to a circulatory disturbance, causing a fall in blood pressure. (2) Injection of adrenaline is of value as an emergency measure for such distress.

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THE BEVERIDGE PLAN

The publication on December 2 of Sir William Beveridge's Report on Social Insurance and Allied Services had not been unheralded in the Press, and many intelligent anticipations reached the public eye before the large printed document was released. The report has been widely summarized and commented upon in newspapers and reviews during the past ten days, and medical men and women must already be familiar with its broad outlines. Sir William Beveridge alone signs the report, though he acted as chairman of an interdepartmental committee set up to survey the whole field of existing national schemes of social insurance and allied services, including workmen's compensation. For the views and recommendations on questions of policy which the report contains Sir William, by the Government's wish, takes sole responsibility. His plan for post-war social security aims to replace the present medley of social services by a single comprehensive system, bringing the adult population of the country into a compulsory, and in the main contributory, unified scheme of insurance to provide against sickness and unemployment and old age, and for family allowances. It is meant to include all citizens, without upper income limit, and to be administered by a new Ministry of National Security, to which would be transferred the relative responsibilities of six or more Government Departments as well as some of the duties of local authorities. One stamp on one insurance document, payable weekly, would cover all social insurance schemes.

Briefly put, the report proposes that medical treatment should be separated from the administration of cash benefits and that a comprehensive medical service should be set up for everyone, covering all treatment and every form of disability, under the supervision of the Health Departments. The paragraphs which are of primary interest to the medical profession and those associated with it have so far had little attention in the newspapers, and for that reason we print them in full at p. 704. Sir William Beveridge accepts the view that restoration of a sick person to health is a duty of the State and of the sick person, prior to any other consideration; and he adopts the definition of the objects of medical service in the draft interim report of the Medical Planning Commission of the B.M.A. —"(*a*) To provide a system of medical service directed towards the achievement of positive health, of the prevention of disease, and the relief of sickness; (*b*) to render available to every individual all necessary medical services, both general and specialized, and both domiciliary and institutional." But he says that most of the problems of organization of such a service fall outside the scope of his report. This excludes any opinion by him on such questions as free choice of doctor, group or individual practice, or the place of voluntary and public hospitals respectively in a national scheme. "Once it is accepted that the administration of medical practice shall be lifted out of social insurance to become part of a comprehensive health service, the questions that remain for answer in this report are in the main financial." It will be seen that in handling these financial questions, after dismissing organization as no affair of his, he takes up in separate paragraphs domiciliary treatment, institutional treatment, special services like dental and ophthalmic treatment, subsidiary services such as supply of medical or surgical appliances, nursing and convalescent homes, and post-medical rehabilitation.

The problems involved in establishing and running a comprehensive medical service for all, and even the financial basis of such a service, are excluded from the Beveridge Report. Its author merely suggests the need for a further immediate investigation in which the finance and the organization of medical services could be considered together, in consultation with the professions concerned and with the public and voluntary organizations which have established hospitals and other institutions. The ideal plan, in his view, is a health service providing full preventive and curative treatment of every kind for every citizen without exceptions, without income limit, and without an economic barrier at any point to delay recourse to it—in other words, a 100% service for 100% of the population. His cool words about the effect of all this on private medical practice will arouse mixed feelings: "The possible scope of private general practice will be so restricted that it may not appear worth while to preserve it." Further immediate investigation is certainly called for, and it will have to be very thorough. The primary interest of the proposed Ministry of National Security may not be in the details of the national health service or in its financial arrangements; but such details and arrangements must be worked out with the full consent of those who provide the service if the great social plan of which they will form part is to fulfil its author's great expectations.

PREVENTION AND TREATMENT OF HEPATITIS

A rise in the jaundice rate seems to be an inevitable concomitant of war, and this war has been no exception to the rule. Epidemics of infective hepatitis have been reported by the enemy and have occurred among our own troops. The increase in the incidence of syphilis and in the vigour of arsenical treatment has its corollary in the increase of toxic jaundice. Our American allies have had the unfortunate experience of a high incidence of jaundice after vaccination against yellow fever, now happily arrested by improvements in the vaccine. On a very much smaller scale there has been the usual outbreak of T.N.T. jaundice which follows the entry of an unsalted population into the filling factories. Most cases of non-obstructive jaundice clear up rapidly, but when the jaundice lingers or recurs the physician's anxiety deepens, for experience shows that fibrosis or insufficiency of the liver is inevitable if the disease process is not arrested. We may well ask ourselves why inflammation or degeneration persists when the initial noxa has presumably disappeared. Cullinan[1] found final degeneration of the regenerated liver tissue in all but two of his cases of recurrent jaundice, and in some there was evidence of at least three attacks of necrosis. Is there a vicious circle, comparable with that in Bright's disease,[2] so that the metabolism now perpetuates some harmful product or process? Our thoughts turn to a diet which will spare the damaged liver, in the same way that undernutrition will arrest the progress of diabetes. When we consult textbooks on treatment we are advised that the diet should be chiefly carbohydrate in composition as throwing least strain on the damaged organ. "Proteins should be kept down to the minimum bodily requirement, as the metabolism of their derivatives requires hepatic activity."[3] Experimental work carried out from a variety of aspects shows that, while restriction of fat is indeed essential in conditions of strain or damage to the liver, restriction of protein is not merely unnecessary but positively harmful.

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[1] *St. Bart's Hosp. Rep.*, 1936, **69**, 55

[2] *Quart. J. Med.*, 1941, **10**, 65.

Best[4] has summarized the work on fatty degeneration of the liver which has grown out of the original discovery of insulin. Depancreatized dogs which are kept alive by insulin eventually develop large fatty livers. The fatty degeneration of the liver can be prevented by feeding the dogs with raw beef pancreas. Successive discoveries showed that the same curative effect was exerted by lecithin (which is a compound of fat, phosphoric acid, and choline) and by choline alone. It is now clear that choline accelerates the formation of phospholipids and the turnover of fat in the liver. Most of the recent work has been done on white rats, which develop fatty livers and eventually cirrhosis when they are fed on diets very rich in fat. Fatty degeneration can be prevented not only by choline but also by casein, methionine, and the choline-like amine, betaine. These observations have given rise to the hypothesis that the protein (casein) acts by virtue of its amino-acid (methionine), which provides the labile methyl groups out of which choline is built up and which are essential for the orderly metabolism of fat in the liver. The type of fatty liver upon which these substances act specifically is that due to relative or absolute deficiency of choline, but it has also been shown that choline accelerates the disappearance of fat from a liver which has been poisoned by phosphorus or carbon tetrachloride. A second important factor for the integrity of the liver is an unidentified component of the vitamin B complex which is present in yeast. Degenerative changes develop in the livers of rats and rabbits fed on diets which are deficient in vitamin B, but they can be prevented by the addition of yeast extract. Moreover, yeast diminishes or prevents the liver damage caused by arsenic, "butter yellow," and high fat diets. Webster[5] has found indications that molasses may have a like protective action. Whipple,[6] who approached the problem in relation to hypoproteinaemia, has shown that the dog whose plasma has been depleted by repeated removal of plasma protein is very susceptible to intoxication by drugs such as chloroform and arsenicals. This susceptibility can be promptly removed by large protein feedings or considerable amounts of plasma given by vein. Further, methionine will protect the plasma-depleted dog against chloroform anaesthesia, though other amino-acids which do not contain sulphur are inert in similar experiments. Lecithin and choline are likewise inactive. The mechanism of action of methionine therefore differs in hypoproteinaemia and in overfeeding of fat, and methionine is evidently a key substance in the metabolism of the liver.

It would seem rational to apply these experimental data to the prevention and treatment of hepatitis in man. Diets should be low in fat and high in protein and carbohydrate. The construction of such a diet is not altogether easy, for many protein foods, such as meat, eggs, and cheese, are relatively rich in fat. Vegetable protein, which is easier to secure in wartime than animal protein, has been regarded as particularly suitable for disease of the liver. A useful ingredient in this country is skimmed milk, whole or dried, which is in fairly free supply at the present time and which contains the valuable protein casein. With this it is not difficult for the dietitian to devise diets containing approximately 100 g. protein, as little as 20 g. fat, and enough carbohydrate to supply the necessary calories. As the fats are reduced, it is wise to administer concentrates of fat-soluble vitamins A and D, and vitamin K if there is evidence of prothrombin deficiency. Hypoproteinaemia should be corrected by transfusion of plasma. Baker's yeast should be prescribed, and increased, if tolerated, from 3 teaspoonfuls to 1 to 3 oz. a day. Molasses is harder to come by, but a not unpleasant drink can be concocted on a basis of yeast and molasses. Such a drink might be offered as an alternative to the draught of magnesium sulphate which is so popular with workers going on duty on the T.N.T. plants in some of the Royal Ordnance Factories. Pure amino-acids are expensive, and they are not always tolerated well by mouth. No information is available about the use of methionine in man, but favourable results have been reported[7] from the administration of choline chloride in a dose of 1 g. daily in cirrhosis of the liver, together with a diet like that outlined above.

RHYTHM OF THE FEMALE SEX CYCLE

It has been generally believed by endocrinologists that the rhythmic nature of the sexual processes in the uterus and vagina could be explained by the interrelation of pituitary and ovarian secretions. The growth of the ovarian follicles is under the control of a follicle-stimulating pituitary hormone. The fluid formed in the growing follicles is rich in oestrogen. Oestrogens in excess depress pituitary function but first appear to stimulate production of the pituitary luteinizing hormone. There is experimental evidence for all the above statements, and if we assume that the corpora lutea produce less oestrogen, so allowing the secretion of follicle-stimulating hormone to begin again, we have gone a long way to unravel the mechanism of the ovarian cycle: the oestral and menstrual cycles in the lower and higher vertebrates were assumed to be a reflection of this ovarian cycle. Some years ago, however, Zuckerman[8] observed that regular cyclic uterine bleeding was induced in an ovariectomized monkey by the injection of a constant daily dose of oestrone. The dose had to be carefully adjusted: with too much oestrone no bleeding occurred until some time after stopping the injections (oestrone-withdrawal bleeding); if too little were given there was no bleeding at all. Zuckerman[9] has lately confirmed his original finding in a group of 15 ovariectomized Rhesus monkeys, 10 of which experienced periodic uterine bleeding when injected daily with a constant threshold dose of oestrone; the average length of time between successive bleedings in 68 of these "artificial threshold cycles" was 43 days, which did not differ significantly from the length of the normal menstrual cycle in a control series collected by Corner,[10] though somewhat longer than that of a larger control series collected by Zuckerman himself.[11] Similar threshold oestrous cycles have been observed in rats injected daily with an appropriate dose of oestrone[12] and the length of the cycles shown to be the same as that of normal oestrous cycles in intact rats.[13] These facts clearly demonstrate that a fluctuating secretion of oestrogen by the ovary is not essential to explain the cyclic changes in the uterus and vagina.

Last year Bourne and Zuckerman,[14] in a more extensive study of these artificial cycles, found that they could still be produced in hypophysectomized ovariectomized rats, but were elicited only rarely in the absence of the adrenal glands, even though the rats were given daily injections of desoxycorticosterone which kept them alive and allowed the continuance of the oestrous cycle in adrenalectomized rats with intact ovaries. They concluded that the rhythmic nature of the vaginal changes was determined by the adrenals. They then[15] investigated the adrenal glands during normal and artificial oestrous cycles. Painstaking histological examinations and measurements were made of glands removed in the oestrous and di-oestrous phases of the cycles and the results compared statistically. These statistics are too detailed for analysis here, but the following main facts emerged. In both normal and artificial threshold cycles the adrenal glands were heavier and bulkier during oestrus than during di-oestrus. These fluctuations were practically confined to the cortex of the gland, and within the cortex it was the zona fasciculata that was chiefly affected. The alterations in volume of this zone were brought about by changes in the size of the cells and not in their number. It was also found that these adrenal fluctuations were present during artificial oestrous cycles produced in rats with both hypophysis and ovaries removed. All of this is strong corroborative evidence for the essential role of the adrenals in causing cyclic changes in the accessory sex organs. How it brings these effects about is a matter for speculation. The authors offer three possible explanations: first, the adrenals may induce cyclic hydration and dehydration of the reproductive tract with consequent variations in sensitivity; secondly, their known production of oestrogen may be cyclic and subthreshold, reaching threshold levels only when supplemented from some other source; or, thirdly, the glands may yield fluctuating amounts of anti-oestrogenic substances such as androgens or progesterone. It will be seen that all these explanations shirk the problem of explaining the cyclical nature of the effects. A cycle produced by the combined co-operation and antagonism of pituitary and ovarian secretion could be visualized, but on the available evidence the adrenal appears to be intrinsically cyclic, which, if it is true, is much more difficult to comprehend. A menstruation centre in the hypothalamus has been postulated[16]—perhaps there is a hypothalamic–adrenal relation similar in some ways to the pituitary–ovarian one.

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[3] *Text Book of Medical Treatment.* By D. M. Dunlop, L. S. P. Davidson, and J. W. McNee. Edinburgh, 1942, 2nd edition, p. 640.

[4] *Science*, 1941, **94**, 523.

[5] *J. clin. Invest.*, 1942, **21**, 385.

[6] *Amer. J. med. Sci.*, 1942, **203**, 477.

[7] *J. Amer. med. Ass.*, 1942, **118**, 1403.

[8] *Proc. roy. Soc.*, B, 1937, **123**, 441.

[9] *J. Endocrinol.*, 1941, **2**, 263.

[10] *Cont. Embryol.*, Washington, 1923, **15**, 73.

[11] *Proc. zool. Soc. Lond.*, Ser. A, 1937, **107**, 315.

[12] Del Castillo, E. B., and Calatroni, C. J., *C. r. Soc. Biol.*, Paris, 1930, **104**, 1024.

[13] *J. Physiol.*, 1938, **92**, 12P.

[14] *J. Endocrinol.*, 1941, **2**, 268.

TOURNIQUET FOR HEART FAILURE

The application of venous tourniquets to the limbs has been practised instead of venesection in cases of heart failure for a number of years since its introduction by Danzer in 1928 The peripheral venous bed is turned into a reservoir in which may be stored about 12 to 15% of the circulating blood volume. The method was shown to be effective in the treatment of left ventricular failure by Weiss and Robb in 1933. An interesting light is thrown on its mechanism by Kountz, Smith, and Wright,[17] who used a machine which maintained inflation of cuffs placed on all four limbs for four minutes and deflation for one minute, the latter so arranged as to operate on each limb in turn, so that three limbs were always congested. The authors found that cases of left ventricular failure responded very well, but that those with right ventricular failure, as in acute or chronic cor pulmonale, did not. The point of interest was this: while the venous pressure fell and kymographic pulsation of the heart diminished (the expected results of lessening the venous return), the size of the heart, as measured by its transverse diameter, increased appreciably in normal subjects and in two patients with mitral stenosis. Cases of left ventricular failure showed no such increase. On the contrary, two of them showed a smaller heart shadow during venous compression. No explanation of this phenomenon is available. Cardiac output was not measured; but as neither the pulse rate nor the blood pressure altered appreciably, whereas the venous pressure and amplitude of cardiac pulsation fell, it may be assumed that the cardiac output fell too. Before looking for the solution the facts should be confirmed, for very few cases seem to have been studied in this paper. However, the method of treating orthopnoea and paroxysmal cardiac dyspnoea by compression of the limb veins is again brought before the notice of physicians.

FAKED FITS AND ABSENT RECORDS

The winter session of the General Medical Council was remarkable for a number of cases in which complaints by the Ministry of Labour and National Service were lodged against doctors on the ground that they had given false or misleading certificates to enable young men to evade military service. The evidence threw light upon a grotesque system which has been in operation whereby men due for appearance before medical boards have been coached by some elusive person—sometimes a man and in other cases a woman—in the simulation of the symptoms of epilepsy. Under the guidance of this person, who posed as a relative, the Army-shy young man was made to sham fits, was then taken to a doctor, or sometimes a succession of doctors, and medical certificates were obtained which were in due course presented to the medical board and succeeded for a time in imposing on the authorities. Sums amounting to hundreds of pounds were mentioned in connexion with these frauds. One young man (who incidentally has since been discharged from the Army on account of osteomyelitis) confessed in the witness box that he had paid 350 guineas to his "aunt" who showed him how to convince doctors, not of his lameness, but of his long-standing epilepsy, a condition from which he had never suffered. A witness told the Council how he was instructed to behave—to stroke his nose in a certain way, to take a quantity of black coffee the night before and have very little sleep, and to try to bite his tongue. Even doctors such as those on medical boards—against whom, of course, there was no breath of suspicion—were impressed, and in certain cases, it was said, when the interesting "patient" arrived they did not allow him to get out of the car but came one by one and looked at him in the vehicle. A final touch was added to the situation by the fact that several of these young men held driving licences, and one of them, who had originally been put in Grade 4 as an epileptic, but was afterwards re-graded, stated that he was now in the Army as a motor-driver. Sometimes, however, the chief interest in a case which comes before the General Medical Council lies in some incidental revelation. In certain of these cases the astonishing thing was not so much the issue of wrongful certificates as the manner in which a large practice was conducted without any proper records even of medicines supplied, not to speak of clinical details. One of the respondent doctors, who stated that his practice brought him in over £3,000 a year, admitted in the witness box that, although for his private patients he did his own dispensing, he had kept no records whatever. Comment was made on the fact that he had given luminal and other drugs to the supposed epileptics mentioned in the charge (and he said that at the relevant time he had 20 or 30 people in his practice whom he was treating for epilepsy), but no note of this appeared in his books. The only entries relating to the cases were in his diaries, and these were merely records of fees paid or to be charged.

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[15] *J. Endocrinol.*, 1941, 2, 283

[16] E.g., Theobald, G W., *British Medical Journal*, 1936, 1, 1038.

[17] *Amer. Heart J.* 1942, 23, 624.

Such absence of records is, of course, not a fault which brings a practitioner within the purview of the Council, but it is a highly questionable way of conducting a practice. It is disadvantageous to the patient who may present himself again for treatment after a lapse of time if the doctor has to rely solely on his memory as to the treatment given him on the previous occasion, and it may be damaging to the doctor himself if at some later date his treatment should be called in question. The excuses of a large and busy practice are of no avail; the larger the practice the more necessary it is, in the interests of good treatment, apart from any possible legal action, that the practitioner should fortify his memory by careful notes, whether the drugs are "dangerous" in the technical sense or not.

THE BLOOD–BRAIN BARRIER

The conception of a semi-permeable barrier between the blood and the brain dates back to the end of the last century, when it was found that certain substances such as trypan blue or diphtheria toxin failed to produce any change in the central nervous system (c.n.s.) on intravenous injection, while they were very active on intracerebral or intraventricular injection. In recent years there has been a growing interest in the practical application of this theory to medicine, and Friedemann[1] has summarized the present position. It should perhaps be emphasized that the blood–brain barrier is located in the capillary endothelium of the cerebral vessels, and that the cerebrospinal fluid plays no part in this connexion as an intermediary in the exchange of substances from blood to brain. The method of investigation may be illustrated by certain experiments on diphtheria toxin. It was found that the rat is almost immune to intravenous injection of this toxin while highly susceptible to intracerebral injection, which caused striking pathological changes; conversely, in rabbits the protecting dose of antitoxin is the same by the intravenous or the intracerebral route, although the toxin is 20 to 40 times more potent on intracerebral injection. These results suggest that the capillaries of the c.n.s. are relatively impermeable to diphtheria toxin, and so circulatory failure in the early stages of the infection, at least in animals, is probably not due to medullary paralysis. From similar experiments there is additional evidence that tetanus and botulinus toxins reach the c.n.s. by neural rather than by vascular pathways. Adrenaline caused a five- to ten-fold increase in the permeability of the cerebral capillaries to substances such as paraldehyde, strychnine, and ethyl urethane, to which they are already permeable. It was suggested that since adrenaline lowered the intravenous lethal dose of cobra venom for a rabbit from 0.5 mg. to 0.025–0.05 mg., the blood–brain barrier is therefore by analogy permeable to cobra venom. While this conclusion is not perhaps altogether justifiable, the observation is clearly of practical importance in so far as it can be applied to man. Friedemann also concluded that the blood–brain barrier was impermeable to the neurotropic viruses, such as those of poliomyelitis or rabies, which, like tetanus and botulinus toxins, must therefore reach the c.n.s. via the peripheral nerves. Experiments with tetanus and diphtheria antitoxins suggested that they could pass through the cerebral capillaries, but that the antitoxin concentration in the intercellular fluid was only 1/20 to 1/60 of that in the blood plasma. This observation is a further justification for the intrathecal administration of antitetanus serum in cases of tetanus, and explains the slow therapeutic response. Of the various drugs which act on the c.n.s. it was observed that many may act indirectly, as, for instance, by stimulating the carotid sinus. To be sure that they penetrate the blood–brain barrier it is necessary to identify them in the brain after intravenous injection. In this way it has been shown that many alkaloids and the sulphonamides pass the cerebral capillaries, while neoarsphenamine and suramin (Bayer 205) do not.

Friedemann concludes from the large number of observations on this subject that the ability of substances to pass the capillaries of the c.n.s. is determined by their electrochemical properties. So the higher permeability of the blood–brain barrier to electropositive substances may explain the rapid action of cobra venom in contradistinction to the slow action of tetanus and botulinus toxins, which have to make their way along the peripheral nerves into the c.n.s. rather than via the blood stream.

TANNIC ACID, BURNS, AND THE LIVER

The tannic acid treatment of burns has by many been criticized and by some condemned on account of its local effects, especially when used on the hands and face. Its most violent critics, however, seldom disputed its value as a life-saving measure in extensive burns of the trunk and limbs, although convincing statistical evidence of its superiority over other methods has not been produced. Now comes evidence from America imputing to tannic acid a toxic effect on the liver which may kill the patient. Wells, Humphrey, and Coll[1] report 4 fatal cases of burns in which death was attributed in whole or part to liver necrosis. Suspecting that tannic acid was to blame, they experimented on rats, and by subcutaneous injection of tannic acid produced liver necrosis similar to that found in the fatal burns—the degree of necrosis being proportionate to the dose of tannic acid. The necrosis affects the central part of the liver lobule and is identical with that described by Wilson and his co-workers as being the characteristic lesion of burn toxaemia. It would be premature to conclude that burn toxaemia is tannic acid poisoning, but that is the suggested implication, and other agents such as silver nitrate should be employed by those who hold that coagulation is a desirable part of burn therapy.

One of the advantages claimed for coagulation is control of fluid loss, and with tannic acid now suspect as a poison other methods of achieving this end assume greater interest and importance. Siler and Reid[2] report 134 cases treated by Koch's "primary cleansing, compression, and rest treatment of burns" and claim good results. About a third of the burns were extensive, and only 5 patients died. These workers tried to show by experiments on dogs that the method of pressure dressing controls haemoconcentration and loss of plasma protein, but although their results were suggestive of a beneficial effect they were not statistically significant.

A second advantage claimed for tanning is the control of infection. This end may be attained with more certainty by sulphonamides and/or other agents such as C.T.A.B. In the series reported by Siler and Reid only one patient died of sepsis and in none were sulphonamides used, but meticulous primary cleansing is an essential part of the Koch method. Although tannic acid is suspect as a poison, a comment of Wells is worthy of note, that he would be unwilling to give up a method that has proved so beneficial, even if it did cause an occasional death. But if other agents will produce an equally beneficial coagulation it would seem wise to avoid tannic acid until it has been cleared of suspicion.

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[1] *Physiol. Rev.*, 1942, 22, 125.

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[1] *New Engl. J. Med.*, 1942, 226, 629.
[2] *Ann. Surg.*, 1942, 116, 1106.

SOCIAL INSURANCE AND SERVICES

MEDICAL PARTS OF THE BEVERIDGE PLAN

The proposals in Sir William Beveridge's Report on Social Insurance and Allied Services* which are of most immediate importance to the medical profession are conveniently summarized in three paragraphs taken from different sections of the report. First, among the main provisions of the Plan for Social Security is the following:

"Medical treatment covering all requirements will be provided for all citizens by a national health service organized under the Health Departments, and medical rehabilitation treatment will be provided for all persons capable of profiting by it."

Second, among the principal changes from present practice that the author considers will be necessary is:

"Separation of medical treatment from the administration of cash benefits and the setting up of a comprehensive medical service for every citizen, covering all treatment and every form of disability, under the supervision of the Health Departments."

Third, the report states that no satisfactory scheme of social security can be devised except on the following assumptions:

(A) Children's allowances for children up to the age of 15, or if in full-time education up to the age of 16;

(B) Comprehensive health and rehabilitation services for prevention and cure of disease and restoration of capacity for work, available to all members of the community.

(C) Maintenance of employment—that is to say, avoidance of mass unemployment.

The paragraphs in the report which elaborate Assumption B are given in full below.

Comprehensive Health and Rehabilitation Services

426. The second of the three assumptions has two sides to it. It covers a national health service for prevention and for cure of disease and disability by medical treatment; it covers rehabilitation and fitting for employment by treatment which will be both medical and post-medical. Administratively, realization of Assumption B on its two sides involves action both by the Departments concerned with health and by the Ministry of Labour and National Service. Exactly where the line should be drawn between the responsibilities of these Departments cannot, and need not, be settled now. For the purpose of the present report, the two sides are combined under one head, avoiding the need to distinguish accurately at this stage between medical and post-medical work. The case for regarding Assumption B as necessary for a satisfactory system of social security needs little emphasis. It is a logical corollary to the payment of high benefits in disability that determined efforts should be made by the State to reduce the number of cases for which benefit is needed. It is a logical corollary to the receipt of high benefits in disability that the individual should recognize the duty to be well and to co-operate in all steps which may lead to diagnosis of disease in early stages when it can be prevented. Disease and accidents must be paid for in any case, in lessened power of production and in idleness, if not directly by insurance benefits. One of the reasons why it is preferable to pay for disease and accident openly and directly in the form of insurance benefits, rather than indirectly, is that this emphasizes the cost and should give a stimulus to prevention. As to the methods of realizing Assumption B, the main problems naturally arise under the first head of medical treatment. Rehabilitation is a new field of remedial activity with great possibilities, but requiring expenditure of a different order of magnitude from that involved in the medical treatment of the nation.

427. The first part of Assumption B is that a comprehensive national health service will ensure that for every citizen there is available whatever medical treatment he requires, in whatever form he requires it, domiciliary or institutional, general, specialist, or consultant, and will ensure also the provision of dental, ophthalmic and surgical appliances, nursing and midwifery, and rehabilitation after accidents. Whether or not payment towards the cost of the health service is included in the social insurance contribution, the service itself should (i) be organized, not by the Ministry concerned with social insurance, but by Departments responsible for the health of the people and for positive and preventive as well as curative measures; (ii) be provided where needed without contribution conditions in any individual case.

Restoration of a sick person to health is a duty of the State and the sick person, prior to any other consideration. The assumption made here is in accord with the definition of the objects of medical service as proposed in the Draft Interim Report of the Medical Planning Commission of the British Medical Association:

"(*a*) To provide a system of medical service directed towards the achievement of positive health, of the prevention of disease, and the relief of sickness; (*b*) to render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional."

428. Most of the problems of organization of such a service fall outside the scope of the report. It is not necessary to express an opinion on such questions as free choice of doctor, group or individual practice, or the place of voluntary and public hospitals respectively in a national scheme. It is not necessary to express an opinion on the terms of service and remuneration of doctors of various kinds, of dentists and of nurses, except in so far as these terms may affect the possibility of diminishing and controlling sickness and so may affect the finances of the Social Insurance Fund. Once it is accepted that the administration of medical treatment shall be lifted out of social insurance to become part of a comprehensive health service, the questions that remain for answer in this report are, in the main, financial. Shall any part of the cost of treatment, and if so what part, be included in the compulsory insurance contribution? But, though that question is in itself financial, the answer to it may affect the organization of the service and may therefore depend in part upon views as to organization.

429. In dealing with this financial question, it is desirable to consider separately domiciliary treatment, institutional treatment, special services like dental and ophthalmic treatment, and subsidiary services such as supply of medical or surgical appliances, nursing and convalescent homes.

430. *Domiciliary treatment* is now paid for by persons subject to health insurance, for themselves by compulsory contributions, for dependants either by a charge for treatment when it is given or more rarely by voluntary contribution through associations for public medical service. There is no obvious reason, apart from a desire to keep the insurance contribution as low as possible, why insured persons should be relieved of this burden wholly, in order that they may bear it as tax-payers. If importance attaches to preserving the contributory principle for cash benefit, it attaches also to contribution for medical treatment. There appears to be a case for including part of the cost of domiciliary treatment in the insurance contribution. This means that a proportion of the receipts of the Social Insurance Fund would be paid by the Fund to the Health Departments as a grant towards the cost of the medical service. The administration of this money would rest with the Health Departments.

431. But one consequence of this suggestion has to be noted. The Report proposes a compulsory social insurance scheme without income limits. Its contributing Classes I, II, and IV, though they pay different contributions according to the cash benefits for which they insure, are not income classes; each contains rich and poor. Any contribution for medical treatment must apply to all these classes, to every one in each of them, and must cover their dependants in Class III (Housewives) and Class V (Children). If a contribution for medical treatment is included in the insurance contribution, contributions will cover not 90% of the population (the present insured persons and their dependants), as is assumed in the Draft Interim Report issued by the Medical Planning Commission, but 100% of the population. This will not, of itself, put an end to private practice. Those who have the desire and the means will be able to pay separately for private treatment, if the medical service is organized to provide that, as they may pay now for private schooling, though the public education system is available for all. But no one will be compelled to pay separately. The possible scope of private general practice will be so restricted that it may not appear

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* Cmd. 6404. H.M. Stationery Office. (2s.)

worth while to preserve it. If, therefore, it is desired to preserve a substantial scope for private practice and to restrict the right to service without a charge on treatment to persons below a certain income limit, it will not be possible to include a payment for medical service in an insurance contribution which all are required to pay irrespective of income.

432. *Institutional treatment* is not included in the present health insurance contribution except to a small extent as an additional benefit. It is obtainable by any citizen in a public hospital subject to recovery of the cost—that is to say, to payment according to his means, or free if he has no means. It is obtainable in a private hospital, as a rule either in virtue of previous voluntary contribution through a hospital contributory scheme or on payment according to means as agreed with the hospital almoner. The growth of hospital contributory schemes in the years just before this war has been remarkable. They are stated to cover now more than 10,000,000 wage earners and they produce more than £6,500,000 a year for the voluntary hospitals; the cost of collecting this money is put at about 6%; in London and some other parts of the country contribution to a Hospital Saving Association qualifies the contributor for free treatment either in a voluntary hospital or in a public hospital as may best suit his case. The Ministry of Labour family budgets in 1937-8 showed an average payment to hospital saving associations of 3½d. a week in every industrial household and 3d. a week in every agricultural household. British people are clearly ready and able to pay contributions for institutional treatment. Should a payment for this purpose be included in the compulsory insurance contribution, and be passed on as a grant from the Social Insurance Fund to the Health Departments towards the maintenance of the institutions? The answer to this financial question, like the answer to the similar question as to domiciliary treatment, involves problems of organization as well as finance. If a payment for institutional treatment is included in the compulsory insurance contribution, there will be little or nothing left for which people can be asked to contribute voluntarily, and an important financial resource of the voluntary hospitals will come to an end. It will then be for the Health Departments to use the grant that they will receive from the Social Insurance Fund in whatever way best fits their hospital policy. If it is not included, people of limited means will have the choice, as at present, of contributing voluntarily beforehand or of paying at the time of treatment, according to means.

433. The main considerations relevant to the choice between these alternatives are:

(i) The importance of securing that suitable hospital treatment is available for every citizen and that recourse to it, at the earliest moment when it becomes desirable, is not delayed by any financial considerations. From this point of view, previous contribution is the ideal, better even than free service supported by the tax-payer. People will take what they have already paid for without delay when they need it, and they pay for it more directly as contributors than as tax-payers. But it can be argued that, under the present system, people do not in practice delay taking hospital treatment when they need it; their general practitioner will advise going to hospital, as soon as it becomes necessary, and if they are not voluntary contributors they will be asked to pay only according to their means. It is possible that the main practical reasons which now delay recourse to hospital after it has become desirable are not difficulties about paying for the treatment, but either (*a*) deficiency of accommodation or (*b*) unwillingness or inability to give up work or household duties in order to be treated. A suggestion for meeting the last-named difficulty is made in para. 344.

(ii) Hospital policy, particularly in relation to the place of voluntary hospitals, the terms of service and pay of their staffs, and the desirability or the reverse of allowing arrangements whereby individuals, whether through membership of a voluntary association or by special payment, can get choice of specialists or hospitals or special treatment in them.

(iii) Financial policy, and particularly the question of the optimum size of the insurance contribution and of the security budget in relation to the ordinary budget.

435. *Dental and ophthalmic treatment and appliances* are now overwhelmingly the most popular of the additional treatment benefits under national health insurance. That is to say, they are being paid for in part by compulsory contributions and for the rest mainly by a charge when treatment is given. There is a general demand that these services should become statutory benefits available to all under health insurance. There appears to be ground for regarding a development of preservative dental treatment as a measure of major importance for improving the health of the nation. This measure involves, first, a change of popular habit from aversion to visiting the dentist till pain compels into readiness to visit and be inspected periodically; it involves simultaneously, with creation by these means of a demand for a larger dental service, the taking of steps to organize a larger supply of the service. That the insurance title to free dental service should become as universal as that to free medical service is not open to serious doubt. The only substantial distinction which it seems right to make is in the supply of appliances. To ensure careful use, it is reasonable that part of the cost of renewals of dentures should be borne by the person using them. This might possibly be extended to the original supply. The same holds true of optical appliances.

436. *Surgical appliances, convalescent homes, and nursing* are less widely provided as additional benefits, but are essential to a comprehensive health service. Decision as to making these subsidiary services contributory or non-contributory for the individual depends on the line taken in regard to the major problems of domiciliary and institutional treatment. It is reasonable that insured persons should contribute something for such services, as they have shown themselves able and willing to do in the past; in regard to appliances of all kinds, the terms of supply and renewal must be such as to give an incentive to careful use. But it would be anomalous to require compulsory contributions for special and subsidiary purposes if the main services were non-contributory.

437. This review of some of the problems involved in establishing a comprehensive medical service makes clear that no final detailed proposals, even as to the financial basis of this service, can be submitted in this report. It suggests the need for a further immediate investigation, in which the finance and the organization of medical services can be considered together, in consultation with the professions concerned and with the public and voluntary organizations which have established hospitals and other institutions. From the standpoint of social security, a health service providing full preventive and curative treatment of every kind to every citizen without exceptions, without remuneration limit and without an economic barrier at any point to delay recourse to it, is the ideal plan. It is proposed accordingly that, in the contributions suggested as part of the Plan for Social Security, there shall be included a payment in virtue of which every citizen will be able to obtain whatever treatment his case requires, at home or in an institution, medical, dental, or subsidiary, without a treatment charge. It is proposed that the sums derived from these payments shall be transferred to the Department or Departments concerned with the organization of the health service to meet part—it can only be part—of the total cost. But these proposals are provisional only, subject to review in the light of the further inquiry suggested, in which organization and finance can be dealt with together. The primary interest of the Ministry of Social Security is not in the details of the national health service or in its financial arrangements. It is in finding a health service which will diminish disease by prevention and cure, and will ensure the careful certification needed to control payment of benefit at the rates proposed in this report.

438. Assumption B covers not only medical treatment in all its forms, but also *post-medical rehabilitation.* In regard to the latter, as in regard to the former, it would be inappropriate here to discuss details or organization. During the preparation of this report the practical problems of rehabilitation have been under consideration by the Departments concerned, and it is hoped that practical measures will follow. Rehabilitation is a continuous process by which disabled persons should be transferred from the state of being incapable under full medical care to the state of being producers and earners. This process requires close co-operation between the Health Departments and the Department concerned with employment—that is to say, the Ministry of Labour and National Service. Whether this co-operation can be secured best by the setting up of an executive organ representative of both sides or by allocation of specific duties to each Department is a problem of departmental organization on which it would

be inappropriate here to express an opinion. It is sufficient to put forward three general propositions:

(a) That rehabilitation must be continued from the medical through the post-medical stage till the maximum of earning capacity is restored, and that a service for this purpose should be available for all disabled persons who can profit by it irrespective of the cause of their disability.

(b) That cash allowances to persons receiving rehabilitation service should be the same as training benefit, including removal and lodging allowances where required.

(c) That the contributions paid by insured persons should, as in the case of medical treatment, qualify them for rehabilitation service without further payment.

Correspondence

Hand and Finger Lesions

SIR,—During recent months a great deal of correspondence has appeared in your columns on complacency in anaesthetics. May I call attention to another branch of medical practice—the treatment of injuries and infections of the hand and fingers—where complacency is the only explanation of, though no excuse for, the deplorable results which are so often met with?

It has been estimated that in peacetime injuries of the hand and fingers were responsible for 35 to 45% of the total sum paid as compensation for all injuries, and at a meeting of the British Orthopaedic Association at Nottingham on Sept. 25 and 26 Dr. Donald Stewart stated (Oct. 24, p. 493) that of 1,000 consecutive accidents in one factory 52% were finger injuries only. It is the same story in the Services, where these lesions cause longer hospitalization, a higher degree of permanent disability, and more invaliding than almost any other condition. A small part of the blame for the poor results may be due to the severity of the original injury or to the failure of the patient to present himself in time for treatment to be effective, but impartial analysis forces one to the unpleasant conclusion that by far the greater share of the blame is due to neglect or mismanagement by the patient's medical advisers.

An open wound of the finger is no less worthy of skilled and careful treatment than an open fracture of the femur, but too often it is classed among the trivialities of minor surgery. Medical men who would never dream of using a scalpel for any other purpose gaily "operate" on these cases without any adequate attempt at asepsis and with little or no appreciation of the principles which should govern their treatment. This attitude is understandable, for these lesions receive little attention in the curriculum of most medical schools. Students see injuries and infections of the fingers left to the most junior hospital officers and more or less ignored by the honorary staff.

Improvement will only be attained if all those who are responsible for the surgical education of students take more trouble than most of them do at present to show by their teaching and example the importance and seriousness of lesions of the fingers. It is fortunate that there is no subject that lends itself more to dogmatic teaching, for it is one of the very few exceptions where theoretical knowledge is more important than experience or technical ability. Good results can be obtained by anyone who is prepared to learn and obey a few cardinal principles: careful pre-operative examination; perfect asepsis at operation and re-dressings; a dry field; the avoidance of incisions in the mid-line of the finger, buried sutures or ligatures, rubber drains, fomentations, baths, or passive movements; immobilization of the affected parts in the position of function, and mobilization of the unaffected fingers, etc.

The education of those who are already qualified is a more difficult task, but there is a way in which I believe it could be done. Since the beginning of the war a spate of literature has poured out from the medical departments of the fighting Services, the Medical Research Council, and the E.M.S. instructing us what to do and what not to do for this and that condition. Of the educational value of these memoranda there can be no doubt. Is it too much to hope that one or other of these bodies, or better still a joint committee representing them all, will formulate and issue a memorandum on "The Principles of the Surgery of the Hand and Fingers"?—I am, etc.,

J. B. OLDHAM,
Surg. Commander, R.N.V.R.

The Sulphonamide Problem

SIR,—Surg. Cmdr. E. A. Gerrard's letter (Nov. 28, p. 647) about the uses and abuses of the sulphonamide group of drugs is most timely. The general public appears to regard the use of these drugs from one of two aspects: either as a veritable elixir of life which no one must neglect to employ or as a kind of last rite in a desperate emergency. From the professional point of view the situation is scarcely less unhappy. Within a very short period instances have come to my notice of the administration of sulphonamides to an infant cutting teeth, to cases of septic finger of minor degree, and to a patient with a small boil in the axilla. The dose employed in this last case could not have caused the slightest inconvenience to any but a moribund staphylococcus, though the patient proved much more vulnerable to its action. The use of sulphonamide powder in recent wounds is in danger of being regarded as a substitute for and not as an additional safeguard to careful excision. Now that the powder is recommended as a first-aid dressing steps should be taken to ensure that proper excision of the wound should not be delayed or neglected on this account.

Sufficient information is now available for the preparation of a survey of this group of drugs. This might be undertaken by an authoritative body such as the Medical Research Council, and the production of a film, preferably in colour, should be considered. A film on this subject has been made in America but has not yet reached this country. By the kindness of one of the manufacturing firms a colour film on the treatment of pneumonia was recently shown in this area. So great was the interest aroused that there occurred what one only too rarely sees at a medical meeting—a "full house." I believe in this way we have an ideal method of dealing with an urgent problem quickly, scientifically, and in a manner to arouse the greatest interest.—I am, etc.,

Berkhamsted R. GRAINGER, F.R.C.S.

Ship-borne Small-pox

SIR,—It is apparent that the story of the outbreak of small-pox in Glasgow, 1942, is not ended. Following the introduction of ship-borne infection into that city the possibility has now arisen that small-pox may once again become endemic in these islands. A similar situation threatened to develop after the arrival of the *Tuscania* at Glasgow in April, 1929, and of the *Cathay* at the Port of London in March, 1938. On each occasion infection was carried and spread ashore.

Small-pox on a ship at sea is an example of an infectious disease occurring in a closed community, where conditions are almost ideal for containing the epidemic. I suggest that, at a time when this country is free from small-pox, a case may be made out for enforcing absolute quarantine on an infected ship. This measure, combined with the efficient use of vaccination, should determine the outbreak within twenty-one days.—I am, etc.,

Dartford, Kent J. PICKFORD MARSDEN.

Cleft Palate

SIR,—Mr. H. P. Pickerill (May 30, p. 680) has taken me to task for some remarks I made in an article on cleft palate published in the *British Journal of Surgery* (Oct., 1941), and he has set me some interesting questions to answer. I must apologize for my delay in replying, but the *Journal* containing his letter has only just reached me.

I was a little disappointed that a surgeon of Mr. Pickerill's experience should consider "extravagant" my strong condemnation of the use of a tubed pedicle graft for repairing a cleft palate, but I read the description of his cases treated by intra-oral tubed pedicles with great interest. Mr. Pickerill's first two cases were not examples of cleft palate but of gunshot wounds of the palate; my paper did not include a description of wounds of the palate. I agree that gunshot wounds with enormous loss of tissue might require operations which I should characterize as fantastic if used for the repair of the smaller congenital defects. Though my unit has recently treated a number of gunshot wounds involving the palate, we have yet to see a case which required a tubed pedicle graft for the repair of the palate.

I still consider repair of any type of congenital defect in the palate by means of a tubed pedicle graft to be a fantastic operation, and I believe Mr. Pickerill when he says that these procedures "tax the skill of the operator to the utmost in their final stages." It seems to me that the patience and forbearance of the patient are even more severely taxed than the skill of the operator, for the patient, following the operation, has to sustain a pedicle attached at one end to the palate and at the other, presumably, to some part of the upper extremity or chest for ten to fourteen days. Yet Mr. Pickerill says of these operations: "They certainly do not, as stated, cause pain to the patient." I cannot believe that Mr. Pickerill does not visit his patients on the day after operation.

Not having seen her I cannot say what I should have done for the "young woman" under Mr. Pickerill's care who was "panic-stricken" at the prospect of the dental extractions which were to rob her obturator of its sole support. Possibly her panic was in part due to Mr. Pickerill's proposal that he should attach her arm to her palate by a tubed pedicle. I can well imagine Mr. Pickerill's satisfaction at the gratitude and pleasure of the parents of the boy who was "the leader of his school in sport and study" when a tubed pedicle enabled him to acquire good speech. But would a Wardill or a Gillies-Fry procedure have earned the gratitude and pleasure not only of the proud parents but also of the boy himself? I think it might have done.

I do congratulate Mr. Pickerill on his great technical skill in the performance of these elaborate operations. I congratulate Mrs. Pickerill even more heartily, not only for reconstructing the lip and palate of the baby mentioned with anatomical perfection but also for saving the poor child from one of Mr. Pickerill's tubed pedicle operations.—I am, etc.,

MICHAEL C. OLDFIELD,
M.E.F. Major, R.A.M.C.

The Teaching of First Aid

SIR,—The importance of a widespread knowledge of the elements of first aid in present circumstances is generally acknowledged; but, owing to the existence side by side of two distinct official systems, lecturers and examiners are confronted by a handicap which, one would think, ought to be removed at least for the duration of the war.

No one would urge the British Red Cross Society and the St. John Ambulance Association to merge their separate identities—each has its own special field of service—but the present liaison might, I think, be drawn even closer in one respect for the time being. As a lecturer under both systems, I have become more and more impressed by the advantages which would accrue from a common first-aid syllabus and a conjoint examination held under the auspices of both bodies. This would obviate the necessity for hard-pressed doctors to bear in mind two separate procedures. Moreover, it would eliminate the contretemps which sometimes arises when an examiner more conversant with Red Cross methods is appointed to examine a St. John class and vice versa, canalize into one channel energies now dissipated in two directions, and simplify the problems of intending students.

With a little give-and-take on both sides the difficulties of such a readjustment should not prove insuperable. If desired, the original position could be restored after the war, though possibly the advantages of one official system combining the best points of the two would by then have become so obvious that the change might become a permanent arrangement.—I am, etc.,

Grasmere E. W. ADAMS.

Control of Venereal Disease

SIR,—I would endorse the recommendations given by Drs. David Erskine and V. E. Lloyd (Nov. 21, p. 617), particularly the last sentence that the problem might well be discussed now so that suitable arrangements can be prepared in advance. In the Services the compulsory treatment which is so desirable can be effected without any difficulty and with none of the troubles attending on seeming publicity in similar circumstances in civilian life.

With regard to the new Defence Regulation 33B, I would submit that there are some serious defects which will prevent its being of use in many cases. First, it is the experience of many clinics at present that false names and addresses are frequently given by those attending; particularly is this so among men. It would be desirable, and may even become necessarily compulsory, to demand the production of the National Registration identity card on first attendance at the clinics. Authorities concerned might well be advised to practise this at present, even though they have no powers to compel its production. The identification of suspected persons to be named by two separate patients will obviously be prejudiced if fictitious names and addresses persist. Secondly, I am told that it is seldom that persons are named by those who attend—the element of fear of breach of "treatment in secrecy" obviously prevents such notification. The almoner of one large clinic assures me that there is the greatest difficulty, even when dealing with numbers and not names, in tracing contacts. It would seem unlikely that registration will therefore be as effective until a wider power to enforce observation and treatment becomes law.—I am, etc.,

Nailsea, Nr. Bristol. W. ARTHUR GORNALL, M.D.

SIR,—In the issue of your *Journal* for Nov. 21 you say with regard to the number of persons who fail to continue treatment for V.D.: "Major Laird points out that the defaulter rate of England in 1935 at 82.5% compares most unfavourably with the corresponding defaulter rate of 2.5% for Sweden." Yet the report of the Chief Medical Officer of Health for 1937 has the following: "The percentage of patients on the books of the treatment centres who discontinued attendance prematurely during the ten years ending December 31, 1937, were as follows":

	Syphilis		Gonorrhoea	
	Males	Females	Males	Females
1928	24.7	22.8	27.5	20.4
1931	24.2	22.2	29.3	21.2
1934	21.9	20.7	23.9	22.9
1937	17.4	17.9	21.8	18.2

If the average percentage of all patients defaulting in 1934 is just over 22%, and just over 18% in 1937, it is curious that it should have leapt to such a figure in 1935. There is no mention of this extraordinary rise in the Minister's report for 1935.—I am, etc.,

E. M. TURNER,
London, S.W.1. Secretary, Association for Moral and Social Hygiene

*** The statement in Major Laird's paper, summarized in the leading article, was as follows: "An investigation in various parts of Staffordshire, in which I collaborated, showed that in 1937 50% of cases of early syphilis and 30% of gonorrhoea cases defaulted. Sir Kingsley Wood stated that the percentage of clinic patients in England completing treatment and tests of cure was 12.9% in 1925 and 17.5% in 1935. This puts the defaulter rate for England in 1935 at 82.5%, which compares most unfavourably with 2.5%, the corresponding defaulter rate for Sweden." (*Brit. J. vener. Dis.*, 1942, 18, 84.)—ED., *B.M.J.*

Prostatic Smear as a Test for Cure of Gonorrhoea

SIR,—The cure of gonorrhoea is so important from the social and individual health points of view that it is not surprising that physicians have recourse to as many tests as possible in order to establish it with certainty. Of these procedures there is one which seems to me too dangerous in its sequelae and therefore not deserving of such widespread use in the venereal disease centres of this country—namely, the expression of prostatic fluid by massage for microscopical examination. The positive value is questionable, since the direct demonstration of gonococci in this liquid is fraught with so many contingencies that it is purely a matter of chance. Of course the bacteriological culture would considerably enhance the value of the test, but it is seldom practised in the routine work of a busy centre because it is too expensive and time-consuming. But even if this more scientific and accurate method be used, it is still doubtful whether the results would outweigh the possible harmful effects of prostatic massage, for in the early stage of gonorrhoea the maltreatment of the prostatic gland with its spongy structure is a serious matter if gonococci have already invaded it. Any rough handling of the prostate at this stage is the most certain method of disseminating the gonococci from the initial focus to the utmost recesses of the gland, with the additional risk of spreading the infection to the seminal vesicles. We are not entitled to draw analogies from similar procedures in the case of chronic prostatitis, where massage may yield useful therapeutic results, because in the latter case we are dealing with a type of chronic abscess in which an inflammation of long standing has become localized by means of a surrounding organized inflammatory infiltration, which prevents the possible spread of the infection. In recent acute gonorrhoea any interference with an infected prostate is as dangerous and risky as squeezing a furuncle in the acute stage.

It is certain that in many cases where the material obtained by efficient and therefore forceful massage of the prostatic gland yields a positive result, the subsequent prostatitis and potential vesiculitis are the direct outcome of this exploration, although they may erroneously be regarded as a confirmation of the diagnosis. When it is remembered that the incidence of gonococcal arthritis and rheumatism accounts for about 10% of all cases of chronic arthritis—one of the widely prevalent diseases in this country—and that gonococcal arthritis nearly always indicates the presence of latent prostatitis and/or vesiculitis, it is clear that this whole question deserves thorough consideration and discussion.

Recent experience with the sulphonamide group of drugs suggests that the considerable reduction of chronic complications in gonorrhoea may be due not only to the rapid therapeutic effect obtained, but also, and in no less degree, to the omission of direct interference with the urethra, such as lavage, instillations, etc. Perhaps this point should be borne in mind when prostatic massage is being considered as a control test for the cure of gonorrhoea.—I am, etc.,

Polish Forces. JERZY FEINER.

Child Health

SIR,—Dr. James Burnet's letter (Nov. 21, p. 616) applies, *pari passu*, to the School Medical Service. This service, established in 1908 under the Education (Administrative Provisions) Act, was stultified from the beginning by being placed under the control of medical officers of health, who are seldom clinicians and as a rule know little and care less about diseases of children. The sad result of this is that, as a general rule, the School Medical Service has become the poor relation in the Public Health Departments.

It is to be hoped that after the war the School Medical Service will be separated from Public Health Departments and established as a separate service under a clinician with special knowledge of diseases of children; and, further, that medical inspection will be carried out in special centres, properly equipped and staffed, away from school buildings, and that existing "care committees" will be abolished and "following up" of cases done by trained nurses.—I am, etc.,

Sunninghill, Berks. EVA MCCALL.

Loneliness in Infancy

SIR,—I have been greatly interested in the correspondence on loneliness in infancy, and in particular in Dr. Laura Hutton's letter (Nov. 7, p. 558). It certainly seems strange that mothers should deny to infants that ordinary degree of consideration that they would show to their adult acquaintances. To leave a baby to scream is, I agree, criminal, though it requires some experience to tell what exactly is the matter. In nine cases out of ten something very specific is the matter, and can fairly easily be remedied. Infant routine has become, to an illogical extent, dominated by the clock. I can see no merit, however, in a routine which recommends three- or four-hourly feeds and yet allows for a long interval of eight (or more) hours at night, even for newborn babies. Only the baby knows how hungry it is, and to deny it food when it asserts its hunger is a cruelty that one would not practise with more articulate beings.

I would, however, like to join issue with Dr. Hutton on two points. First, with regard to thumb-sucking. I have had four babies in the past six years. All have been treated with a fair degree of leniency, the leniency becoming greater as my experience increases. The two younger babies have not been allowed to cry for more than a very short time before a rescue is effected. Nevertheless, all four have been thumb-suckers. I do not like to think of this as a sign of special mental imbalance. In fact, it seems to me to be a very normal baby pastime, and one that should give rise to no anxiety in the parents, especially if it disappears when the baby starts to handle and play with toys. It seems possible that many very well adjusted people may have been thumb-suckers in their early childhood. No definite evidence has, so far as I know, been produced either to confirm or to deny this possibility.

The same lack of evidence can, I think, be held against Dr. Hutton's implication that loneliness in infancy necessarily gives rise to neurotic personality in later life. I should be interested to know whether so-called normal people have not suffered much the same deprivations as those who require analytical help, but have not reacted so unfavourably to them. Have many really well-adjusted people undergone thorough and deep analysis?

I raise these points largely to reassure myself, as mistakes in dealing with infants cannot be avoided. With Dr. Hutton's general thesis that ordinary consideration is too often denied to very young babies I concur whole-heartedly; and wish that something could be done to re-educate the public away from the clock and back to natural impulse.—I am, etc.,

Stansted, Essex. NANCY SALAMAN.

Tonsillectomy by Guillotine and Dissection

SIR,—In my article on this subject (Oct. 31, p. 512) I dealt with the methods of tonsillectomy. Dr. E. C. Atkinson's letter (Nov. 21, p. 620) illustrates well the die-hard aspect of some dissectionist schools. Three-quarters of his long letter is devoted to a discussion of the removal of adenoids, which has nothing to say to the case. I must not trespass on your space to discuss its inaccuracies.—I am, etc.,

Guildford. T. B. JOBSON.

*** This correspondence is now closed.—ED., *B.M.J.*

Future of the Profession

SIR,—Dr. H. E. Collier's excellent letter (Nov. 14, p. 591) on the future of the profession raises important points with regard to medical planning. The spate of letters on this subject has stressed medical organization; there is no mention of actual medical work. A co-ordinated medical service with good working conditions for doctors is undoubtedly needed, but it will not solve our true medical problems. The object of this service will be the maintenance of a healthy population, but how can we hope to achieve this by organizational changes alone?

The futility of our present medical approach—our clinical examination with its growing battery of static investigations—is obvious in all cases save those of established disease. Will the general practitioner, working in a health centre and personally able to follow his patient through hospital investigation, be any better off when "organic disease is excluded" and he still has a patient with real symptoms and complaints on his hands? Will the maternity and child welfare worker be better able to deal with the numbers of physically subnormal children who attend our welfare centres? Will the pathologist with his increasing studies of the infinite variations of bacteria help us much unless we see the need for an equally careful study of individual variations in the subjects whom bacteria attack?

Unless we realize that alteration of our outlook and technique must be part of our reorganization, medicine will remain sterile, irrespective of the framework within which it functions.—I am, etc.,

ROWENA WOOLF,

Finsbury, E.C.1. Assistant Medical Officer of Health

Rationed Distribution of Doctors?

SIR,—To meet what is now an urgent need and which will become a paramount need of the Services for doctors, I have severely practical proposals to make. We have had at least a partial rationalization of industry to meet war needs, but no attempt at a co-ordinated plan has been made to obtain maximum efficiency for medical services by the same process. Apart from the obvious waste of skill which this lack of organization entails, injustices result, of which inequality in loss of income is only one. It is not at all impossible to estimate the basic needs in medical personnel per unit of the civilian population; numbers must be reduced to basic needs and therefore all "frills" must be abandoned. One assumes that the demands of the Services are inescapable, and that there is no waste by them of personnel either at home or abroad.

For a 50,000 unit of urban population, I estimate basic needs as: general practitioners 10; public health staff 4 (including one fever hospital resident); surgeons 4; house-surgeons 2 or 3;

anaesthetist 1; obstetrician-gynaecologist 1; obstetrical house-surgeon or R.M.O. 1; specialist physicians (no house-physicians) 2; pathologist 1; radiology and ophthalmology, equivalent of 1 specialist. Rural population would require about 30% more general practitioners and 20% more public health staff. Only able-bodied men and women under the age of 70 should be included.

The necessary adjustments to make such a service feasible would be: (1) Complete pooling of practices; immediate establishment of central clinics or health centres, with elected director, roster of services, off-duty time, etc. (2) Taxation or levy for health services on the whole population to meet the costs of medical service in wartime; no individual fees; salary for the duration of the war for all doctors on a scale proportionate to service offered plus a factor for age and family obligations. (3) Domiciliary work reduced to an essential minimum. (4) Suspension of school clinics and infant centres (but full maintenance of school and health visitor staff). (5) Compulsory service for all doctors of both sexes under 65; no exemption for married women without young children. (6) Hospital resident posts, apart from limited number of specialist training posts, reduced to a 3-months period.

I take my own immediate area, mostly urban, with a population of about 30,000, as an example. There are practising in this area 12 general practitioners, 4 public health staff, 3 surgeons, 1 obstetrician-gynaecologist, 1 specialist physician, 2 pathologists, half-time anaesthetists to the equivalent of 1 specialist, 1 part-time radiologist, 5 hospital residents—total 29, or nearly 1 per 1,000 of the population. Some of the specialists give part-time service to the neighbouring E.M.S. hospital, but this is not such an important factor as to upset the calculation. On the basis outlined, this area would now release for service 1 surgeon, possibly a second surgeon or 1 physician specialist, 1 pathologist, 1 public health officer, 3 or possibly 4 general practitioners, 2 hospital residents. I am an ardent advocate of immensely increased health services, but this great reform must wait until the world is secure from savagery. We shall then expect to have a large reserve of doctors, not enough but still substantial, to inaugurate the new health era.—I am, etc.,

Inverness. D. LEYS.

Sedimentation Rate

SIR,—It is with a growing feeling of impatience and dissatisfaction that I have read the recent articles and correspondence on the subject of blood sedimentation. It appears to me that the medical profession has adopted this test in complete ignorance of the principles involved. An engineer can make use of his knowledge of sedimentation in rivers to good purpose, and he is working on accurate and scientific methods, which he fully understands. Compare this with the sedimentation of biconcave disks in a sticky solution, and consider the enormous number of variable factors involved. It would appear that medical men are using this test to justify the clinical condition of a patient, when they would be better employed in practising and perfecting their powers of clinical observation, for which they have been trained.

If any medical practitioner is under the impression that he understands the subject, he would be wise to read the recent researches of R. B. Whittington in the *London, Edinburgh, and Dublin Philosophical Magazine*, Jan., 1942; *British Journal of Experimental Pathology*, Feb., 1942; *Tubercle*, Sept., 1942; *Lancet*, Oct. 31, 1942; and *Proceedings of the Royal Society*, 13, Nov., 1942. Progress has been made in the fundamental study of red-cell sedimentation in these studies.

No one would doubt the value of accurate and reasonable investigation in haematology and blood chemistry, but our attitude to blood sedimentation is unscientific and unhealthy. If, as is now suggested, blood sedimentation is to be conducted in moving vehicles the matter is becoming ludicrous. If the oracular predictions are as reliable as ever under such conditions, medicine can no longer be considered an art or even an inexact science, but a magic cult. I feel sure that there are many engineers at present, with sufficient spare time, who would be only too pleased to investigate the effects produced by size of car, road surface, tension on springs, tyre pressure, etc. Perhaps they could advise us regarding the adjustment of our shock-absorbers, and find a formula suitable to make corrections, in case we use the Austin 7 or Rolls 40.

Perhaps I am prejudiced in my desire to preserve scientific accuracy and to understand the tests I employ. At any rate I have abandoned the use of blood sedimentation tests long ago, and it will require reason to make me readopt them. The only value I have ever found from the fashion was that it tended to inhibit the indiscriminate use of gold in the treatment of arthritis, since we were carefully informed that this remedy was unsafe without blood sedimentation control.—I am, etc.,

Blackpool, Lancs. F. M. HILLIARD, M.D., F.R.C.P.I.

⁂ This correspondence is now closed.—ED., *B.M.J.*

Working for a Salary

SIR,—Few would deny that the activities of certain medical research workers on a fixed salary have been the means of great relief to suffering humanity, but this does not mean that the issue between a system of fixed salaries and one of competitive incomes has been decided in favour of the former. Many other points besides isolated acts of brilliant accomplishment must be considered before the question is settled. One such point is that research workers, for the most part, are servants of institutions, and that institutions are in the habit of paying their servants fixed salaries. In other words, these men, in common with medical officers of health and officers of civil and military medical services, are chiefly engaged in serving the interests of institutions or organizations, not directly of individuals, and consequently if they are to be paid at all it will be in the manner customary to institutions and organizations.

In contrast with the status of the medical officer consider that of the general practitioner. He serves not institutions but individuals. Here there is an arrangement of mutual advantage between two persons. In return for service rendered the patient transfers to the doctor a whole- or part-claim on goods or services which the latter needs then or may need at some future time. The relation of patient to doctor is that of master to servant. This position is not in any way derogatory to the doctor. "Whosoever would be first among you shall be servant of all." An honest servant will not ask for more than is just, and a great service deserves, though it may not always receive, a corresponding reward.

In general it is true to say that we can each choose one of two masters—the institution or the individual. It does not help matters to denounce one or the other. Each has points in its favour. The institution is an essential part of every civilized society. Fortunately for humanity the necessary institutions appear to obtain, voluntarily or otherwise, enough servants to meet their needs. We G.P.s who serve the individual find him trying at times, but in our heart of hearts, in spite of such blandishments as a fixed and adequate salary, pension, paid holidays, etc., I don't think a majority of us wish to change.—I am, etc.,

Bexley, Kent. E. U. MACWILLIAM.

Health Centres and Periodic Medical Examination

SIR,—In the leading article on planning and the M.O.H. (Nov. 14, p. 580) I think you come to the crux of the whole matter in your statement: "Clearly the medical profession will need a new kind of education before really effective progress can be made." There can be no fusion of the public health and the general practitioner services until the function of the doctor is revisualized and made comprehensive to embrace preventive and curative medicine.

I do not think that health centres as at present suggested are a practical proposition. This innovation will require to be built up step by step, and in its introductory stage a health centre can be fully occupied with preventive measures.

I fail to find in the suggestions for replanning one of the most important means of keeping the individual healthy, and that is periodic medical examinations. The principle is carried out in the school medical service and partly in the child welfare service. The National Health Insurance service will need to be reorganized to meet this requirement. I suggest, therefore, that the health centre should be the place for carrying out this most important duty. All doctors should be engaged on this work. Medical boards formed by doctors in rota should be set up for this purpose. A team of specialists should be available to deal with any conditions requiring their attention. A report drawn up by the board should then be sent to the family doctor in each case. Such information will be most valuable to him and will relieve him of essential work which can be done more expertly by the board.

If the whole family is to come under the National Health Insurance system there should be no difficulty in making these board examinations a condition of enrolment in the service. In addition, there is medical inspection for life insurance, medical inspection for the Services (civil and military), the factory service, and so on. The advantages of such initial expert medical inspection are obvious. It supplies the family doctor with the classification of the patient and gives the patient interest in his own health. The subsequent care of each person should be in the hands of the family practitioner, who should have the opportunity of referring a particular case to the board as he considers advisable. From this initial duty of a health centre other spheres will develop in its organization, but I firmly consider the total functions of the health centre should grow up round this preventive work.—I am, etc.,

S. P. BEGGS, M.D., D.P.H.,
Morecambe and Heysham. M O H Middleton (1921-41).

The Services

The D.S.O. has been awarded to Capt. S. B. Thompson, N.Z.M.C., and the M.C. to Capts. R. D. I. Beggs and R. P. Lawson, R.A.M.C., in recognition of gallant and distinguished services in the Middle East.

Temp. Acting Surg. Lieut.-Cmdr. A. D. Bateman, R.N.V.R., has been appointed O.B.E. (Military Division) for coolness and devotion to duty during an enemy air attack.

Temp. Surg. Lieut. S. Moss, R.N.V.R., has been mentioned in dispatches for skill and endurance.

Temp. Surg. Lieut. R. C. R. Gethen, R.N.V.R., has received a commendation for bravery in an enemy air attack.

The King has approved the award of the George Medal to Flying Officer J. A. Elliott, R.A.F.V.R. The citation in the *London Gazette* dated Dec. 1 reads as follows:

> "In May, 1942, a Boston aircraft crashed shortly after taking off from an aerodrome and burst into flames. An airman who was on duty near by hastened to the scene, where he was joined by 5 soldiers. Although the fire was intense and ammunition was exploding in all directions one member of the crew (the air gunner, who was seen to be hanging out of the turret) was dragged from the wreckage by one of the soldiers and then, with the assistance of the remainder of the party, carried on a stretcher to an ambulance which had arrived. The party was returning to the aircraft, which was then being approached by the station engineer officer and F/O Elliott, a medical officer, when a bomb exploded. The engineer officer was thrown to the ground bleeding from the chest. F/O Elliott, although also knocked down, was uninjured and immediately went to the aid of the engineer officer. He gave him morphine, and at the time was fully aware that other bombs were in the aircraft only 8 yards away. A second bomb exploded, which wounded F/O Elliott, but he valiantly attempted to remove his injured comrade. Eventually F/O Elliott was assisted away by one of the soldiers, whilst the remaining men of the party removed the engineer officer, who was found to be dead. Throughout F/O Elliott displayed great determination and complete disregard for his own safety."

CASUALTIES IN THE MEDICAL SERVICES

Surg. Lieut.-Cmdr. DAVID SIMPSON, R.N., who was killed on active service last month, was educated at the University of Liverpool, where he graduated M.B., Ch.B. in 1933. Entering the Royal Navy as surg. lieut. in the following year he was promoted surg. lieut.-cmdr. in 1940. He leaves a widow, a member of Queen Alexandra's Royal Naval Nursing Service Reserve. He was a member of the B.M.A.

Surg. Lieut.-Cmdr. NORMAN ALFRED VERNON, R.N.V.R., is reported "missing, presumed killed" in action in November. He was the elder son of Mr. and Mrs. G. Vernon of East Sheen, and received his professional education at St. Thomas's Hospital, qualifying M.R.C.S., L.R.C.P. in 1931. After holding the post of resident medical officer at Worthing Hospital he settled in practice at Petts Wood in Kent and later at Chislehurst, where he was police surgeon. He entered the R.N.V.R. in 1935 and was promoted surg. lieut.-cmdr. in 1940. He leaves a widow.

War Subs. Capt. GEORGE NOEL BRAHAM, O.B.E., M.C., R.A.M.C., died at Baghdad on Nov. 16. Born at Bath on June 24, 1886, he was educated at Manchester and took the Scottish triple qualification in 1909 and the F.R.C.S.Ed. four years later. He held house posts at Ancoats Hospital and Monsall Isolation Hospital before moving to Southampton, where he became senior house-surgeon at the Royal South Hants and Southampton Hospital. In the war of 1914–18 he served in the R.A.M.C., attaining the rank of capt., and was awarded the M.C. for "conspicuous gallantry and devotion to duty. He with four others worked continuously under intense fire and succeeded in rescuing several wounded men from an advanced dressing station, which was untenable. He set a fine example of courage and determination throughout." After demobilization he took the post of medical officer at the Civil Hospital, Baghdad, and later became librarian to the Baghdad Medical Society. He was appointed O.B.E. in 1921 for services in Mesopotamia. In 1923 he took the post of Civil Surgeon, Baghdad, and also became senior surgeon to the Royal Hospital in that city and chief surgical specialist to the Iraqi Health Services. In addition he was deputy senior medical officer to the Anglo-Persian Oil Company, becoming the company's consulting surgeon when he moved to Masjid-i-Sulaiman in Persia in 1928. In 1924 the King of the Hedjaz conferred upon him the Order of El Nahdi (Third Class) in recognition of valuable services rendered. Mr. Braham returned to England in 1929 and settled in practice at Gosport, where he became honorary medical officer to the local memorial hospital. In 1936 he again went to Baghdad, this time to take up the positions of professor of surgery in the Royal Medical College and head of the surgical unit in the Royal Hospital. He was elected president of the Mesopotamia Branch of the B.M.A. in 1938. Early in 1941 he re-entered the R.A.M.C. as temp. lieut. and was in Lebanon when the Allies entered the country to remove the threat of Axis domination. His contributions to medical literature included four articles in this *Journal*.

Lieut.-Col. WILLIAM PEET HOGG, M.C., I.M.S., died at Poona on Nov. 5. He was born on Feb. 29, 1888, and was educated at the University of Aberdeen, where he graduated M.B., Ch.B. in 1912. He also took the D.T.M.&H. of the London Colleges in 1920. He entered the R.A.M.C. in Oct., 1914, becoming capt. a year later. In 1916 he was appointed capt. in the I.M.S. and became lieut.-col. in 1934. He served in the war of 1914-18, in Iraq 1917-19, was mentioned in dispatches, and was awarded the M.C. and bar. Most of his Indian service was spent in the Political Department, where he was surgeon to the Mewar Agency, Rajputana, and superintendent of hospitals and gaols in that agency and later chief medical officer and inspector-general of prisons, Baluchistan. He had been a member of the B.M.A. since 1923.

Lieut.-Col. SUKUMAR NAG, I.M.S., who is included as "died" in an India Office Casualty List published on Nov. 26, was born on Nov. 13, 1890, and was educated at the University of Calcutta, where he graduated M.B. in 1915. He also took the F.R.C.S.Ed. and the D.T.M.&H. of the English Royal Colleges in 1924. Entering the I.M.S. in 1920 he became lieut.-col. in 1935.

Wounded.—Capt. R. D. I. Beggs, R.A.M.C., War Subs. Capt. P. T. Savage, R.A.M.C.
Missing.—Capt. C. R. Robson, R.A.M.C.

Obituary

We regret to announce the sudden death of Dr. MARY JANET PIRRET of West Cromwell Road, S.W., who had been a member of the B.M.A. from the time of graduation. She was born in Glasgow on June 2, 1878, daughter of the Rev. David Pirret, and from Hillhead High School went to study medicine at Queen Margaret College, Glasgow. She graduated M.B., Ch.B. of Glasgow University in 1901, M.D. in 1906, and took the Cambridge D.P.H. in 1911. Dr. Pirret's first house appointment was at the Mater Infirmorum Hospital, Belfast; she was then in turn house-surgeon to the Clapham Maternity Hospital and to the Chorlton Dispensary, Manchester, and assistant M.O. at the Crichton Royal Institution, Dumfries. In 1911 she was appointed school medical officer for the county of Wigtown. She came to London to undertake part-time public health work under the L.C.C., and had been M.O. for maternity and child welfare for the borough of St. Pancras.

Dr. ANDREW STEWART TINDAL, who died on Nov. 22 at his home in Newlands Road, aged 75, was one of the best-known practitioners in the south side of Glasgow. He graduated M.B., C.M. of Glasgow University in 1889, proceeded M.D. in 1892, and was elected a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1905. After holding house appointments he joined his father in general practice, and later became senior partner of the firm. Dr. Tindal was at one time an assistant physician on the staff of the Victoria Infirmary, visiting anaesthetist to the Western Infirmary, the Royal Hospital for Sick Children, and the Glasgow Dental Hospital, and had been assistant physician to the Belvidere Fever Hospital. He joined the British Medical Association in 1892.

Dr. **FREDERICK WILLIAM STEWART**, who had been a member of the B.M.A. for nearly 40 years, died on Nov. 29 at Beckenham, where he had long practised. He was born at Ballymena, Co. Antrim, in April, 1878, and had a distinguished career as a medical student at Queen's College, Belfast, before the University received its Charter. He graduated B.A. of the old Royal University of Ireland in 1899, M.B., Ch.B., B.A.O. in 1902, and M.D. in 1906. After holding demonstratorships at Queen's he was for a few years in the mental hospital service in Kent, and then settled in practice at Beckenham, where he filled a number of public appointments. During the last war he served with a temporary commission in the R.A.M.C. as mental specialist to the 50th General Hospital, B.E.F. In 1907 he published jointly with Sir Frederick Mott a paper on chronic lead encephalitis.

Dr. **WALTER CARR** (writes Dr. Marion S. Linton), whose death was recently reported in this *Journal*, was a great teacher. As medical tutor to the women students at the Royal Free Hospital he taught us, with reiterated patience and great thoroughness, that in clinical medicine first things were first. We were a little afraid of him—his comments were caustic—but, at a time when medical women were still "on sufferance," he gave us of his best, and there must be many of my day and generation to share the feeling of deep gratitude, respect, and affection for all he did for us.

We regret to announce the death of Dr. **JOHN M. T. FINNEY**, sen., professor of clinical surgery at Johns Hopkins University and honorary Fellow of the Royal College of Surgeons of England, aged 78.

According to a Reuter message Prof. **ALBERT DUSTIN**, formerly Rector and Dean of the Faculty of Medicine at the University of Brussels, has died at the age of 58.

Medical Notes in Parliament

Venereal Disease

Mr. **BROWN** stated on Nov. 19 that the Ministry of Health had already received much help from the Press and the B.B.C. in the publicity campaign on venereal diseases. He was asking the responsible local authorities to make more extensive use of the services of the Central Council for Health Education, which included pamphlets, films, and lectures, and to advertise local facilities for treatment by the wider exhibition of posters and otherwise. The campaign's development and success depended largely on the extent to which the Press and other leaders of public opinion, including M.P.s, gave it active and continued support.

On Nov. 24 Mr. **BOOTHBY** asked the Minister of Health whether his attention had been drawn to the serious increase of venereal disease in this country and to the inadequate measures so far taken to combat it; and whether he would give immediate directions to the Departments concerned to neglect no step to encourage the use of every kind of preventive measure and to stop the spread of infection. Miss **HORSBRUGH** said the increase of venereal disease had been receiving the close attention of the Minister of Health in consultation with the Secretary of State for Scotland. A Defence Regulation for combating this problem had been laid before the House. Mr. **BOOTHBY** asked if Miss Horsbrugh was aware that this Defence Regulation was quite inadequate to combat this problem. Was it the intention of the Government to initiate a propaganda campaign throughout the country? Miss **HORSBRUGH** referred to a previous reply on Nov. 19, which stated what publicity and further educational remedies were to be undertaken. Dr. **SUMMERSKILL** asked if the Department had considered compulsory notification, which was a course advocated by many medical authorities. Miss **HORSBRUGH** said that the Department had considered many schemes, and the scheme now before the House in this regulation was that for which it was thought desirable to get sanction from the House. Mr. **BOOTHBY** said he would raise the matter on the motion for the adjournment at an early opportunity.

Diphtheria Immunization: Publicity

Sir **FRANCIS FREMANTLE** on Nov. 19 invited Mr. Brown to arrange for simple leaflets and advice on diphtheria immunization to be given by registrars of births and by maternity and child welfare officers to all parents attending their offices and clinics. Mr. **BROWN** replied that mothers attending welfare centres had for some time been urged to have their children immunized against diphtheria. He had recently asked that health visitors should be taken off less urgent routine duties to give similar advice in the homes. On the suggestion that registrars of births should be asked to advise parents in this sense, Mr. Brown commented that as most medical authorities regarded the first birthday as the best time to immunize a child he doubted whether this method would be effective.

Small-pox in Edinburgh

Mr. **JOHNSTON**, replying to Mr. Viant on Nov. 24, said that 24 confirmed cases of small-pox were associated with the Edinburgh outbreak, and one other case was in hospital under observation. Nineteen cases were or had recently been patients in a medical institution or an associated convalescent home, three were medical students attending at the institution, and two were contacts of the original cases. In the remaining case no connexion with the institution had so far been traced. Four of the patients had died.

Rehabilitation after Loss of Limbs

Miss **WARD** on Nov. 24 asked what were the arrangements for the rehabilitation of Service men and civilians who lost limbs as a result of war service or enemy action. Sir **WALTER WOMERSLEY** replied that after active stump treatment had been completed and the artificial limb supplied, the patient was taught how to make the best use of his artificial limb. During this period of instruction, which varied from case to case, the man or woman might be either an in-patient or an out-patient of one of the Ministry's hospitals. Often, particularly in the case of arm amputations, the individual preferred to be an out-patient and live at home. Where this did not interfere with his treatment, he did not feel justified in compelling him to become an in-patient. In addition, while the patient was under hospital treatment, officers of the Ministry of Labour discussed with him and the surgeon-in-charge the question of future employment. Where required, vocational training was given, and, in the case of arm amputations, his Department provided any appliances necessary for the trade or calling which the patient intended to pursue. Virtually all amputation cases of the present war, whose treatment had been completed, were either in full employment or would be on the completion of their vocational training.

The Minister also said that he was considering whether civilians who become totally disabled as a result of war service or enemy action should be eligible for a constant attendance allowance in cases of helplessness in addition to the war pension.

Accidents and Sickness in Miners

Major **LLOYD GEORGE**, replying on Nov. 24 to Mr. Gallacher, who asked why no report had been issued by the Chief Inspector of Mines in view of the high accident and sickness rate among miners and the effect this was having on production, said that a general decision had been taken to suspend for the time being the issue of departmental reports not immediately essential to the war effort. Information and statistics relating to accidents in mines had, however, been given from time to time to the House and elsewhere. In addition, in each year since the war, the divisional inspectors of mines had circulated to collieries in their respective divisions details of accidents during the previous year, together with suggested means for effecting improvement. The figures for the present year were considerably lower than those for the corresponding period of 1941.

In reply to Mr. J. Griffiths the Minister said that 1,827 persons in the South Wales coal mines were certified in 1938 by examining surgeons in respect of scheduled industrial diseases. The figures of persons injured (disabled for more than three days) by accidents at mines under the Coal Mines Act in the South Wales and Monmouth coal fields during 1938 were:—Fractures: thigh (femur), 33; leg (tibia or fibula), 267; arm and forearm, 85; spine, 30; pelvis, 27. Injuries and/or other fractures: head, 1,789; arm, 1,959; hand, 8,302; thigh or leg, 4,060; foot, 3,272; eye, 703; back, 2,165; other parts of body, 2,146. Total, 24,838.

Doctors for Appeal Tribunals

Sir **WALTER WOMERSLEY** on Nov. 26 assured Sir Francis Fremantle that the Central Medical War Committee was consulted by the Medical Personnel (Priority) Committee when the latter body was asked to consider the availability of medical men for Pensions Appeal Tribunals. He himself had consulted the Medical Personnel (Priority) Committee on Oct. 24, 1941. The Secretary of the B.M.A. was formally consulted in the matter, in his capacity as Secretary of the Central Medical War Committee, in regard to the medical requirements for the staffing of Pensions Appeal Tribunals.

Sir **Francis Fremantle** reported that the British Medical Association said it had received no formal request for the provision of medical men. Sir **Walter** said the Ministry of Pensions was always applying and the answer had been that the personnel was not available. He kept in touch with the Service Departments, and in the case of every medical man who was discharged from them he considered whether he would be suitable. He had advertised in the medical press. The replies showed the difficult position in which he was. He was willing to receive applications from anyone or to consult anyone.

Tuberculosis Mortality

Mr. **Brown** stated on Nov. 26 that the numbers of deaths from tuberculosis (all forms) in London and in the remainder of England and Wales during certain years were as follows—the figures being inclusive of deaths of non-civilians before the outbreak of war and exclusive thereafter:

	London	Remainder
1938	2,861	22,634
1939	2,875	22,722
1940	3,005	24,866
1941	2,895	25,378

The corresponding death rates per 1,000,000 population in 1938 and 1939 were 704 and 760 in London and 609 and 606 in the remainder of England and Wales. For 1940 and 1941 comparable rates were not available on account of the heavy evacuation of London residents which attended the outbreak of war. Considerable numbers of London residents who were then in institutions outside London and died there during 1940 and 1941 would continue to count as London deaths, while a large proportion of the population had been transferred and credited to areas outside London. Rates obtained by relating such deaths and populations would be entirely misleading.

Diphtheria Immunization.—On Nov. 10 Mr. **Alfred Edwards** asked the Minister of Health whether he was aware that a pamphlet recently circulated to all members of the House of Commons charges the Ministry with misrepresentation and evasiveness in its claims for diphtheria immunization, and if he would appoint an impartial committee to examine those allegations. Mr. **Ernest Brown** said he had seen the pamphlet. The case for immunization against diphtheria was fully supported by medical opinion and practical experience in other countries, and as advocacy of immunization had been the Government's considered policy for some time past he did not think there would be any advantage in appointing a committee.

Pasteurization of Milk.—On Nov. 17 Mr. **Ernest Brown** informed Col. Carver that the Minister of Food, with whom he was in close consultation on the subject, was taking all practicable steps to extend pasteurization of milk. They were also consulting on the best allocation among children of the supplies of dried milk available.

Lung Disease in Coal Miners.—On Nov. 17 Sir **William Jenkins** asked the Home Secretary what action he had taken to implement the report of the Medical Research Council into lung diseases among coal miners in South Wales; if he was aware that the disease was on the increase; and if he would take steps forthwith, as the matter was vital for the mining industry. Mr. **Herbert Morrison** said that the Minister of Fuel and Power and he were fully alive to the urgency of this matter, and were anxious to deal with it at the earliest date possible. Consultations with a view to securing agreement had been in progress with the representative bodies concerned, but were not yet complete.

Surgical Belts as Rationed Clothing.—On Nov. 17 Sir **William Davidson** asked the President of the Board of Trade whether he was aware that surgical abdominal belts had recently been included in the clothes rationing scheme, thereby involving hardship to people who were obliged to wear such appliances; and whether he would consider the exclusion of surgical belts from the clothes rationing scheme on the production of a medical certificate. Mr. **Dalton** said that most kinds of surgical abdominal belts had been included in the clothes rationing scheme from the beginning But, in view of the serious shortage of rubber, steel, and other materials used in making such belts, we had recently had to include all types, with the exception of maternity belts. He was prepared, however, to consider sympathetically any individual cases where the surrender of coupons caused real hardship.

Rushcliffe Committee on Nurses' Salaries—Mr. **Ernest Brown** stated on Nov. 19 that the last nominations for the Rushcliffe Committee on nurses' salaries were received early in November, 1941 There had been approximately 8 meetings of the full committee, 15 meetings of the employers' panel only, and 12 of the nurses' panel only Many of the meetings extended over more than one day. Mr. Brown added that he awaited replies from some of the organizations which he had consulted on the future distribution of nurses.

Housing—During the debate on the Address Mr. **Ernest Brown** said 100,000 families continued to live in houses which, three years ago, were legally condemned as unfit. The Government had to concentrate on first-aid repairs to houses damaged by enemy action, which numbered 2.750,000, apart from damage to glass. On the whole it had been found possible to deal with movements of population, but there was dangerous overcrowding in some districts. He and his colleagues were examining the possibility of making available labour and material for the extended repair of empty houses. He hoped that before the war ended they could start a modest problem of building new houses.

Vaccine Lymph.—Mr. **Ernest Brown** said on Nov. 24 that he had recently made an Order modifying the tests for the purity of vaccine lymph. The new Order allowed an increase in the total number of living bacteria and other visible micro-organisms, but it provided safeguards against harmful micro-organisms at least equal to those previously prescribed.

Pre-natal Child Allowances.—Sir **John Anderson** announced on Nov. 26 variations in the pay and allowances of the Forces. He said the Government had decided that children's allowances would be payable to the wives of sailors, soldiers, and airmen at the appropriate rate by the Service authorities from a date three months before the expected date of birth. Claims would have to be supported by medical certificates. Arrangements were being made to put this change into force from Dec. 1.

Fees for Vaccinations in Glasgow—On Dec. 1 Mr. **Johnston** informed Mr. Alfred Edwards that the amount paid by the Glasgow Corporation to doctors and medical students for vaccinations performed at the special vaccination stations opened in Glasgow on July 1 was £3,316. The doctors and medical students were paid by fees on a sessional basis, doctors receiving a fee of 31s. 6d. and medical students 10s. 6d. per session of 2½ hours.

Regulation 33B.—On Dec. 1 Mr. **Ernest Brown**, replying to Mr Pethick-Lawrence, said that under paragraph (3) of Regulation 33B a special medical practitioner could give a direction to a contact to attend a particular hospital. It was, however, open to a contact, on giving due notice, to transfer to another special practitioner at any time before the course of treatment was completed.

Notes in Brief

Lord Addison has been re-elected leader of the Labour Peers for the coming session in the House of Lords.

Medical News

The British Medical Students Association has arranged a conference at B.M.A. House, London, from Dec. 18 to 20—open to all medical students. Among the speakers will be the Minister of Health, Sir Charles Wilson, P.R.C.P., Prof. J. A. Ryle, and Dr. Charles Hill. There will be a dance on the evening of Saturday, Dec. 19, open to all members of the medical and nursing professions. Tickets (congress 1s. 6d., dance 3s. 6d.) from the secretary of the B.M.S.A., B.M.A. House, Tavistock Square, W.C.1.

The first annual general meeting of the Anglo-Soviet Medical Council will be held on Thursday, Dec. 17, at 4.30 p.m., at the Royal Society of Medicine, 1, Wimpole Street, W.

Prof. J. W. Munro, D.Sc., will give a discourse on "The Place of Research in the Control of Injurious Insects" at the Royal Institution, 21, Albemarle Street, W., on Friday, Dec 18, at 5 p.m.

The American Gastroenterological Association will publish on Jan. 1, 1943, the first number of a new monthly journal to be called *Gastroenterology*. The subscription price will be $6.00 a year. The editorial board invites clinical and investigative contributions which are of interest to the general practitioner as well as the specialist, and which deal with the diseases of digestion and nutrition, including their physiological, biochemical, pathological, parasitological, radiological, and surgical aspects. Manuscripts should be sent to Dr. A. C. Ivy, *Gastroenterology*, 303, East Chicago Avenue, Chicago, Illinois. Letters regarding subscriptions and business matters should be addressed to Mr. R. S. Gill, Williams and Wilkins Company, Baltimore, Maryland.

As only a small percentage of children are receiving the cod-liver oil and fruit juices that are available at food offices and welfare centres a publicity campaign to impress upon mothers the importance to children of these vitamin supplements is to be started by the Ministry of Health and Ministry of Food. Cod-liver oil will shortly be available to expectant mothers and also concentrated orange juice during the last six months of pregnancy.

Prof. F. E. Tylecote, M.D., F.R.C.P., has been elected chairman of the Manchester Public Health Committee He was also recently elected President of the Royal Manchester Institution (founded 1823).

The Swedish Medical Society of Stockholm has presented to Dr. Alfred Vogt, professor of ophthalmology at Zurich, the Gullstrand Medal, which is awarded every ten years to the most eminent ophthalmologists.

Prof. H. Mooser, director of the Institute of Hygiene of Zurich University, has been created an honorary member of the Royal Academy of Medicine of Barcelona for his researches on typhus fever recently made in Spain.

The Minister of Health (Circular 2707) has decided to extend to March 31, 1943, the period during which local authorities may submit arrangements made by them under the Cancer Act, 1939.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on Nov. 21 the following degrees were conferred:

D M.—H. W. Davies, T W Lloyd (in absence).
B M., B.Ch.—C. O. Carter

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the College, held on Dec. 3, Dr. Charles McNeil was re-elected President and Dr. L. H. F. Thatcher, Dr. A. Murray Drennan, Dr. A. Fergus Hewat, Dr. D. M. Lyon, Dr. A. Graham Ritchie, and Dr. A. Rae Gilchrist were elected to form the Council of the College for the ensuing year. Dr. A. Fergus Hewat was nominated Vice-President.

FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Fellowship Board at the examination for the Fellowship of the Faculty: *Radiodiagnosis.*—G. Friedlaender, M.D., D.M.R. *Radiotherapy.*—I. G. Williams, M.B., F.R.C.S., D.M.R.E.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there was a general rise in the notifications of infectious diseases. There were 1,085 more cases of measles, 91 of whooping-cough, 89 of acute pneumonia, 61 of diphtheria, 34 of scarlet fever, 18 of cerebrospinal fever. The incidence of dysentery fell by 31, and of typhoid by 7.

The rise in measles was fairly general throughout the country, but highest in the North. The counties reporting the largest increases were Derbyshire 229, Cheshire 107, London 118, Durham 100, Leicestershire 77, Lancashire 71.

The incidence of scarlet fever tended to fall in the South, and the only rises of note were those of Lancashire, Yorks West Riding, and Staffordshire, with 51, 47, and 42 more cases than last week.

The notifications of diphtheria were the largest since the beginning of January. During the present year about 40% of the cases have been reported from the three counties of Lancashire, Yorks West Riding, and Durham; during the week reviewed 188, 128, and 107 notifications came from these counties.

The largest increases in whooping-cough were those of Lancashire 54, and Yorks West Riding 42.

The incidence of dysentery has fallen by 60% during the past four weeks, but is still twice as high as during the middle of August. Lancashire, with a rise from 9 to 24 cases, distributed through eight administrative areas, heads the list: 11 further cases were reported from the existing outbreaks in each of the counties of Yorks West Riding and Yorks North Riding. Ten boroughs contributed the 18 cases notified in London.

In *Scotland* there was a mounting incidence of most infectious diseases, chiefly of acute primary pneumonia 61 cases, of diphtheria 49, and of scarlet fever 38. The largest local variation was the increase in the cases of pneumonia in Glasgow from 91 to 137.

In *Eire* poliomyelitis for the fourth consecutive week showed a slight rise; there were 25 cases from sixteen districts.

In *Northern Ireland* about half of the cases of infectious diseases were reported from Belfast, with the exception of whooping-cough, of which 24 of the 25 cases were recorded in Lisnaskea rural district.

Small-pox

Two further cases of small-pox were confirmed in Edinburgh on Nov. 30. The number of persons vaccinated in this city now exceeds 165,000. Another death has occurred from the recent outbreak at Methilhill; this brings the total of small-pox deaths in Fife to 8.

A case of small-pox has been reported from the London borough of Hampstead.

Returns for the Week Ending November 28

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,970, whooping-cough 1,263, diphtheria 861, measles 10,649, acute pneumonia 766, cerebrospinal fever 77, dysentery 163, paratyphoid 4, typhoid 13, small-pox 1.

No 46

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for. (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	68	—	21	3	3	104	5	28	—	6
Deaths		—	4				1	1		
Diphtheria	1,001	49	262	86	29	1,043	34	262	58	37
Deaths	26	3	3	1	—	43	1	6	1	—
Dysentery	117	18	67	—	—	204	12	45	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	5	—	1	—	—
Deaths		1					—	—		
Erysipelas		—	69	17	2		—	60	9	6
Deaths		—					1	—		
Infective enteritis or diarrhoea under 2 years				62						
Deaths	57	10	12	14	4	37	3	19	19	7
Measles	8,816	362	428	38	40	671	50	19	61	4
Deaths	7	1	1	1	1	2	—	—	—	—
Ophthalmia neonatorum	83	4	19	—	1	78	1	11	2	—
Deaths										
Paratyphoid fever	5	2	1	—		30	5	—	—	
Deaths	—	—	—	—	—	—	—	—	—	
Pneumonia, influenzal*	645	36	7	—	12	997	44	14	4	5
Deaths (from influenza)	21	1	1	—	—	38		5	2	—
Pneumonia, primary		—	226	19			33	226	17	
Deaths				13					9	11
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	15	1	1	25	2	21	—	1	6	—
Deaths		—					—	—		
Puerperal fever	—	3	17	2	—	1	1	15	4	—
Deaths		—					—			
Puerperal pyrexia	137	4	13		—	135	4	10		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,914	166	430	75	66	1,352	36	247	59	44
Deaths	2	—	—	—	1	—	—	—	2	—
Small-pox	—	—	3		—	—	—	—		—
Deaths				—	—			—	—	—
Typhoid fever†	6	—	4	11	4	9	—	1	7	2
Deaths		—	—	—	—		—			
Typhus fever	—	—	—	*8	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough	1,246	92	33	79	25	2,066	177	88	57	5
Deaths	9	1	—	2	—	8	2	3	—	—
Deaths (0–1 year)	342	42	65	43	14	338	23	80	40	23
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,439	710	589	231	124	4,473	618	647	192	137
Annual death rate (per 1,000 persons living)			13 3	15·4	‡			14 1	12·7	‡
Live births	5,742	670	705	369	253	4,937	410	770	306	215
Annual rate per 1,000 persons living			14·6	24·6	‡			15 7	20 3	‡
Stillbirths	188	21	27			195	22	34		
Rate per 1,000 total births (including stillborn)			37					42		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

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Telephone No.—B.M.A. and *B M J.*: EUSTON 2111

Telegraphic Addresses.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Sulphonamides for Leukaemia?

Dr J H. Douglas Webster (London, W.1) writes: In reply to Dr. J. Harton Rayner (Dec. 5, p. 684) a new untreated case of myeloid leukaemia was treated with sulphapyridine (M & B 693) about three years ago (in collaboration with Dr. C. E. Lakin and Dr. Lionel Whitby); two attempts were made, but each had to be abandoned owing to general toxic symptoms; the white count dropped, but rose immediately the drug was stopped. A remission followed *x*-ray treatment. The trial did not encourage a repetition in other cases. (A note was published on the case in my *Periodicity of Cancer, Leukaemia and Allied Tumours,* 1940, p. 144.)

Death by Lightning

Dr. Stefan Jellinek (Oxford) writes: Dr. H. M. Stanley Turner (Oct. 24, p. 503) rightly stresses the "potential importance" of the "electrical traces," a few examples of which I was able to demonstrate in the course of an address to the Royal Society of Edinburgh in 1936. These are alterations in the tissues characterized by certain geometrical patterns. Their decisive importance has already been proved in a number of legal actions, such as the case of a young girl of 18 in which homicide or an attempt at suicide was suspected or that of a country house destroyed by ? lightning or arson. But apart from their interest to the medical jurist, electrical traces are of importance in a general legal sense A Dutch plane crashed near Baghdad in 1934. Passengers and the crew were killed and drunkenness of the pilot was alleged as a cause of the disaster. A little while later word went round that the plane had been struck by lightning. I was approached by the Koninklijke Luchtvaart Maatsch. voor Nederland en Kolonien with a view to establishing the truth of these rumours. The debris of the plane was examined according to my instructions. "Electrical traces" were in fact found and their identity was proved with traces present on objects kept in my electropathological museum in Vienna and known to have been damaged by lightning. Thus the truth was established and the honour of the dead pilot restored. Once found, no doubt concerning the significance of such "traces" can be entertained, since they can be reproduced experimentally. In 1937 I published my findings, including photomicrographs of geometrical deformities in cell nuclei (larva of *Salamandra maculosa*), at the Académie des Sciences in Paris (*C. r. Acad. Sci.*, Paris, 1937, p. 1962). Finally, "electrical traces" are of clinical and therapeutic significance; they may be observed after electrocautery by the surgeon and following the application of ultra-short waves by the physician. Dr. Alfred V. Dill (Oct. 10, p. 426) very rightly draws attention to anti-lightning safety devices in aeroplanes. It is possible that another examination of the bomber concerned would result in a different interpretation. The "traces" are not always visible with the naked eye. Sometimes microscopical investigation is necessary and able to reveal startling pictures.

Income Tax

Practice in Commission

"Aldershot" entered the R A.M.C. in July, 1942; continuing receipts from practice are small, including part fees from a colleague. Shall he claim (*a*) that the practice shall be regarded as ceased or (*b*) the relief to diminished earned incomes?

*** Admittedly the "civil" receipts are likely to be small, but "Aldershot" might find it difficult to establish that his former practice had ceased, and the alternative relief will apparently give him substantially the same advantage. Further, it is likely to have the additional attraction that it will not prevent the continuous operation of the previous year's basis in the future, an obvious advantage in the first year of "Aldershot's" return to full civil work.

LETTERS, NOTES, ETC.

Working for a Salary in the S.M.S.

Dr. Reginald Lawrence (Wakefield) writes: I must controvert the implication of Dr. Una Westell's letter (Nov. 7, p. 561) that a salaried worker inevitably deteriorates. School medical inspection, especially if done on five days a week, is the most deadening occupation in the practice of medicine, yet some members of the service never fail to produce some original work. Few people outside those immediately interested read the annual reports of the Chief Medical Officer to the Board of Education; if they did they would be surprised to see the list of original inquiries undertaken and carried out by members of this salaried service. In contrast to this intellectual activity I can point to voluntary hospitals of which the staff have not made an original contribution to medical literature for twenty years. The School Medical Service, in spite of working for a salary, has caused two quiet but real revolutions. (1) The observations of its members, as shown in the massed statistics of the Chief Medical Officer, have shown that operations for the removal of tonsils and adenoids which were formerly undertaken cheerfully (and profitably) must in many cases have been unnecessary. This alteration in medical opinion is, I believe, due to the irrefutable evidence that in many cases these overgrowths of lymphoid tissue will disappear without leaving any evil legacy. (2) The School Medical Service has brought the subject of nutrition to its proper place—the forefront of medical endeavour—and I have no hesitation in saying that members of this salaried service know more about the clinical aspect of subnormal nutrition than any other group of medical practitioners.

Unreliable Vaginal Pessaries

Dr. Lilias M. Blackett Jeffries (Hove, Sussex) writes: Within the last few weeks there has been a marked increase of patients who have started an undesired pregnancy in spite of using quinine pessaries. I am told that these are widely advertised, that "the Army" has complete confidence in them, and, finally, that "the medical officer" recommended them as reliable. It is surely agreed among the profession that safety can only be assured by the use of both an occlusive pessary and a spermicidal paste or tablet together. I write in the hope that readers of the *Journal* will use their influence to prevent the distress and danger which are following the public's misplaced confidence in medicated vaginal pessaries.

Corrigendum

By a printer's error the word "no" was omitted between the words "given" and "time" in the third paragraph of Dr. K. R Ogilvie's letter on the treatment of gonorrhoea (Nov. 28, p. 648).

MEDICINE 100 YEARS AGO

Extract from a letter by Dr. John Ashburner, of 55, Wimpole Street, published under the heading "Physiology of the Nervous System" in the *Provincial Medical Journal* of Dec. 10, 1842:

"Gentlemen,—In addressing to you the following brief remarks, I make an effort to stem the torrent of narrow and illiberal feeling which appears to pervade the medical profession. In your notice respecting the proceedings of the Royal Medical and Chirurgical Society, you 'regret extremely that the society should have lent itself to a proceeding so unworthy of its dignity and reputation' And what is that proceeding? The reading of a paper presented to the attention of a society by two gentlemen, containing an account of a case of 'amputation of the thigh, *alleged* to have been performed during Mesmeric sleep.' Are medical men to forget that they belong to a *royal* association? Are the courtesies of life between gentlemen and gentlemen to be lost sight of, when folks step within the limits of a medical circle? Are surgeons who are esquires, and barristers who hold an equal rank, to be flouted with the insinuation of falsehood, because they dare to relate facts which militate against the narrow prejudices of would-be philosophers? Do you know, Gentlemen, what impression the expressions you have used make upon impartial men that belong not to our profession?

"I happen to be no 'advocate of the delusion,' as you please to term it, of Mesmerism. I ought with shame to say that I have derided, perhaps with much want of courtesy, the accounts I have heard of the wonders of animal magnetism. I have seen enough to know that I was wrong—that there are connected with the subject facts which demand inquiry; and inquiry they must have, whether you like it or not I tell you, Gentlemen, and all who oppose the investigation of truth, that time marches past you, and that the world will not wait until it suits the high mightiness of doctor bodies to lay aside their paltry feelings. Men of small minds will be pitied, and men of moral courage will not shrink from inquiry because the objects of their pity may presume to bow-wow at them."

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RENAL FAILURE AFTER UTERO-PLACENTAL DAMAGE

BY

JAMES YOUNG, D.S.O., M.D., F.R.C.S., F.R.C.O.G.

Professor of Obstetrics and Gynaecology, University of London

(From the British Postgraduate Medical School, London)

There are two conditions in obstetrics in which massive damage affecting the placenta, uterine muscle, or other pelvic tissues may be followed by renal insufficiency and azotaemia—accidental (retroplacental) haemorrhage (Young, 1942) and the trauma of labour (Young and McMichael, 1941). They show the same clinical sequence. (1) There is the initial tissue damage. (2) In severe cases there is "shock," which may be immediately fatal. In milder cases there may be an absence of shock. In cases which survive the shock there are (3) anuria or oliguria, with a urine containing hyaline and granular casts and leucocytes, and (4) a rising blood urea which reaches its maximum usually between the 5th and 9th days and which is followed by death or by an increasing diuresis and eventual recovery. These two clinical states resemble the "crush syndrome" (Bywaters and Beall, 1941). In the latter condition the chief histological changes are found in the kidney; these have recently been fully described by Bywaters and Dible (1942). They consist of a degenerative and necrotic lesion specially affecting the ascending limb of Henle and the second convoluted tubule, usually with the presence of pigmented (myohaemoglobin) casts. We have recently drawn attention to the similarity between the shock-azotaemic state following the trauma of difficult labour and the crush syndrome (Young and McMichael, 1941). Further evidence, to be published later, suggests that this state is by no means a rare sequel of difficult obstetrics.

The other obstetrical condition in which shock and renal failure are relatively frequent—namely, concealed accidental (retroplacental) haemorrhage—is the especial concern of the present communication. The evidence to be adduced again indicates that in the aetiology of the renal failure the same two factors emerge for consideration—the liberation into the general circulation of blood pigment which is excreted by the kidneys, and tubular damage. The clinical syndrome in concealed haemorrhage is confused by the eclamptic phenomenon (pre-eclampsia and eclampsia) which invariably accompanies it, generally in the form of severe albuminuria, hypertension, oedema, blurred vision, etc. This association is no mere haphazard one. For it has long been known that haemoglobinaemia and haemoglobinuria not infrequently occur in eclampsia associated sometimes with renal failure and with a renal lesion exhibiting blood-pigment casts and tubular degeneration. The accidental-haemorrhage syndrome is to be regarded as a variant of the pre-eclamptic and eclamptic picture, with the renal failure element thrust into the foreground.

The purpose of the following communication is to discover how far these similarities between the crush and obstetrical syndromes rest upon any basic identity in regard to genesis. In this connexion the massive ischaemic lesion in the placenta and uterine wall found in the obstetrical state calls for special consideration.

The manner in which tissue trauma leads to renal failure is uncertain. It has been suggested that the blood pigment released from the autolysed muscle may act by causing damage to the tubular epithelium or blockage of the tubular lumina. Alternatively, it is possible that the tubular degeneration is determined by the toxic action of some other material derived from the autolysis of the damaged muscle and that the blood pigment merely represents the myohaemoglobin liberated at the same time and precipitated in the tubules during excretion. There is also to be considered the possible influence of the shock phenomena (circulatory collapse, vasoconstriction) acting alone or in combination with the other factors.

The Accidental-haemorrhage Syndrome

In some cases the patient is known to have been previously suffering from pregnancy toxaemia, and the accidental haemorrhage then forms the critical and terminal phase. In other cases the pregnancy is normal up to the acute onset. This consists of abdominal discomfort and pain, often acute. Faintness and vomiting are common, with pallor, shivering, sweating, and rapidity (sometimes slowing) of the pulse. There may be vaginal bleeding. The blood pressure may be lowered to shock levels, but this is not usual and it is apt to be followed by early death. The urine is completely suppressed or is greatly reduced in amount. It is dark red or plum-coloured and contains a large amount of albumin with hyaline and granular casts and leucocytes. Pigment casts are sometimes present. In the first sample the urine urea may be in high concentration; thereafter it quickly falls to low levels. Within two days the blood urea is raised, and may reach a high level between the 5th and 9th days. The patient succumbs about the 7th to 10th day or, alternatively, there is a free diuresis, a rapid drop in the blood urea, and eventual recovery, which may apparently be complete. This is the picture in the severe type; but all grades of severity are found, and in some cases eclamptic convulsions are present. The lesion consists of marked distension of the decidual vessels with thrombosis and free extravasation in the retroplacental area. In some instances there is an accompanying widespread haemorrhagic lesion in the uterine wall ("utero-placental apoplexy"). The area of placenta thus deprived of its blood supply dies and, in minor cases in which continuing pregnancy is possible, undergoes infarction. In severe cases the massive placental involvement results in early foetal death and delivery. But the maternal circulation may continue and the foetus may survive for hours even after as much as half of the placenta is so thrown out of the blood circuit and is undergoing autolysis. A partial circulation may even persist for some time in this affected segment. The cause of this utero-placental lesion is unknown. It is determined by a critical interference with the maternal circulation by those factors (probably generally hormonal in nature) which are commonly responsible for abortion in the early months of pregnancy. In the present instance, however, they are operating in the later months, when it is alone possible for a partial circulation to persist despite the occurrence of massive autolysis in the adjacent segment of the placenta (Young, 1914, 1942).

The Kidney Lesion.—Bratton (1941) in 6 fatal cases of antepartum bleeding with anuria or oliguria found a renal lesion resembling that seen in the crush syndrome. In none had blood transfusion been given. With the collaboration of Dr. Bratton and the medical superintendents of the hospitals concerned we have had the opportunity of studying the records of five of the cases. In three with anuria and the full renal picture the clinical evidence suggested that the patients had suffered from accidental haemorrhage between the 26th and 28th weeks of pregnancy. In one patient, as Bratton indicates in his paper, there was a haemorrhagic and necrotic lesion in the liver. In one of the remaining two cases the patient suffered from concealed accidental haemorrhage and eclampsia at the 30th week of pregnancy.

Through the kindness of Prof. R. W. Johnstone we have obtained for personal study the clinical notes and pathological material from 4 fatal cases of accidental haemorrhage. In none had blood transfusion been given. This material was submitted to Prof. J. H. Dible, who has kindly furnished the description of the microscopical appearances of the organs and the comments included in the following statement.

Case 1

Para 0+1 abortion; aged 28. March 17, 1940, 6 a.m.: Sudden onset of dizziness and dimness of vision. 8 a.m.: Severe abdominal pain and vaginal bleeding; pale, pinched, cold, and clammy; pulse 70; B.P. 130/80; urine—albumin + + +; uterus tense and tender; foetal heart not heard. 1.10 p.m.: Spontaneous delivery of stillborn child weighing 4 lb. 2 oz. (36 weeks' maturity), followed by large amount of dark-red blood clot and torn-up and infarcted placenta. 1.30 p.m.: Pulse soft and irregular, but still slow; glucose-saline given intravenously, with strychnine, adrenaline, and nikethamide (coramine). 2.55 p.m. (1st day): Died. The interval between the onset of the acute symptoms and death was thus 8 hours 55 minutes.

Kidneys.—Slightly softer than usual, with on section a pale-yellow surface in which the cortex and medulla were fairly well differentiated. In the subcapsular region there were a few small haemorrhages. *Microscopical.*—"The tufts are generally rather bloodless. The capsular spaces are filled with protein material. There is marked hyaline droplet degeneration of the cells of the first convoluted tubules. The cells are swollen and desquamating; their brush borders are lost and their lumina are full of debris. This condition is continued into the descending limb of Henle. At one site in the intermediate zone a focus of necrosis with hyaline casts in the ascending limb is found. The second convoluted tubules do not show the same severe cellular change. Their cells are a little pyknotic and they tend to contain casts of a condensed and hyaline type. No pigment or necrosis is found in these tubules. A considerable number of collecting tubules show long dense hyaline casts, but these are not pigmented. *Comment.*—The lesion is an acute 'toxic' tubular nephritis. It is similar to the early stage of the crush syndrome in this respect, but differs from this in that the damage to the first convoluted tubule is more pronounced. *Other organs.*—The lungs are congested, oedematous, and emphysematous, but the liver, spleen, and heart show no noteworthy changes."

Case 2

Para 7; aged 30. Feb. 4, 1937, 11 a.m.: Slipped and fell heavily on stone stairs at 28th week of pregnancy. In the evening she had fairly severe vaginal bleeding and fainted. Feb. 5, 12.15 a.m.: Admitted to hospital; drowsiness; marked oedema of hands and feet; B.P. 135/80; a "few ounces" of dark-brown urine withdrawn by catheter—albumin + + +; membranes ruptured artificially. 2 p.m.: No urine passed; catheter withdrew 60 c.cm. of "dark-brown viscid urine"; R.B.C.s and granular and hyaline casts present; blood urea 54 mg. per 100 c.cm. 7.30 p.m.: 10 drops of "oily black urine" withdrawn; under a short gas–oxygen–ether anaesthesia bipolar version was performed and 1/2-lb. weight attached to ankle of child. Feb. 6, 1 a.m.: Delivered; child 3 lb., stillborn; large amount of dark retroplacental clot. During the next 7 days patient had marked oliguria despite a large intake of glucose-saline solution. The blood urea was not recorded, but on two occasions (8th and 10th days) the urine urea was 300 mg. per 100 c.cm. The minimum blood pressure until the terminal stages was 130/70. Feb. 13 (10th day), 10.25 p.m.: Died.

Kidneys.—Moderately enlarged and fairly firm. The surface in each was diffusely congested and the cortex and medulla were fairly well differentiated. The cortex showed some increase in depth. Each capsule stripped readily, exposing a smooth surface, over which multiple petechiae were scattered. *Microscopical.*—"The glomeruli do not show any noteworthy changes. The tubules are generally dilated. The first convoluted tubules contain debris, desquamated cells, and globular masses; they are, however, fairly well preserved and there is no widespread cellular necrosis. Many of the second convoluted tubules show marked lesions. Their interior contains casts, which are made up of granular material that is lightly pigmented. The presence of this pigmented material is associated with a pronounced cellular reaction—desquamation, degeneration, and regeneration of the epithelium and some polymorph infiltration. Similar changes are seen in the ascending limb of Henle. In the region of the second convoluted tubules and in the boundary zone necrotic tubules and foci of cellular reaction (similar to those described by Bywaters and Dible) can be seen. In the medulla there are oedema and foci of lymphocytic and plasma-cell infiltration. The collecting tubules contain pigmented casts and pigmented necrotic cells and show epithelial proliferation. *Comment.*—The picture is practically indistinguishable from that found in the kidney in cases of the crush syndrome. *Other organs.*—The liver and heart do not show any noteworthy changes."

Case 3

Para 0; aged 24. June 1, 1939: Admitted because of oedema of ankles at term; B.P. 130/100. Remained satisfactory. On June 17, 5 a.m., artificial rupture of membranes. 6 a.m.: Labour started. 2 p.m.: Vomiting. 11 p.m.: Sudden onset of severe abdominal pain with collapse and sweating; foetal heart ceased and concealed accidental haemorrhage diagnosed; 1/4 gr. morphine given, and intravenous drip saline. 12 midnight: Delivered by easy low forceps after craniotomy to diminish size of head. Placenta expelled one hour later: no blood loss. Examination of the placenta showed a portion which seemed to have separated prematurely. There was marked oliguria (the maximum daily output being 140 c.cm. on 4th day), and the blood urea on 7th day was 164 mg. per 100 c.cm. Treatment: glucose-saline, 10% glucose, sodium sulphate, 20% glucose. The lochia became offensive. Coma developed and on June 25 (9th day), at 10.10 a.m., the patient died.

Kidneys.—Both swollen and moderately firm. Abnormally broad pale cortex and reddish-brown medulla, both areas being oedematous. Each capsule stripped readily, exposing a smooth pale surface. *Microscopical.*—"The glomeruli tend to be bloodless but show no anatomical change. The first convoluted tubules contain a good deal of debris, are generally dilated, and their epithelium is flattened; the cells are not well preserved and there is some widespread necrosis. The second convoluted tubules are pyknotic. Many of them contain lightly pigmented granular cast material. In connexion with this there is epithelial desquamation and necrosis, some of the necrosed epithelial cells absorbing pigment. Most of the nephrons are affected. Changes in Henle's tubules are minimal. The medulla shows lymphocytic and plasma-cell infiltration. A majority of the larger collecting tubules contain pigmented casts, reproducing the picture of 'blockage' seen after intravascular haemolysis—as, for example, in fatal incompatible blood transfusion. *Comment.*—This picture is essentially similar to that found in the kidney in the fatal anuria of the crush syndrome. *Other organs.*—Liver: Typical patchy eclamptic necrosis. Lung: Oedema, emphysema, acute bronchitis, and early bronchopneumonia. Pituitary: Acute necrosis of the anterior lobe. The heart and spleen show no noteworthy changes."

In the fourth case the appearances were those of bilateral cortical necrosis, the rare lesion which has long been associated with cases of accidental haemorrhage resulting in death with uraemic symptoms. The difference in the causal factors responsible for two such striking variants in the renal lesion is a matter for further study. Meanwhile it is interesting and perhaps relevant that cortical necrosis has been described in a case of traumatic anuria (McFarlane, 1941).

Discussion of the Aetiology of the Renal Failure

The following factors, operating singly or in combination, call for consideration in this connexion: (1) shock, (2) haemolysis and tubular blockage, and (3) a toxic material or toxic materials of tissue origin. For this study we have 5 personal cases associated with renal impairment and a significant rise in blood urea out of a total consecutive series of 79 cases of accidental haemorrhage. All 5 patients recovered.

Shock

This may be severe, and a considerable proportion of the mortality from accidental haemorrhage is due to this cause. That the collapse of haemorrhage does not in the present series explain the kidney lesion is suggested by the fact that, in 59 consecutive cases of obstetrical haemorrhage (post partum, from placenta praevia, accidental haemorrhage) so grave as to require blood transfusion, renal failure is restricted to the accidental-haemorrhage group (Table I).

TABLE I.—*Severe Haemorrhage at Childbirth necessitating Blood Transfusion. Analysis of 59 Consecutive Cases*

	Cases	Renal Impairment
Post partum	37	0
Placenta praevia	12	0
Accidental (retroplacental)	10	5

This table demonstrates the correlation between renal impairment and accidental haemorrhage and suggests that the former is determined by some factor other than the shock of haemorrhage. Further, it can sometimes be clearly established that the renal impairment antedates the shock phenomena.

Case 4.—Mrs. M., aged 27, walked into hospital at 7 p.m. with lower abdominal pain and thinking she was in labour. She was unable to pass urine, and next morning the catheter revealed an empty bladder. The general clinical condition was good; blood pressure 120/80 mm. Hg. During the rest of the day the suppression continued. At 5.30 p.m. she developed acute abdominal pain with severe shock. Diagnosis: Concealed accidental haemorrhage. Bladder empty. The suppression of urine had thus existed for 22½ hours before the first onset of shock.

Case 5.—Mrs. E., aged 37, wakened at 7 a.m., rose, and passed urine as usual. She prepared her husband's breakfast, and later in the morning, in her usual health, went shopping. At 11 a.m., on the way home, was seized with abdominal pain; walked home and went to bed. At 12 noon felt sick and vomited. Sent to hospital at 5.30 p.m. in condition of shock (with pallor, shivering, perspiration, and rapid pulse), but with B.P. 155/98. Diagnosis: Concealed accidental haemorrhage. 3 c.cm. urine withdrawn by catheter. No urine had been passed since 7 a.m. She thus had suppression for 10 hours, and this antedated the shock.

These cases further exemplify how the causal agency has a selective action on the kidney.

An added argument against the view that the renal failure is a local expression of general circulatory collapse due to shock is the frequent absence of hypotension. In 4 out of the present series of 5 cases of accidental haemorrhage the blood pressure was recorded at frequent intervals, and the respective minimum readings up to the time when the kidney impairment was firmly established were 100/70, 110/90, 155/98, 145/86. The relatively high pressure levels in some of these women are clearly related to the coexisting hypertensive toxaemia.

Dunn and Montgomery (1941) have suggested that bilateral cortical necrosis, the rare variant of the renal lesion, which is also remarkably selective in its character, may be due to circulatory failure from haemorrhagic "shock" with complete stagnation of the blood flow in glomeruli previously damaged by the eclamptic "poison." Such an explanation, however, does not seem to be valid for the lesion now under discussion. We have seen (1) that the selective lesion may be tubular, with a relative immunity of the glomeruli; (2) that renal failure does not follow the shock from other forms of obstetrical haemorrhage (post partum and from placenta praevia) complicating the eclamptic state; (3) that the renal failure may develop before the "shock" while, in other cases, there may at no time be hypotension.

The data invite some further tentative conclusions on the aetiology of the shock phenomena. In accidental haemorrhage shock may be severe and even fatal, and in some cases the blood loss by itself is clearly a determining factor. That, however, there may be another factor, or other factors, is demonstrated by those cases in which the degree of shock is out of proportion to the amount of bleeding (Whitridge Williams, 1925) and by the frequency with which it fails to respond to the therapeutic influence of blood transfusion (Sheehan, 1942). In the evolution of shock in surgical trauma the fall in blood volume caused by the loss of plasma to the damaged tissues is believed to play an important part. In the case of accidental haemorrhage there is no clear evidence of such a mechanism. Although there may be oedema of the uterine wall (especially when the retroplacental bleeding is associated with a muscular lesion—"utero-placental apoplexy") this local loss of blood fluid to the tissues cannot be regarded as an adequate explanation of the total phenomena. We have not found evidence of haemoconcentration, though this may, of course, be obscured by the haemorrhage, and it is known that the eclamptic state may be accompanied with marked haemoconcentration due to the explosive generalized oedema (Zangemeister, 1903). This haemoconcentration, which may develop rapidly in the crisis of the eclamptic state, may, however, be associated with an equally rapid rise in blood pressure, even to high levels, and with a clinical condition which in this respect is the reverse of shock (Dieckmann, 1942). Further, in many instances, although the shock phenomena may be clinically brisk, the accompanying hypertensive state, as in the 4 surviving cases reported in this communication, would seem to protect the patient against the major risks. It is only when the "shock factor" breaks through this protective hypertensive state and paralyses the vasomotor mechanism that the full shock effect is induced. Whether this action is central or peripheral it is impossible to say. This view of the genesis of the initial shock often seen in such cases resembles the conclusions of Noble and Collip (1942) based upon the study of experimental trauma in rats. They conclude that a poison is generated by the damaged tissues and that this can cause death rapidly from shock with little haemoconcentration. Only where death is delayed is there the development of a severe haemoconcentration due to the loss of blood plasma through the capillaries. Glen (1941) has shown, also, that the shock may develop so rapidly after the restoration of the circulation in an ischaemic limb as to suggest the immediate effect of a circulating poison.

We may summarize the above evidence as follows. The data are opposed to the view that the shock mechanism is essential for the production of the renal lesion. This is dependent upon some other influence whose action on the kidney may be strikingly selective. Neither haemorrhage nor the loss of blood fluid to the tissues (local or general) with haemoconcentration is an adequate explanation of the shock phenomena. To explain the full shock effect we must postulate some other factor (toxic agent?).

Haemolysis and Tubular Blockage

The eclamptic phenomenon is apt to be associated with haemoglobinaemia and haemoglobinuria. Many references to these conditions are to be found, especially in German literature. Schmorl (1893), in 2 out of the 17 cases on which his classical monograph on the pathology of eclampsia was based, described the presence of yellow pigment in the collecting tubules of the kidney. In one case, in which the urine was plum-coloured, the pigment was also present in the epithelial cells. Brütt and Schumm (1918) reported 6 cases of eclampsia with haemoglobinaemia in which there were haematin casts in the urine. In a fatal case with marked oliguria there were abundant haematin casts in the straight and Henle tubules. Fahr (1924) found haemoglobin casts in the kidney tubules in 18 out of 33 fatal cases of eclampsia, and regards this appearance as next only in importance to the glomerular changes in the total renal lesion of eclampsia. He points out that this incidence is higher than one would expect from the frequency of haemoglobinuria as clinically recorded in eclampsia by Meyer-Wirz and Geipel (6 in 44), Konstantinowitsch (6 in 30), and Zangemeister (5 in 14). At the same time he points out that the haemoglobin casts are often few in number. In general these German writers have regarded this haemolytic process as one of the side-effects of the eclamptic "poison"—an effect which it shares with other poisons, such as arsenic preparations, nitrobenzol, quinine, etc. The haemoglobinaemia and haemoglobinuria are clearly related to the acme of the eclamptic attack, and subside quickly thereafter. The Continental investigators were also aware of the association between haemolysis and the azotaemic type of renal failure dependent upon tubular degeneration (Brütt and Schumm, 1918; Seitz, 1927; Spitzer, 1934). In this country Dunn and Baird (1933) found haemoglobin casts in the kidneys in 3 out of 10 cases of eclampsia.

These investigations have acquired a new significance by their revelation of the close resemblance between the haemolytic phenomenon in eclampsia and its accompanying renal lesion and the changes found by Bywaters and Beall (1941) to follow a massive ischaemic lesion of muscle and by Bratton (1941) and ourselves in the accidental-haemorrhage syndrome. It has been suggested that in the crush syndrome the anuria may be due to blockage by the pigmented casts. But, as Bywaters and Beall (1941) have pointed out, any urine excreted in such cases may differ little from a glomerular filtrate, thus indicating the existence of severe damage even in non-obstructed tubules. Further, in an early case there may be tubular lesions in the absence of casts.

The same considerations apply to the kidney in accidental haemorrhage. In a woman who died 9 hours after the onset of symptoms there were no pigmented casts, but the tubular degeneration was evident; whilst in another case, with 22½ hours' anuria, pigmented casts were absent. We have had the opportunity of examining the kidneys in two women who died with anuria, 6 days and 9 days respectively after an eclamptic attack. In the former case there was a typical tubular lesion with blood casts and a blood-urea figure of 173 mg. per 100 c.cm.; while in the latter, in which the tubular degeneration was characteristic and the blood-urea reading 222 mg. per 100 c.cm., there were no pigmented casts. These findings suggest that the blood casts are necessary neither for the initiation of the renal failure nor for the development of the renal lesion.

Toxic Material or Materials of Tissue Origin

The elimination of competing factors in the aetiological field serves to direct attention to the immediate influence of the massive tissue damage, which establishes a basic link between the obstetrical and the crush syndromes. This brings us to the correlation between the "concealed" type of accidental haemorrhage and renal impairment (Table II).

Table II.—*Relation of Type of Accidental Haemorrhage to Renal Impairment. Analysis of 79 Consecutive Cases*

Haemorrhage	Cases	Albuminuric Toxaemia	Toxaemia + Renal Impairment
Revealed ..	59	7 (11·8%)	0
Concealed ..	20	13 (65·0%)	5 (25%)
Totals ..	79	20	5

These results conform to those of other observers. The table shows that the albuminuric type of toxaemia is much more frequent in "concealed" (65.0%) than in "revealed" (11.8%) cases, and that the renal insufficiency is associated especially with the "concealed" type.

The distinctive features of the utero-placental lesion of "concealed" accidental haemorrhage have been discussed elsewhere (Young, 1914, 1942). One feature of immediate relevance is that after the production of the lesion, which in the cases we are discussing generally involves as much as half and sometimes even more of the organ, the placenta is retained for some time within the uterus. Where the circulation is maintained in the undamaged portion, with resulting foetal survival, the conditions are such as to favour the escape into the systemic blood stream of any toxic materials which may be generated in the dying area. The circumstances are then similar to those which have been postulated in the case of surgical trauma after the circulation has been re-established in the crushed limb. To this analogy we referred many years ago (Young and Miller, 1921). Elsewhere we (Young, 1942) have given evidence that the "toxaemic" state is immediately related to the massive placental lesion. Thus there is a recognizable quantitative relation between the severity of the toxaemia, on the one hand, and the mass of placenta involved and the period of foetal survival, on the other. When the lesion is so fulminating as to cause complete initial detachment there is no toxaemia, and where, after the onset of toxaemia, the lesion progresses to the stage of causing foetal death there may be an abrupt decline of the toxaemia. This evidence, and evidence of a like nature in ordinary cases of eclampsia and pre-eclampsia, in which, however, there is generally no history of accidental haemorrhage, have formed the basis of the placental hypothesis of the eclamptic phenomenon (Young, 1914, *et seq.*). Evidence has been given that the interference with the uterine circulation which causes the placental lesion is the expression of an antecedent abortion taint (Young, 1927, 1942).

It is firmly established that renal failure with azotaemia is rare in eclampsia and pre-eclampsia. The relatively high incidence (25% in the present series) of renal impairment in concealed accidental haemorrhage would seem, therefore, to be determined by some factor introduced into the eclamptic and pre-eclamptic state by the conditions obtaining in concealed haemorrhage. What this factor is we do not know. It does not seem to connote a quantitative relation to toxaemia, for renal failure is rare even in severe eclampsia not associated with concealed haemorrhage. The massive muscular lesion in the uterus, to which reference has already been made, is especially identified with cases of concealed haemorrhage, and it provides a striking analogy to the conditions in the crush syndrome. But there is some evidence that this lesion may be present in a marked degree without renal failure (Whitridge Williams, 1925; Dieckmann, 1936). Nevertheless it merits fuller consideration. Its existence helps to explain the very high incidence of puerperal sepsis in such cases (Whitridge Williams, 1925; Gibberd, 1936; Bratton, 1941).

The immediate cause of the bleeding in the decidua and muscularis is not clear. There would seem to be no doubt that it is an expression of the "abortion taint," to which reference has already been made and which has been discussed more fully elsewhere (Young, 1942). Reasons have been given for the view that it precedes the placental autolysis (Young, 1914, 1942). This evidence is, however, not unequivocal, and it remains possible that the placental degeneration antedates and determines the retroplacental and muscular lesions. It cannot be claimed that the haemorrhagic lesions are due to a systemic "toxaemia," because out of 79 cases of accidental haemorrhage albuminuric toxaemia was absent in 59, including 7 of the 20 cases of the concealed type (Table II). It is possible, however, that the massive blood effusions in these sites are due to vascular damage by a toxic agent locally produced, and that the purpuric and haemophilia-like haemorrhages occasionally found in accidental haemorrhage in such distant sites as the nose, stomach, and subcutaneous tissues (McGoogan, 1935; Dieckmann, 1936) may be a more generalized manifestation of the same factor. On this question further information is desirable.

Summary

The foregoing clinico-pathological study of the syndrome in concealed accidental haemorrhage suggests the following proximate causes: (1) The syndrome is determined by a massive utero-placental lesion of ischaemic origin. (2) The renal failure characterized by tubular degeneration and azotaemia is determined by a toxic material derived from tissue autolysis. (3) The shock element and the haemolysis which are frequently present may have a similar origin.

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LOCALIZED TYPHOID FEVER OUTBREAK IN GLASGOW, 1942

BY

R. J. PETERS, M.D., D.P.H.

AND

D. H. CLUTTERBUCK, M.B., D.P.H.

(*From the Public Health Department, Glasgow*)

The following is a description of a small localized outbreak of typhoid fever which presented some rather unusual features and for that reason is considered to be worth recording. The cases, of which there were 41 in all, occurred among the staff and customers of a butcher's shop in one of the poorer districts of Glasgow. The outbreak took place at the end of winter at a time when otherwise the city was free from enteric infections.

General Description of the Outbreak

The first indication of the existence of typhoid fever came on Feb. 6, when 3 cases, all in one family, were diagnosed as this disease. These patients had been admitted to an infectious diseases hospital on Feb. 4. A second group, of 4 cases, consisting of a mother and three children, were removed to another infectious diseases hospital on Feb. 6; and a third family group, consisting of two children, came to notice on the following day. Up till this time all the patients had been women or young children; but on Feb. 9 a fourth family became affected, the patients being two adolescent males aged 15 and 17. Thus within the first two days of our knowledge of the outbreak three families were involved, giving rise to 9 cases.

At first the age and sex distribution caused the investigation to be concentrated on the milk supply, which was common to the first three families; but before reports could be obtained upon the bacteriological specimens submitted, further cases had come to light in which there was no obvious connexion with the dairy. The preliminary investigation had, however, shown that all the infected families received their meat supplies from a butcher's shop in the district, though the usual routine inquiry had failed to incriminate any special meat product. It became clear, however, that the butcher's shop was the only common link between the cases. Specimens of faeces and blood were examined from the staff, which consisted of five persons, with the result that one male employee was found to have *B. typhosus* in stools and urine, and a blood agglutination for *B. typhosus* of 1 in 2,500. A second male employee had a positive agglutination reaction (1 in 250), but in his case there were no other positive findings even after investigation in hospital. He had been inoculated against typhoid during the last war. The former case (J. P., aged 62) was ultimately regarded as the probable cause of the outbreak. This man subsequently died of typhoid fever in hospital, and his case is discussed in more detail below.

Further investigation disclosed sickness, later confirmed as typhoid fever, in a female employee who had left the butcher's employment on Jan. 24—that is, before the occurrence of the cases. She lived in another part of the town. The date of onset in her case—Jan. 27—coincided with the starting of the epidemic, so that she is to be regarded merely as one of the cases and not as the original source of infection.

Intensive house-to-house visitation of the district was carried out by the medical officers and sanitary inspectors, and at the same time a circular letter was addressed to local medical practitioners advising them of the presence of the disease. Suspicious febrile cases were removed to hospital for observation, and a frequent and careful check-up was made on all family contacts. The intensive visitation and follow-up of contacts were generally successful in preventing the occurrence of secondary cases. Daily visits were paid to the butcher's shop, and a complete overhaul was made of the hygienic arrangements, which were on the whole of a very low order. All cooked meats found in the shop were destroyed. Some of the customers' ration cards were in an incredibly filthy condition, and it was observed that the shop-assistants handled these cards and then handled meat. By arrangement with the local food office large numbers of ration cards were withdrawn and fresh ones issued. This may not have had any bearing on the genesis or spread of the outbreak, but nevertheless it is a matter worthy of careful consideration from the point of view of the hygiene of food-handling generally.

One case occurred among the attendants of a public wash-house in the area. This patient had no direct connexion with the butcher's shop and took no food at all in the district; but since many of the patients' families were in the habit of taking clothes to the washhouse, he was probably infected by an article of clothing belonging to a typhoid case, although this was never definitely proved.

Analysis of Cases

Time Distribution.—There were 35 primary cases, and, of these, 30 sickened between Jan. 27 and Feb. 3, a period of eight days: 26 of them sickened in the first five days. The following table shows the dates of onset and admission to hospital.

Date of onset	January					February							Total Cases
	27	28	29	30	31	1	2	3	8	14	15	18	
Cases ..	2	3	4	11	6	1	1	2	1	1	1	2	35

Date admitted	February																Total Cases
	2	4	5	6	7	9	10	11	12	14	16	17	18	20	21	25	
Cases ..	1	3	1	5	4	1	2	1	2	6	3	1	2	1	1	1	35

There were, in addition to the 35 primary cases, six secondary ones in which infection could be traced to one or other of the primary cases. These consisted of 3 clinical cases and 3 symptomless carriers.

It is apparent that the infection must have been distributed on or around Jan. 16. The patient J. P. was isolated on Feb. 20, and there is a strong presumption that he must have been a potential source of infection while working in the shop throughout the whole period up to that date. If he was the cause of the epidemic he must have transferred infection to foodstuffs in large amount during the few days around Jan. 16. The dropping cases towards the end of February can be explained by later infection from J. P. or by a much-extended incubation period.

J. P. was a man of irregular habits who lived in model lodging-houses and was somewhat addicted to alcohol. He was careless as regards his person, and as an example of this he had a large untreated varicose ulcer of some 20 years' duration. He maintained from the first interview that he had no symptoms, and indeed it was with some difficulty that he could be persuaded to give the necessary specimens for examination. On Feb. 20 *B. typhosus* was reported in a sample of faeces, and arrangements were made for his removal to hospital; but even on that day he was at work in the shop, and when interviewed by the medical officer he denied that he was in any way ill. Later in the day, in hospital, it was found that he had a moderate pyrexia and some degree of splenic enlargement. Subsequently he developed bronchopneumonia and died on March 6. Post-mortem examination confirmed the diagnosis of typhoid fever. The spleen was considerably enlarged; Peyer's patches were acutely inflamed and oedematous but not ulcerated. This patient may either have been a carrier who became a clinical case or he may have been an ambulant case somewhere about the middle of January, with a relapse in February. The date of his last attack is not definitely fixed, but, according to the clinical signs in hospital, was probably some time about Feb. 15. The very high titre of his blood agglutination reaction would appear to indicate that his illness following admission to hospital was not his primary attack, although from the end of January right up till Feb. 20 he was seen by a member of the staff of this department and made no complaint as regards his health. Thus, in the absence of definite pointers, no detailed clinical examination was made, but had there been such an examination it might have led to an earlier diagnosis. An important point emerges, however—that in the search for carriers the question of ambulant or relapsing cases should be borne in mind, particularly when dealing with the lodging-house type of patient.

Age and Sex Distribution.—The age and sex distribution of the 35 primary cases were as follows:

Age Group	−1	−5	−10	−15	−20	−25	−30	−35	−40	−45	−50	−55	55+	Total
Males ..	–	2	5	1	2	–	–	2	1	–	–	–	1	14
Females	–	3	3	4	2	–	2	4	1	–	–	1	1	21
Total .	–	5	8	5	4	–	2	6	2	–	–	1	2	35

Although in the early stages of the outbreak women and young children were mostly affected, some adolescent and adult male cases soon followed. The table shows more children under 10 and a higher proportion of women than one would expect in a meat-borne outbreak. It may be that the women and children consumed the ready-prepared meats—the tinned beef and other canned meat products which were sold in the shop by weight—whereas the men were more likely to get the chops and steaks, which, of course, would be cooked at home. It is clear that in investigating typhoid epidemics the age and sex groupings of the early cases may be misleading if the investigator does not maintain an open mind on the consumption of different foodstuffs at different ages. The case for a differential age and sex incidence in milk outbreaks has never been convincing, and any such preconceptions should be discarded.

Secondary Cases.—The secondary cases—i.e., cases infected directly from one or other of the primary cases—numbered 6, but three of these were actually symptomless carriers. The remaining 3 had typical typhoid fever. One of these was a nurse in an infectious diseases hospital. These secondary cases are excluded from the tables so that the description of the epidemic may be confined to infections contracted directly from the butcher's shop.

Family Distribution.—In all, 15 families were involved. In 10 families there were multiple cases: 5 had two cases each, 2 had three, 2 had four, and 1 had five. Thus an exceptionally high proportion of multiple family cases occurred in this outbreak.

Housing and Social Circumstances.—All the cases occurred in 15 tenement houses, 12 of which had two apartments, 2 had one apartment, and 1 had three apartments. The patients were thus all from the poorer working class. As regards spatial distribution, the great majority of the cases occurred in a very circumscribed area surrounding the butcher's shop; but a few arose in distant parts of the town. In the latter, however, direct personal contact was clearly established with the original focus. For example, a woman aged 29 was taken ill on Feb. 2 and was removed to hospital on Feb. 12. Her home address was far removed from the other cases, but she worked in a factory beside one of the patients, whom she visited about the middle of January, partaking of some corned meat.

Clinical Types of Disease

The onset of illness was generally rapid, usually with diarrhoea, abdominal pain, and vomiting. There was, as already noted, an unusually marked tendency for the disease to attack several members in one family. The times of sickening of these cases were often so close together as to raise the question of food-poisoning; and, indeed, 11 of the 35 primary cases were so notified to the department, the diagnosis probably being suggested by the rapid onset. Only in 8 cases was typhoid fever intimated as the probable diagnosis before admission to hospital.

The disease in hospital tended to be severe, and ran the typical course of typhoid. Of the 38 clinical cases admitted (including the 3 secondary clinical cases), 5 terminated fatally—a rate of 13%. Case-to-case infectivity was comparatively low, and none of the patients became a persistent carrier, the usual criteria for dismissal from hospital—namely, three negative faeces and urine examinations—having been satisfied.

Commentary

A meat outbreak of this nature is a comparatively rare occurrence, but with the increasing proportion of canned and processed meats being distributed it is not unlikely that outbreaks spread in this way may become more frequent. The danger lies, of course, in the handling of preparations which are usually eaten without further cooking, such as corned beef, pressed beef, and canned meats of various kinds, the cans being opened within the retailer's premises and the meat sold by weight in small quantities over the counter. Cooked meats sold by retailers may also be infected. But even meat and meat products which are usually cooked in the home are now exposed to much-increased handling in distribution, and this in itself may constitute an added danger. The sausage particularly is suspect, because it is doubtful if, in cooking, its centre always reaches a very high temperature.

The meat which was the vehicle of infection was heavily infected for a few days in the middle of January. When the patient J. P. was found to have *B. typhosus* in samples of faeces and urine it was naturally concluded that he must have been the source of infection. He was employed almost entirely in the back shop, cutting up carcases into joints, etc., for sale over the counter. He did not normally handle canned meat, nor did he serve customers, but is said to have done so on occasion. He was by reason of his personal habits a very likely type of man to convey any infection he may have had to whatever he handled. Unfortunately for the complete acceptance of this theory, shortly after admission to hospital he was himself discovered to be a case of typhoid fever, dying later of a pulmonary complication, the active typhoid being confirmed by post-mortem examination. Therefore, if he is to be regarded as the source of the outbreak we are driven to put forward the two possibilities already mentioned—that he was a chronic carrier who developed clinical disease, or that he had had an ambulant attack of typhoid with a clinical relapse. On the other hand, he may simply have been infected in the same way as all the others, in which case the source of infection must remain unknown. No cases occurred through infection from the shop during the period when he was known to carry typhoid bacilli—namely, the few days prior to Feb. 20. His discovery as an actual or probable source of infection was thus made after the epidemic was over, and no further cases have arisen from this focus up to the date of publication.

With regard to the sending out of circular letters to practitioners warning them of the existence of typhoid fever; while this may be of considerable value, it should not be allowed to take the place of a house-to-house visitation and search for cases, particularly if the outbreak is localized. Many cases of illness in the area were thus traced to infectious disease hospitals and to wards of general hospitals, having been admitted with a diagnosis of pneumonia, influenza, cerebrospinal fever, or enteritis. In fact, as mentioned already, only 8 were actually sent to hospital as typhoid fever. The active search for cases presumably had its reward in the small number of secondary infections.

In this outbreak the first five families had the same milk supply, and although they dealt with the same butcher no particular kind of meat appeared to have been consumed by all cases. Furthermore, the butcher's clientele was far wider than the dairyman's. Suspicion at first therefore rested on the dairy, and although general supervision was exercised over the butcher's shop, bacteriological investigation was at first confined to the dairy staff. Other cases continued to arise from the same milk supply, and even in instances where the milk supply was stated to be from another source, one could not be sure that casual purchases from the suspected dairy had not been made. After an exhaustive examination of the milk supply had yielded entirely negative results, more detailed attention was directed to the butcher. He had at first not been too co-operative, but finally he and his staff provided all the specimens required. By this time, however, it was evident that the peak of the outbreak was past. The butcher probably had about 2,000 rationed customers. Thus the maximum risk to these customers, among whom 35 primary cases occurred, was 1.75%.

The exceedingly low standard of hygiene and general cleanliness in the butcher's shop must also be commented upon. It is feared that such conditions are common in the poorer quarters of towns. It may be remarked, too, that shortage of good-quality skilled labour and other difficulties are matters of concern at the present time.

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JAUNDICE PRESENTING UNUSUAL FEATURES

BY

A. M. GILCHRIST, M.B., Ch.B.
Surgeon Lieut., R.N.V.R.

Four cases of jaundice coming under observation at a Naval hospital within a very few months presented unusual features. The pathological reports upon material removed at operation from the liver of two patients with "subacute hepatitis" constitute a valuable addition to the case records; the following is the story of "four instructive mistakes."

Case I. Jaundice due to Subacute Hepatitis: Exploratory Laparotomy: Recovery

An officer aged 24 was suddenly seized with acute abdominal pain at the end of Jan., 1942; it was fairly generalized, but the maximal intensity was in the epigastrium. The pain was colicky, and came on in spasms, which "doubled him up" and were followed by intervals of comparative freedom, although a dull ache persisted between the "spasms." This first attack lasted about 12 hours, but was not associated with vomiting; the pain gradually wore off. For nearly two months after this attack the patient had little appetite, felt "out of sorts," and experienced occasional pain of moderate severity in the upper abdomen. During early April a second stage may be said to have begun with frequent severe attacks of abdominal pain at night; there was no radiation of pain to the back or lumbar region. His urine was dark in colour and his skin and conjunctivae looked slightly yellow; there was no pruritus.

His general condition deteriorated, and on admission to a Naval hospital for further investigation the jaundice was marked and of a deep yellow colour; all pain had now disappeared. He was considerably emaciated, but cheerful and optimistic in outlook. Severe persistent headache and dimness of vision were other symptoms; at no time was there any vomiting, although nausea was complained of occasionally after meals. The liver was slightly enlarged and tender; the gall-bladder could not be felt: the spleen was not palpable. The tongue was furred; the teeth were good, but there was considerable sponginess of the gums, which bled on the slightest pressure. No enlargement of glands in axillae, neck, or groin was found. The urine was dark and contained bile pigments and bile salts.

A direct van den Bergh gave an immediate positive reaction. Quantitative indirect gave 7.2 mg. (14.4 van den Bergh units). Paul-Bunnell test was negative. Blood picture: R.B.C., 4,550,000; Hb, 86% (Haldane); C.I., 0.95; leucocytes, 5,200—polymorphs 45%, lymphocytes 45%, large mononuclears 5%, eosinophils 2%, mast cells 0, basophils 0; B.S.R. (Westergren), 11 mm. in 1 hour, 22 mm. in 2 hours; Wassermann, negative. Radiographs revealed no opaque calculi. The pulse was regular about 80; temperature showed a slight evening rise. The past history disclosed nothing of significance. He had never served outside British waters.

The clinical picture was not characteristic of any of the more frequent types of jaundice, but the most probable diagnosis appeared to be an obstructive jaundice due to cholelithiasis. The prolonged jaundice was considered to necessitate an exploratory laparotomy. After the liberal administration of glucose and vitamin K, operation was performed on April 21. The liver was moderately enlarged, but its surface smooth and its outline even; nothing abnormal was seen in the appearance or texture of the gall-bladder. No gall-stones could be felt in gall-bladder or ducts. An enlarged lymph gland was found near the cystic duct, and two more were easily palpable along the common bile duct, but it was obvious that these two glands were not obstructing the flow of bile; the lesion was evidently intrahepatic. Two of the lymph glands were removed for microscopical purposes and a small portion of liver was also resected. Bleeding at the operation was minimal.

Pathological Report (Dr. W. W. Woods).—"*Subacute hepatitis*: There is severe albuminous and vacuolar degeneration of the liver cells, their cytoplasm being swollen, coarsely granular, and vacuolated, and their nuclei showing karyolysis. In frozen sections sudanophil fat can be found in only a few scattered cells. Disappearance of a few liver cells as the result of necrosis has occurred in the centres of the lobules, where there is conspicuous dilatation of the sinusoids. There is bile pigmentation of the liver cells, but there are only a very few bile thrombi in the canaliculi. Regeneration of parenchyma is indicated by many cells with two nuclei, some of them having deeply eosinophilous cytoplasm; only one mitotic figure can be found. Inflammatory infiltration is almost confined to the portal systems, extending thence only slightly between liver cells. It is more severe in the smaller than in the larger portal systems. It consists of numerous lymphocytes, a few eosinophil leucocytes, and very few neutrophil leucocytes. There has been slight proliferation of fibroblasts, but there is no fibrosis. The bile ducts are normal and empty. In the lymphatic glands from the region of the cystic and common bile ducts there is a pronounced degree of hyperplasia of the endothelial cells of the lymph sinuses (sinus catarrh)."

Post-operative progress was uneventful. Glucose was given freely, and occasionally small doses of calomel and magnesium sulphate. The jaundice began to diminish as the general condition improved, and six weeks after operation had entirely disappeared. The officer was ultimately sent on sick-leave.

Case II. Jaundice due to Subacute Hepatitis: Exploratory Laparotomy: Death Two Months after Operation

An officer aged 34 complained in Aug., 1940, of a sensation of fullness in the abdomen, flatulence, loss of appetite, and general debility, present for some weeks; no previous history of any similar illness. He was jaundiced, the icterus being of moderate intensity. The abdomen was somewhat distended, the distension being uniform; the liver could be palpated beneath the right costal margin.

After several weeks, during which the jaundice increased somewhat in intensity, he was admitted to a Naval hospital. By this time jaundice was marked, and the patient listless and disinterested; he had lost much weight, and his appetite was poor. The abdomen was distended, tumidity being most pronounced in the right hypochondrium, the musculature of which showed some rigidity. The liver was enlarged, and its lower border was felt three finger-breadths below the costal margin; the outline appeared fairly regular, and there was tenderness on pressure over it. The gall-bladder was not palpable: no enlargement of spleen or kidney could be detected. The glands in the groin, axillae, and neck were not involved. Rectal examination yielded no positive information of value. The urine contained bile salts and bile pigments.

Faeces were slate-grey in colour; total fats 64.48 g.%—neutral fats 2.8%, soaps 36.68%, free fatty acids 25%; no pathogenic bacteria, cysts, or ova. A blood count showed: R.B.C., 4,110,000; Hb, 88% (Haldane); C.I., 1.08; leucocytes, 6,800—polymorphs 51%, lymphocytes 43%, large mononuclears 4%, eosinophils 2%. Slight anisocytosis and achromia were noted. Fragility of red cells, bleeding time, and coagulation time were within normal limits. The van den Bergh gave an immediate direct reaction. The laevulose-tolerance test showed no impairment of hepatic efficiency. The Wassermann reaction was negative on several occasions. A straight radiograph showed no opaque gall-stones. The gall-bladder was not seen by opacol radiograph. No calculus or other abnormality seen. The patient stated that during the previous 6 or 8 months while serving in small ships he had frequently been exposed for two or three hours daily to acetylene fumes in his cabin. However, no others exposed to similar fumes had reported sick.

The hope still lingered that the case might be one of "catarrhal jaundice," and initially in hospital the patient was treated expectantly by glucose, fat-free diet, and an occasional dose of calomel and magnesium sulphate. His condition, however, steadily declined; his appetite and weight decreased, and his jaundice became more intense. The possibility of a neoplasm involving the main bile channel now obtruded itself more and more menacingly: exploratory laparotomy was considered necessary. At operation the liver was found to be much enlarged and of firmer texture than normal; here and there the organ showed definite scarring, and a definite thickening could be felt in the portal fissure. The gall-bladder was of small size, whitish, and *quite empty*. The common hepatic and bile ducts were not dilated, and the obstruction was obviously above the junction of the hepatic and cystic ducts; the thickening in the portal fissure seemed to localize the obstruction to the very commencement of the extrahepatic canals. The spleen was not enlarged. A wedge of liver tissue was removed for microscopical examination. The findings at operation suggested either a malignant growth in the portal fissure or a syphilitic hepatitis despite the negative Wassermann reaction. Further serological tests also proved negative.

Pathological Report (Dr. W. W. Woods).—"*Subacute hepatitis with portal fibrosis*: The portal fibrosis is of a subacute, active, recent type. Thus the portal systems in every lobule are uniformly enlarged by a rarefied oedematous network of thin and thick collagen fibres and moderately numerous, rather slender fibroblasts. They are infiltrated with numerous lymphocytes, remarkably numerous neutrophil leucocytes, a few round and spindle macrophages full of bile pigment, and a few plasma cells. There is considerably less inflammatory infiltration in the large portal systems than in the small. This infiltration has spread between the liver cells of the periphery of the lobules. These inflamed fibrotic portal systems contain numerous regenerated pseudo-bile canaliculi, which seem to have budded out from the liver cells; they contain much bile pigment, mostly in their lumina, some in the cytoplasm of their cells. The fibrosis is unilobular. There has been no nodular regeneration of liver cells to disturb the normal lobular pattern. Regeneration of single cells is indicated by the presence of two nuclei in some cells. There is albuminous degeneration and vacuolation of liver cells, and the nuclei of many show karyolysis. In one group of liver cells vacuolation is conspicuous. In the absence of frozen sections the presence of fat cannot be determined. In the centres of the lobules there is slight inflammatory infiltration. There is much bile pigment in the liver cells, and large bile thrombi are numerous in the bile capillaries. The bile ducts in the small and large portal systems are not dilated and are empty except for a very little coagulum in one of the larger ducts. All arteries and veins are normal."

The patient recovered from the immediate effects of the operation, and some two weeks later was able to get up and walk about. However, he subsequently relapsed, and increasing debility and progressive emaciation necessitated his return to bed. Jaundice steadily increased, and ascites developed so that regular paracentesis had to be employed to relieve the abdominal distension. Death occurred about 2 months after the laparotomy.

Comment on Cases I and II

Clinical jaundice readily suggests the three most frequent groups of cases characterized by this arresting symptom, and attempts were made to assign the patients to their particular category: (*a*) catarrhal jaundice; (*b*) the effects of cholelithiasis; and (*c*) malignant obstruction of the extrahepatic biliary channel. In both of the above cases an erroneous pre-operative diagnosis was made, but material removed at laparotomy led to the diagnosis of subacute hepatitis from the pathological laboratory. The term "hepatitis" suggests vagueness of diagnosis, since it may include all the results of damage to the liver, chemical or physical, or due to the action of micro-organisms and their toxic products. It might also include the various processes of reaction and repair which follow the injury. Unfortunately, in these two cases the precise cause of the hepatitis is still wanting.

It must be most exceptional in a case of hepatitis to have the onset of the disease heralded by symptoms of such severity as to suggest gall-stone colic. The persistence of the jaundice which followed the last attack of severe pain in Case I seemed to demand surgical investigation and some operative effort to relieve the obstruction. The absence of any gross obstruction along the course of the extrahepatic ducts occasioned the greatest surprise.

The pathological diagnosis of a hepatitis suggests some relationship to so-called "catarrhal jaundice," in which severe pain certainly never occurs. Doubtless both conditions are due to an infective agent, and recent investigation into the cause of catarrhal jaundice tends to demonstrate the infectivity of the disease and its possible spread by droplet infection (Newman, *British Medical Journal*, 1942, **1**, 61): many cases have been found in a locality among individuals living together or spending their lives in fairly close contact, but in our case the officer was certain there had been no similar cases among his colleagues. He gave no history suggestive of gastro-duodenal catarrh as the early pathology of the condition. The pathological findings are of unusual interest because of the rare occurrence of a biopsy of liver tissue in this disease and because of the severe degeneration of the liver cells seen in section, amounting in some areas to a complete atrophy.

In Case II the absence of pain, the increasing jaundice, and the emaciation suggested the possibility of a neoplasm, and an exploratory laparotomy seemed to be indicated. The fibrotic changes and scarring in the liver seen at operation raised the question of a syphilitic infection, but serological tests negatived this suggestion. The spleen was only slightly enlarged, and detached blood examination excluded any of those blood dyscrasias associated with gross splenic and hepatic enlargement with cirrhosis. The whole pathological process was intrahepatic; and the hepatitis was considered to be toxic in origin, the identity of the actual toxin remaining obscure. The patient had volunteered the information of his exposure to acetylene fumes while asleep in his cabin, adding how listless and unrefreshed he felt in the morning. However, no reference in the literature could be discovered relating to acetylene as producing hepatitis with jaundice; but whatever the toxin was, its virulence was demonstrated by the unfavourable course of the illness and its fatal termination.

Case III. Jaundice due to a Mass of Lymphadenomatous Glands compressing Main Bile Channel. A Case of Hodgkin's Disease, Rapidly Fatal

An officer aged 27 was admitted to hospital in March, 1942, with a history of increasing jaundice of about 10 weeks' duration. He complained of loss of appetite, constipation, and general debility; about 7 days later jaundice appeared, and he was treated by a light fat-free diet, glucose, and abundant fluids. No improvement took place, and 6 weeks later an indefinite swelling, thought to be a distended gall-bladder, was felt in the right hypochondrium. A straight radiograph showed a vague opaque shadow which suggested a gall-stone. Further facts were now elicited. At no time had he any pain—only a feeling of intermittent discomfort in the abdomen; there was no history of digestive trouble, and no similar cases had occurred among his colleagues. He was losing weight rapidly. Early in 1940 he had suffered from pleurisy, but his recovery was apparently complete, and full investigation had suggested no possibility of persistent tuberculous infection.

When admitted to hospital he was deeply jaundiced and emaciated. The liver was slightly enlarged and could be felt beneath the costal margin, but a movable swelling was now easily felt in the right hypochondrium, extending down to the right iliac fossa, and not continuous with the liver margin; this appeared to be a distended gall-bladder. Neither the kidneys nor spleen were palpable. One rather large discrete solitary gland was felt in the right supraclavicular fossa; this was not tender, and was not attached to the skin or deeper structures. No glands were palpable in the axillae; and those in the groin were within normal limits. No abnormality was detected per rectum. Almost the whole of the body was covered by a diffuse rash, produced by constant scratching due to the intractable itchiness of the skin. The urine showed no abnormality except bile salts and pigment and a faint trace of albumin. R.B.C., 4,050,000; Hb, 80% (Haldane); C.I., 0.9; leucocytes 7,000—polymorphs 65%, lymphocytes 20%, large mononuclears 4%, eosinophils 1%, mast cells 0. Wassermann reaction negative. A direct van den Bergh gave an immediate positive reaction; quantitative indirect, 20 mg. (40 van den Bergh units) per 100 c.cm.

A second straight radiograph a week after admission showed a shadow to the right of the ascending aorta in an antero-posterior view of the chest. The cervical gland enlargement was considered to be either secondary to some intra-abdominal neoplasm or, alternatively, of lymphadenomatous nature. The biopsy pathological report was provided by Dr. I. Doniach, pathologist to Mount Vernon Hospital, who reported: "The architecture of the gland is destroyed by a reticulum-cell hyperplasia. Scattered throughout are numerous giant cells of the Dorothy Reed type, together with a good number of lymphocytes, eosinophils, and plasma cells. The cells have laid down only a moderate amount of collagen. Fairly numerous mitotic figures were observed. The picture is typical of Hodgkin's disease." Within a month the patient's condition was miserable in the extreme. The pruritus had become much worse, and sleep was impossible without large doses of sedative, morphine frequently being necessary. Although the prognosis appeared hopeless, and further blood counts showed a progressive anaemia, it was considered desirable to perform a cholecyst-gastrostomy in an attempt to relieve the pruritus.

At operation, on April 4, the gall-bladder was greatly distended, and rather more than half a pint of fluid was aspirated before the anastomosis was done. Examination of the fluid revealed no bile pigment and only a trace of bile salts; cholesterol was found in the merest trace. A large mass of glands was felt in the portal fissure and along the common bile duct. The spleen was enlarged to about twice normal. The anastomosis was rapidly completed and the abdomen closed. The patient failed to rally from the operation and died the following day.

At the time of the patient's admission to hospital the diagnosis was fraught with less difficulty than that which obtained at the onset of the illness. The progressive painless jaundice associated with an enlarged liver, the considerable distension of the gall-bladder, the enlarged gland in the right supraclavicular fossa, and the gradual emaciation strongly suggested a sinister cause of bile-duct obstruction. The biopsy proved the cervical gland to be lymphadenomatous, and the laparotomy deemed necessary by the severe pruritus gave evidence of the rare nature of the obstruction to the main bile channel.

There are certain unusual features about this case. Death indirectly due to cholaemia from obstruction to the main extrahepatic bile channel by a mass of lymphadenomatous glands is exceptional, although Rolleston and McNee do make reference to the possibility of compression of the chief bile channel by such a mechanism. These authors note that jaundice is infrequent in lymphadenoma, but allude to possible glandular compression of the common duct; they also mention two cases of periodic jaundice in Hodgkin's disease, the jaundice coinciding with fever and enlargement of superficial lymphatic glands. In Hodgkin's disease it is most exceptional for the clinical picture to be dominated by obstructive jaundice and its consequences; the rapidity with which these hastened the fatal ending of the case contrasts with the natural history of the malady: in 15 weeks from the first symptom the disease had proved fatal. The case presented other atypical features: the lymphatic glandular involvement was far less widespread than usual; one discrete enlarged lymphatic gland palpable on the right side of the neck, and the existence of a possible second in the posterior mediastinum demonstrated by radiograph, constituted the only evidence of the disease. The operation performed to relieve the pruritus enabled us to discover a glandular mass in the portal fissure which had produced the jaundice; further, the lymphatic involvement was more or less confined to those glands. It will be recalled that this patient was investigated after pleurisy some 18 months previously, and although no evidence of active tuberculous disease was found, the theory of the possibility of a coexistence of the two maladies or even of their causal relationship is revived.

Case IV. Calcified Mass embedded in Head of Pancreas compressing Lower End of Common Bile Duct: Removal: Recovery

A stoker aged 49 was admitted to a Naval hospital with 4 months' painless jaundice. An enlarged liver and a distended gall-bladder suggested a growth obstruction of the choledochus. A two-stage operation was done after taking pre-operative measures. At the preliminary cholecyst-gastrostomy a firm lump could be felt near the lower end of the common bile duct, and the pre-operative diagnosis of an "ampullary carcinoma" seemed to be confirmed. At the second operation the mass was found embedded in the head of the pancreas, and was removed with some adjacent pancreatic tissue by a retroduodenal approach. The choledochus was seen to be compressed but not infiltrated, and was not injured during removal of the "tumour."

The pathological material proved to be a mass of agminated calcified tuberculous glands. Surgeon Rear-Admiral Gordon-Taylor, who operated on the case and recently reported it, remarks: "There was perhaps some justification for the mistake in diagnosis, but at least the patient is to be congratulated on the pathological nature of the compressing mechanism, which before this experience I might have seriously doubted."

Summary

Four cases of jaundice have been described in which a diagnosis based on careful clinical examination, reinforced by laboratory and other investigations, was proved by operation to be inaccurate. The experience and knowledge to be gained from them appear to act as a deterrent, and to justify restraint on the practitioner who feels confident in his capacity to assign correctly to a particular category any case of jaundice on clinical grounds alone. The descriptions given above demonstrate that although the cases had not a few features in common, nevertheless the exact pathological detail obtained as the result of operation proved that the morbid process varied greatly. Specific infectivity, toxicity, granulomatous disease, could all be considered in the course of diagnosis. It is also worthy of note that despite our surprise in being able to exclude malignant neoplasm on three occasions (Cases II, III, and IV), yet in two of these (Cases II and III) the disease ran a fatal course in a comparatively short period. Case IV claims special mention in being apparently illustrative of its author's hope that palliative treatment for neoplasms in the region of the pancreatic head may sometimes be replaced by radical surgery, offering a reasonable prospect of cure.

I wish to express my thanks to the medical officer in charge of this hospital for permission to publish this communication and for the facilities which he constantly offered me in the collection of case details. My acknowledgments are also due to Dr. W. W. Woods, Consulting Pathologist to the Navy, and to Dr. I. Doniach for the pathological reports

DEFICIENCY DISEASE AND ACADEMIC EVIDENCES OF SUBNORMAL VITAMIN METABOLISM

BY

R. E. WRIGHT, C.I.E., M.D., M.Ch.(Hon.), D.P.H.

Major (T.), I.M.S.

The present war with its food restrictions and black-out conditions inevitably focused attention on vitamins throughout Great Britain. Interest in the essential food factors, which was extensive before the war, flared up in both academic and trade circles. Eventually, through the media of the medical and general press and official and unofficial propaganda by circular, screen, and air, the public and the profession became almost hysterically vitamin-minded.

In certain directions there was a complete loss of perspective, incompatible with an emergency which demands a realistic view of the practical issues at the fighting fronts over-seas, and conservation of academic energy at home for more essential problems. In fact, the cult of vitamin deficiency both here and in the U.S.A. has become in part a racket. This state of affairs is largely due to the premature booming of experimental observations, and the attempt to fit them into the jigsaw of human physiology, psychology, or pathology as the case may be. The clinician is not blameless. He lends support to the situation by the empirical use of proprietary vitamin products in all manner of affections and in acclaiming their value by *post hoc* argument. However important the study of vitamin deficiency, the application of academic findings to the maintenance of fighting efficiency should be discussed at a level compatible with total war. Such discussions can hardly be conducted in perspective by those who have no first-hand experience of the clinical aspects of the vitamin deficiency disease syndromes as they exist in man and of the conditions appertaining at the various fronts. Yet just now probably more attention is given to theoretical considerations in this connexion, both here and in the U.S.A., where the clinical picture of frank vitamin deficiency disease as it appears in man is familiar to few, than in parts of the world—such as China, Russia, India, Africa, and Japan—where the human manifestations constitute a familiar everyday problem, the practical economic importance of which is great but subordinate to more urgent issues.

General statements such as these demand at least some support. Let us take the case of night-blindness in vitamin A deficiency.

Vitamin A Deficiency and Night-blindness

Night-blindness, better referred to for psychological reasons as "hemeralopia," is a prominent symptom of A-deficiency disease. It is the only subjective symptom until the later stages of the disease syndrome. This syndrome constitutes an important ever-present economic health problem in large population groups in various parts of the world, such as in the above-mentioned countries.

Frank predominant vitamin A deficiency disease is common in the Madras Presidency, which has a population bigger than that of England and Wales. Its manifestations differ in children and adults or, as Frazier and Hu (1934) have suggested, in the pre- and post-puberty periods. I have for years urged that it is the greatest cause of preventable blindness in children in South India on account of the associated corneal metaplasia or keratomalacia (Wright, 1931, 1937). The latter term is commonly used for convenience throughout the Far East for the whole syndrome, which emphasizes the importance of this complication. The most common sign, and possibly the earliest clinical evidence, of this syndrome is smokiness of the conjunctiva. This is my own view, and might possibly be disputed by such experienced clinical observers as Frazier or Pillat. I formerly held that night-blindness was the earliest evidence of keratomalacia (Wright, 1934). This conjunctival sign is unrecognized or not considered worthy of mention by those who discuss the effects of vitamin A deficiency in this country, probably because few of them have ever seen the disease as it exists in man. Kirkpatrick (1936) mentions it. It is well recognized in China (Mu *et al.*, 1937). It is not referred to by Nicholls (1938) of Ceylon: this is hardly because he does not recognize it, as it has been known to medical men in his part of the world for years, but because both he and Aykroyd—in South India—have found it more convenient to use "phrynoderma" (pilosebaceous hyperkeratosis) in their surveys. Among children of the poorer classes Aykroyd and Rajagopal report a frequency of phrynoderma of 14% for certain groups in South India. Smokiness of the conjunctiva would probably give a higher frequency and might well be a better index. There are in the museum of the London School of Tropical Medicine water-colour pictures of this condition which I had copied years ago from some of my pictures in the museum of the Government Ophthalmic Hospital, Madras: these give an idea of its appearance. Whether this sign or the symptom of night-blindness is the earliest or most common manifestation of A-deficiency is beside the point. We have no adequate frequency figures for either to guide us. Chou (1930) has reported normal dark-adaptation in 7 out of 20 patients with early ocular signs (pigmentation) of vitamin A deficiency. The important thing for purposes of this communication is that either may be absent in cases which are otherwise clinical examples of frank predominant A-deficiency. This fact as regards the symptom is sufficient in itself to show what a false emphasis has been placed on the connexion between vitamin A metabolism and variations in night-vision here since the war began.

In discussing experimental photometric methods employed to demonstrate a correlation between defects of dark-adaptation and the so-called subclinical A-deficiency, Frazier and Li (1938) quote Jung (1938) on the applicability of the fallacy of centripetal drift to the conclusions from such observations. They say: "It would seem, therefore, that a more critical evaluation of the results of photometric testing is required before final conclusions can be drawn on either the incidence of subclinical forms of vitamin A deficiency or the effect of therapeutic measures on the results of such tests. For the present, at least, evaluation of specific treatment in human cases should depend upon observations on definite clinical manifestations such as straightforward night-blindness, xerophthalmia, and follicular hyperkeratosis of the skin." This criticism seems as pertinent to-day as in 1938, and the application of Jung's ideas on poor dark-adaptation to recent work in this country would probably show that in "conditions influenced by so many uncontrolled variables the readings are completely determined by chance."

Again, this night-blindness does not constitute a labour problem in South India, where A-deficiency is so prevalent. It does not interfere with night work to any extent. I have rejected more candidates for specialized night employment, which required a simple night-vision test, on account of tapetoretinal degenerations, of which retinitis pigmentosa is chief, than for the hemeralopia of A-deficiency. In either case the figure is so small as to be insignificant. Night-blindness, too, does not prevent such jungle tribesmen as the Sholagas of South India moving rapidly and safely through dangerous country on the darkest nights. I have followed such men, some of whom showed evidences of A-deficiency, in the dark with difficulty.

If a case of A-deficiency disease with well-marked night-blindness in a Tamil received the average daily ration of the British soldier in England once a week, I should expect recovery. The authorities here at home would shudder at the thought of maintaining the British soldier on a diet which in hospitals of South India or parts of China or Japan would be considered adequate to keep the individual free from hemeralopia. As I have indicated elsewhere (Wright, 1935-6), I cannot imagine there being any such thing as a practical vitamin A deficiency disease problem in this country or America on diets short of famine diets.

With regard to the anti-infective role of vitamin A—which may yet have a revival in connexion with the home Forces—I agree entirely with Pillat (1929) that ordinarily the pathogens grow as saprophytes in the metaplastic tissues of vitamin A deficiency disease; and with Kirkpatrick (personal communication), who holds that colliquative necrosis is the primary process which produces corneal ulceration, not an invasion by pyogenic organisms. My experience coincides with that of Frazier and Hu (1936), that an increased susceptibility of the skin to "boils, sores, impetigo, napkin rash, or other evidence of skin sepsis" is not a clinical feature in keratomalacic subjects. Skin rashes other than pityriasis pilaris (pilosebaceous hyperkeratosis) are not more common in the keratomalacic population of Madras than in the general hospital population (Nayndu, 1935).

Evidently the condition in man cannot be gauged from observations on animals so far as practical clinical issues are concerned. If they were even approximately parallel, an increased frequency of stone in the bladder might be assumed to exist in South India by those in this country interested in vitamins but without experience of the A-deficiency disease syndrome in man. To find an increased frequency of stone in India one must look in parts of the North, where vitamin A deficiency disease is hardly known.

Night-vision in the Army

Before assuming, on theoretical academic considerations or animal (and human) experiments, that minor degrees of A-deficiency affect in any practical way whatever the military value of our man-power in this country, it is essential to consider the effects of gross A-deficiency on the physical activities of members of those populations largely afflicted with vitamin A deficiency disease. Apparently night-blindness has not interfered with the rapid night movements of Japanese troops through the Malayan jungles, although prima facie one might expect it to be a more practical difficulty in their case. Undoubtedly we have a night-vision problem here now. Modern methods of war have enhanced the value of good night vision and thrown poor dark-adaptation into prominence.

For convenience we may consider poor dark-adaptation as of three types—psychogenic, pathogenic, and physiogenic.

Psychological disturbances are a frequent and serious cause of poor night-vision in the Army, as pointed out last year in these columns (Wittkower *et al.*). This form of psychoneurosis received a considerable impetus from the ill-advised publicity campaign in connexion with the beneficial effects of vitamin A on night-vision. The evil effects of this campaign are enormous; the term "night-blindness" has attained a suggestion-value analogous to that of "shell-shock" in the last war.

Bad night-vision associated with well-known recognizable pathological ocular conditions is infrequent and of lesser moment. In this *pathogenic* group the night-blindness of vitamin A deficiency would find a place if it existed here. In the *physiogenic* group poor night-vision may be regarded as a variation in dark-adaptation at one end of the physiological curve. That this function is influenced by many factors, individual and racial, is known. Its investigation is essential in connexion with certain activities of the fighting Forces, and is having the serious attention of the medical authorities. It is not a vitamin A problem, and will not be solved by "following the carrot."

Vitamins B and C

Criticism in like manner is applicable to recent activities in connexion with B complex and vitamin C. To assess deficiency in B_2 (riboflavin) mainly by means of minor variations in the capillary loops at the corneal margin—which are, to say the least of it, common to a number of causes—is futile in wartime. Yet Sydenstricker *et al.* (1940) seriously advocate such capillary changes as the main prop in a list of clinical criteria.

Among ophthalmologists familiar with corneal bio-microscopy since its inception, who is to say what are the capillary variations at the limbus within normal limits? Does the capillary invasion which is suggested as a criterion exceed that which is determined by dust, wind, weather, and other irritants associated with military activities? When a vitamin deficiency can be assessed quantitatively by chemical means, and a biochemical (subclinical?) abnormality established, it may be justifiable in wartime to subject large numbers of hard-worked officers and men to detailed examinations—provided competent clinical, public health, and pathological opinion can show a probable case for impairment of military efficiency on metabolic grounds. Even here a practical rather than an academic level should be adopted.

The processes of biological oxidation (cell respiration) with which the vitamins are eventually concerned are interdependent and overlap, just as the clinical evidences of deficiency overlap. This fact necessarily leads to important abstruse fields of chemical inquiry. Such investigations, and mass biochemical observations, especially on children, will no doubt afford information which may be of use in post-war reconstruction. This war has still to be won by, for the most part, adults to whom the application of metabolic hypotheses is hardly of military value, as they must fight now under dietetic conditions largely imposed by the enemy.

Finally, in this matter of vitamins as applied to the supply of man-power in a grave emergency here and in the U.S.A., it is out of perspective and unrealistic to spend time, money, and energy by labouring academic findings when at least the younger observers may get in touch with practical issues by looking further afield and seeing the real thing in greater mass as it exists in man under conditions of total war over-seas.

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Medical Memoranda

A Case of Haemorrhagic Measles

While it is generally agreed that haemorrhage occurring into a measles rash is not uncommon, true haemorrhagic measles is so rare that well-known writers on infectious diseases such as Goodall and Ker state that they have never seen a case. It is thought that the more frequent reference to it by the older writers was due to its confusion with haemorrhagic small-pox. For this reason I think that the following case, though not quite typical, is worthy of publication.

The patient, a male child of 12 months, was seen at home on June 9, 1942, by Dr. Myerhoff, who considered the appearance to be typical of measles in the eruptive stage. The rash had started on the previous day. On the 12th the child became very ill and was admitted to Clayponds Isolation Hospital as a case of measles complicated by bronchopneumonia.

On admission the child, who was of normal nutrition and development, was seen to be very collapsed and dyspnoeic. The rash had completely disappeared. Although dyspnoea and cyanosis were severe—respiration rate 70—the chest was free from abnormal physical signs. The patient's condition at this stage would seem to correspond with the suffocative type of measles described by Rolleston and Ronaldson. The child was given 0.5 g. of sulphapyridine 4-hourly, continuous nasal oxygen, and frequent glucose drinks. About 4 hours after admission extensive haemorrhages into and under the skin of the face and limbs suddenly began to develop. One large haemorrhagic area, involving the greater part of the nose and adjoining skin, had a raised bullous appearance. No bleeding occurred from the mucous membranes, and the skin haemorrhages had reached their maximum extent in the course of a few hours. Subsequently the general condition of the child began to improve, but he remained very ill, with an irregular remittent temperature, for a further nine days. Sulphapyridine was discontinued on June 16 and no further complications occurred. Subsequent convalescence was rapid, and the patient was discharged from hospital on July 1. The haemorrhagic appearance had by then completely disappeared except for the presence of a scab on the bridge of the nose, where a large haemorrhagic bulla had resulted in superficial ulceration.

This case appeared to correspond with the description of true haemorrhagic measles in that there was a rapid recession of the rash followed by haemorrhagic extravasation. It differed in the absence of haemorrhages from the mucous membranes and in its ultimate recovery.

I am grateful to Dr. Thomas Orr, medical officer of health for Ealing, for permission to publish this case.

J. J. LINEHAN, M.D., D.P.H., D.C.H.,
Resident Medical Officer, Clayponds Isolation Hospital.

Reviews

PAIN AND ITS MECHANISM

Pain. By Sir Thomas Lewis, M.D., F.R.S. (Pp. 192; 27 figs. 12s. 6d.) New York and London: The Macmillan Company. 1942.

Bacon wrote of books, "Some are to be read only in parts; others to be read but not curiously, and some few to be read wholly and with diligence and attention." Sir Thomas Lewis's *Pain* belongs to the third category. As a clear, exhaustive, and critical exposition it is a worthy successor to *The Mechanism and Graphic Registration of the Heart Beat and Blood Vessels of the Human Skin and their Responses*; while its content will appeal to the wider audience of practitioners and students already familiar with *Diseases of the Heart* and *Vascular Disorders of the Limbs*. The scope of the book can be gathered from two extracts from the preface:

> "The chief purpose of this book is to review modern ideas of the mechanism of human pain and to bring into perspective with other observations the work of my own laboratory during the last ten years. While attempting to make a book of reference, one that will bring contact with the more important views, I have desired to . . . keep it in a readable form that will stimulate interest and enquiry."
>
> "Our knowledge of pain, of its sources, of the nerve paths conveying it, has been built up, and will continue to be built up, chiefly by observations upon man. It is built up by tests of the sentient surface in the normal subject, tests of skin deprived deliberately or accidentally of its nerves, the innumerable probings of disease itself, stimulation of deep-lying structures during surgical operations, and ingenious forms of exploration of deep structure from without; all these sources have contributed so abundantly that I shall but rarely need to refer to evidence derived from animals. There is manifest wisdom in seeking knowledge from the direct, rather than from the indirect, source, and here the direct source is prolific; there is, too, the deep satisfaction of knowing that any evidence won from man is indubitably applicable to the human problem."

After reviewing the sensitivity of various human tissues to pain and the nervous paths subserving it, the author proceeds to unfold, against the background of earlier knowledge, the newer developments resulting from his own work and that of his laboratory. This begins with the demonstration that in respect to quality there are but two distinct kinds of pain, that arising from skin and that arising from deeper structures. Dealing first with skin pain the author describes the condition "erythralgia," in which the skin some hours after being injured by a variety of stimuli becomes red and tender. An analysis of this condition leads to the conclusion that the hyperalgesic skin "is one which has been brought to this state by the action of certain tissue substances upon the pain nerve-endings, the latter being rendered hyper-excitable." The next chapter analyses the diffuse hyperalgesia which follows a few minutes after a small localized severe injury to the skin and which may last for 8 to 12 hours or as long as two days. An experimental analysis shows that this hyperalgesia is due to an axon reflex arising from the point of injury and spreading to the limits of the area involved, where the effector endings release in the skin substances increasing the excitability of the pain nerves. Since this axon reflex implies unusually long axonic branchings, and since the effector release of substances lowering the pain threshold cannot be ascribed to any known system of nerves, the author has postulated that besides the known sensory and motor nerves to the skin there exists another system, for which he has proposed the name "nocifensor nerves." The evidence for the existence of such special nerves is strong; it still lacks anatomical demonstration.

From the point of view of medical practice, the most significant part of the book is probably that dealing with deep pain and the associated phenomena of muscular tenderness and rigidity. Lewis and his pupil Kellgren have shown that not only is pain from a deep somatic structure indistinguishable in quality from the pain of visceral disease, but it is likewise referred to a distance in a segmental fashion, and is also accompanied by muscular tenderness and rigidity. This demonstration provides the basis for a review of the pain and associated phenomena of visceral disease. The controversy as to whether the source of pain and the associated reflexes in visceral disease is the viscus itself or adjacent structures is summed up as follows:

> "It is not fundamental unsoundness that renders either the first or second view unacceptable since each contains a large element of truth; it is their presentation as general laws, each exclusive of the other, which is objectionable. I believe that referred pain and associated phenomena are started sometimes in a visceral structure (not necessarily in the actual viscus) and sometimes from the anterior or posterior wall of the body cavity. The evidence that they can so start has been given and is, I think, in both cases conclusive."

From this account of its contents the reader will appreciate that this is an important book, for pain and the associated phenomena of tenderness and muscular rigidity are the very foundation of the diagnostic art. It can be confidently recommended to medical men not only as a book which will arouse their interest but as one which ultimately cannot fail to help their understanding of disease. It is, moreover, a unique illustration of what can be achieved by a forceful mind with the simplest of apparatus and methods.

PRACTICE OF AN AMERICAN SURGICAL CLINIC

Surgical Practice of the Lahey Clinic, Boston, Massachusetts. (Pp. 897; illustrated. $10.00 or 50s.) Philadelphia and London: W. B. Saunders Company. 1942.

The Lahey Clinic, Boston, Massachusetts, is one of the best known of the large American clinics and its reputation stands high in that country. The present volume is a series of articles on the surgical practices of the clinic, which constitute, as Lahey himself says in the preface, a true cross-section of the work embracing methods, techniques, diagnostic measures, and results. The whole field of surgical enterprise is not covered, but the articles nevertheless represent a very comprehensive survey of many of the commoner branches of ordinary workaday surgical practice.

The first 140 pages are devoted to certain aspects of thyroid surgery, the most interesting features in this section being articles upon the management of intrathoracic goitres and the routine dissection and exposure of the recurrent nerves in subtotal thyroidectomy, the latter reminding one of the old adage, "If there's anything you're afraid of in a surgical operation, go for it." After shorter sections on the oesophagus, lungs, and breast, the surgery of the alimentary canal and its accessories receives a considerable amount of attention. Of many points of interest here the following may be picked out as of particular value. In the performance of the operation of total gastrectomy many surgeons from time to time must have found it advisable to remove the spleen at the same time, but here we find it advocated as a definite advance in technique, of frequent application, making the operation easier and reducing the risk. In dealing with massive haemorrhage from peptic ulcers a conservative attitude is advised except for a very small group of cases in which the bleeding seems to be beyond control; these are dealt with usually by resection, but sometimes by less drastic means of surgical haemostasis. Informative chapters discuss the treatment of Crohn's disease and of abdominal fistulae. In the technique of gall-bladder surgery the practice of the clinic is orthodox, although cholecyst-jejunostomy is suggested in place of the common cholecyst-duodenostomy or cholecyst-gastrostomy when an obstructed common duct has to be circumvented. The Lahey two-stage operation for abdomino-perineal resection of the rectum, as would be expected, is fully described. The operative mortality has been 12% and the end-results have been particularly good, over 50% of the patients being alive after a period of 6 to 10 years.

Sections on certain gynaecological conditions, orthopaedics, and neurosurgery precede the final one on anaesthesia. A good deal of space is devoted to the application of spinal anaesthesia, and an interesting account is given of the technique of continuous, or fractional, spinal anaesthesia. This is advocated especially for operations of unpredictable length—the longest case recorded being of four and a half hours' duration. We imagine that this method (devised by W. Lemmon of Philadelphia) is unlikely to replace the very satisfactory and simple methods (such as those of Etherington Wilson and Lake) now in common use, since there are obvious difficulties and risks associated with it. Few abdominal operations can possibly last longer than the two-hours anaesthesia which nupercaine in suitable strengths can give, but the new method is an interesting exploration into the possibilities of this form of anaesthesia.

The illustrations throughout are to the point and of first-rate quality. Altogether this volume can be warmly recommended, for a strong element of common sense runs through the opinions expressed, and there are few who would not gain some useful information and guidance from it.

A TEXTBOOK OF MEDICINE

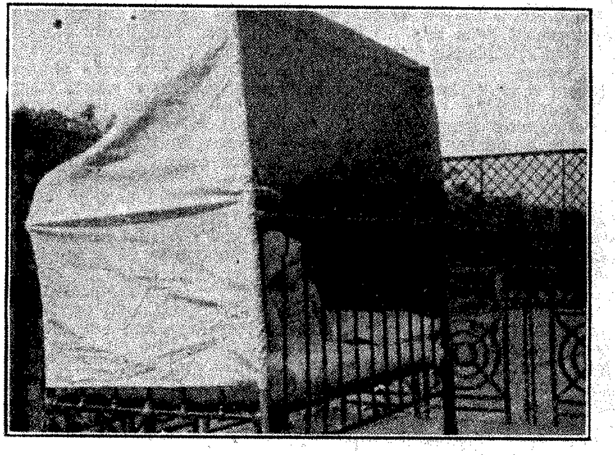
Medicine: Essentials for Practitioners and Students. By G. E. Beaumont, D.M., F.R.C.P., D.P.H. Fourth edition. (Pp. 801. 28s.) London: J. and A. Churchill. 1942.

When a textbook reaches its 4th edition in ten years its success is established and the reviewer's task is proportionately lightened. In those ten years Dr. Beaumont's experience has deepened, but also, to his dismay, the facts the student is expected to know have increased alarmingly. The mere catalogue of new features in this edition, whether new or rewritten articles or additional notes, occupies more than a page of the preface. Naturally, some in the first category relate to the effects of air raids, such as blast injury of the lungs and the crush syndrome. There is an interesting discussion under the latter heading of the parts played by intoxication of the kidney by myohaemoglobin and of the heart by potassium salts on the one hand, and, on the other, by the exaemia which results from the oedema of the compressed limb. There is also a helpful discussion of the factors in the severe jaundice of the newborn. We wish there were more such, for this work illustrates one of the present difficulties concerning students' textbooks. It seems to us that what is needed is a textbook of *principles* which will stimulate the student to do his own thinking and form his own conclusions. Given the encyclopaedic method, we do not see how the book before us could have been better done, but is it the right method? For example, the factors in uraemia, both actual and speculative, are duly stated, but there is no guidance as to their relative significance and importance. Naturally we realize that Dr. Beaumont, like the student, is the victim of an examination system which urgently calls for reconsideration.

Preparations and Appliances

BED AND COT TENTS

Dr. C. Paget Lapage (Manchester) writes: The illustration shows the essential features of tents which can be readily fixed to ordinary ward cots and beds. Primarily they were made for use on the ward balcony, especially in very windy or very sunny weather or for initiation of balcony treatment in weakly infants and convalescent children. They can, however, be used inside the ward, either to avoid draughts or for isolation purposes, though they are not necessarily ideal for the latter purpose. These tents also make it possible to give even delicate babies a daily airing, and this, to my mind, is one of the most potent measures for preventing ward infections.



The tents were made for me by Mr. Robert Burns of Hanover Mills, Buxton Street, Manchester, 1.

BRITISH MEDICAL JOURNAL
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DO DOCTORS DISAGREE ABOUT PASTEURIZATION?

Most readers of the *Journal*, we imagine, will wonder if it is necessary to ask this question. And indeed those who have, over a large number of years, followed the evidence that has been reviewed in these columns will be inclined to dismiss the question as idle and rhetorical. But unfortunately it is still necessary to ask it and to reiterate the reasons why the majority of doctors who have given a moment's thought to the matter agree that pasteurization of milk is in the interest of the public health, and to examine the views of what must be a very small minority of those who do not agree. Unfortunately pasteurization of milk is one of those subjects on which the lay and uninstructed person believes himself competent to hold views. Such people usually begin their arguments by saying: "Ah, well, doctors don't agree among themselves about this." A few medical men, too, tend to attach greater significance to their personal views than to the evidence on which such views should be based. We should have thought that the evidence presented by Prof. Selby Wilson in his recent book, *The Pasteurization of Milk*,[1] would have convinced those who are capable of assessing such evidence—and among these we would like to include all members of the medical profession. Those doctors who do not agree that pasteurization of milk is necessary for the health of the people no doubt are sincere in holding the belief they do. No doubt also there are many sincere people who still believe that the world is flat; but among the majority who accept the evidence of science such a belief is looked upon as foolish and without foundation. By pasteurization we mean, it should be clear, the freeing of milk from pathogenic micro-organisms that might infect the consumer.

The question of pasteurization was discussed by the Parliamentary and Scientific Committee of the House of Commons on October 20, and subsequently a number of M.P.s, including a medical man, Sir Henry Morris-Jones, tabled the following motion:

> "That this House, realizing the unique value of fresh milk in the national diet, asks that His Majesty's Government should not, without the fullest inquiry, embark upon a policy involving the consumption of half-boiled milk, frequently known as pasteurized milk, which is still the subject of conflicting expert opinion; and further urges His Majesty's Government to pursue with vigour a policy to eliminate cattle disease, exterminate vermin, improve water supplies, and establish higher standards of cleanliness and hygiene on the farm and in the transport and the handling of milk on its way to the consumer."[2]

Sir Henry Morris-Jones, then, apparently considers it necessary at this late time of the day to make yet another inquiry into the value of pasteurization, "which is still the subject of conflicting expert opinion." Is there really any opinion that can be called expert which is in conflict with the view that pasteurization of milk is necessary to control the incidence of milk-borne infections? At the meeting of the Parliamentary and Scientific Committee the case against pasteurization was put by Dr. A. H. Macdonald, formerly chief medical officer to Dr. Barnardo's Homes. We will give here an excerpt from the report of what Dr. Macdonald said, issued by the Committee itself:

> "Another point to bear in mind was that children brought up on tuberculin-free milk (T.T.) were liable, if for any reason they had to drink ordinary raw milk which more likely than not would contain living tubercle bacilli, to develop tuberculous glands or peritonitis. . . . In recent years tuberculosis was said to be on the increase. Dr. Macdonald was not surprised, since more pasteurized milk had been consumed. He was afraid it would continue to increase so long as this state of control lasted, and the drinking of pasteurized milk became more general."

After some further observations on the subject Dr. Macdonald concluded, according to the account we have, that "the taking of clean raw milk, and not pasteurized milk, was one of the best means to combat tuberculosis." No doubt Dr. Macdonald believes what he says, and this argument should be examined because it is one that is not infrequently used by lay people who are also quite genuine in their opposition to the pasteurization of milk. What Dr. Macdonald is saying in effect is that, in order to offer a person protection against tuberculosis, children should be allowed to drink milk containing tubercle bacilli. In other words, he advocates that an oral vaccine of viable and virulent bacteria should be given in unmeasured doses at unstated intervals. There is surely no need in these columns to bring arguments against using a vaccine in this way. There is, however, one result of this method of vaccination which is undeniable, and that is that owing to the consumption of this milk at least 3,000 to 4,000 persons in this country contract bovine tuberculosis every year, and 1,500 to 2,000 die of it every year. Do those who think alike with Dr. Macdonald seriously believe that this country, if fully acquainted with these facts, would allow the medical profession to advocate a method of immunization which carries with it such a high mortality rate? Further, if it were agreed that an oral vaccine of viable bovine tubercle bacilli provided the best way to combat tuberculosis, would it not be more logical and more in keeping with what is known about the principles of immunization to give such a vaccine in accordance with these principles, rather than to leave it to the discretion of the householder to conduct this uncontrolled experiment herself?

We have picked out this one point because it formed the staple of Dr. Macdonald's opposition, and so no doubt it will be heard of again in the House of Commons and from those who, for whatever reason, share the hostility to pasteurization expressed by another speaker before the committee, Mr. David Quibell, M.P. Prof. Wilson rightly reminded those present at the committee that milk was at times responsible for spreading scarlet fever, diphtheria, enteric fever, dysentery, food-poisoning, and *Brucella abortus* infection. Pathogenic micro-organisms might come not only from the cow but also from the upper respiratory tract and from the fingers of farm workers. He reminded them, too, that another possible source of infection was sewage-polluted water used for dairy purposes, this being the origin of the milk-borne outbreak of typhoid fever in Bournemouth in 1936.

It is difficult to understand why a country which insists upon bacteriological purity of the water supply wishes to oppose the introduction of an equally pure milk supply, but at least no one has yet suggested that the public health authorities should allow typhoid bacilli to appear in the household drinking-water as a method of immunizing the susceptible population against enteric fever.

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[1] *British Medical Journal*, 1942, 2, 458.

[2] *Times*, Dec. 5, 1942.

UNDER THE ELECTRON MICROSCOPE

The microscopist, like the specialist, seeks to discover more and more about less and less. To assist him in his task he has a variety of microscopes—the compound, the dark-ground, the ultra-violet, the infra-red, the fluorescence, and, latest comer, the electron or "supermicroscope." The glass-lensed compound microscope is capable of almost any degree of magnification, but for the demonstration of minute objects as separate entities—that is, for resolution —it is limited by the wave-length of light. The development of "electron optics" by television physicists has made the construction of the electron microscope possible. An electron beam replaces the light-source of the compound microscope, and a series of electromagnets focus the beam much as glass lenses focus a beam of light. Electron waves travel in straight lines only in a vacuum. The whole microscope must therefore be evacuated to a high degree. Since the waves are entirely invisible, their images must be made visible by the use of either a fluorescent screen or a photographic plate. By using electron waves 1/100,000th of the wave-length of visible light, it may be possible to obtain a magnification of 25,000 to 100,000 with accompanying resolution. One red blood cell would thus be enlarged to seven metres. Specimens for examination are mounted on a very thin collodion film; they must be dry and extremely thin.

The electron microscope is not yet an instrument for every pathologist's bench. Its immediate future lies rather in the research laboratory. It holds great promise in almost every field of science, as it reveals many important structures and reactions which have hitherto been inaccessible to direct observation and measurement. In chemistry it has been possible to obtain micrographs of the location of certain chemical reactions incident to the metabolism of the bacterial cell. Morton and Anderson[1] have studied the reduction of tellurites by *C. diphtheriae*, and have shown that crystals of tellurium form in all parts of the micro-organism, in some cases puncturing its walls. Electron microscopy has also proved of service in metallurgy, crystallography, and colloid chemistry, and in studies of molecular architecture. Possibly a new technology of staining for electron microscopy may develop. Recently Mudd and Anderson[2] have tested a method of selective microchemical analysis, equivalent to differential staining, by photographing specimens after exposure to the salts of heavy metals. Bound up with this work there is another promising field of application of microchemical analysis: this is the recording of the action of germicidal agents on bacterial cells.

Excellent micrographs of bacteria have been obtained, particularly by Mudd, Anderson, and their colleagues.[3] They have shown that many types of bacteria, including streptococci, pneumococci, anthrax and subtilis bacilli, typhoid and coliform bacilli, possess rigid outer membranes which protect their inner protoplasm. Flagella of motile forms are extremely delicate structures, some of which appear as two parallel lines with alternate thinner and thicker markings. Flagella of monotrichates—for example, vibrios—are on the whole wider in diameter. *Treponema pallidum* appears to have a continuous envelope, a knob-like structure at one end, and flagella-like processes at various points along its course. The protoplasmic inner structure of many micro-organisms is not homogeneous. In diphtheria bacilli, for instance, definite polar bodies are seen, and in tubercle bacilli areas of greater and lesser density are observed. Spores of subtilis bacilli appear as dense oval bodies.

In histological research the electron microscope has revealed characteristic cross-striations in collagen fibres, and the effect of various physical and chemical conditions on the fibres is being investigated by Hall, Jakus, and Schmitt[4] in a search for further knowledge of the molecular structure of collagen. To entomologists the new instrument discloses hitherto unseen structures and it permits the accurate measurement of those already recognized. The tracheae, trachioles, air sacs, wing scales, and cuticle have been studied, and experiments by Richards and Anderson[5] on the mode of penetration of the cuticle by non-volatile oils serve as an example of future useful applications.

The electron microscope may well show its greatest value in the study of objects between 5 and 250 mμ, a range not covered by the light-microscope and the one in which nearly all viruses fall. Micrographs of individual virus particles may be secured and their sizes and shapes established with accuracy. Green, Anderson, and Smadel[6] have shown that elementary bodies of vaccinia are rectangular in shape, resembling a brick, and contain five areas of condensation arranged somewhat like the five spots on a dice. Particles of tobacco mosaic virus appear in purified preparations as discrete rod-like units with a tendency to side-to-side and end-to-end aggregation. Bacteriophages, studied by Luria and Anderson,[7] disclose an extremely constant and characteristic sperm-like appearance with a round head and a much thinner tail; in many micrographs the head is filled with a dense internal structure. Such particles are adsorbed to their specific micro-organisms by head or tail, and after contact it is possible to see extensive damage to the bacterial cell. The discovery of such constant and detailed differentiation in objects of supposedly macromolecular nature is of interest also to geneticists, for genes, as well as viruses, are thought to be macromolecular entities. Sperms of the ram and the bull, owing to their extreme flatness, are amenable to examination and have already come under observation.

Finally it should be mentioned that the interpretation of results is limited at present by the necessity for placing the specimen for study in a high vacuum; by the inability to assess the changes effected in protoplasm and in molecules by the electron bombardment; and by the extreme thinness of the objects which the electron beam can traverse. Entomologists have commented on shrinkage, evolution of gas, discoloration, and increased friability of their specimens. The electron microscope is, however, in its early days, and some, if not all, of these difficulties are likely to be overcome by teams of physicists, chemists, and biologists, such as those already working for the National Research Council and the Radio Corporation of America.

CHARTING THE PULSE

The commonest type of clinical chart is still that which provides a graphic record only of the temperature, and relegates pulse and respiration rates to a cramped space at the foot, where they appear in figures. The careful perusal of these figures is no substitute for the instantly comprehensible picture given by charting all three graphically; significant tendencies then become evident at a glance, and the warning of some change in the patient's condition stares one in the face instead of having to be deduced laboriously by building up a mental picture from numerical data. The pulse rate can in some circumstances mean more than the temperature, and is equally entitled to display in the same form; in morbus cordis, for example, it may be the only feature in the chart showing significant variation. A falling temperature, in itself a usually favourable sign, assumes a quite different complexion in the presence of a steadily rising pulse rate, and the opposite tendencies of their two graphs afford an unmistakable danger signal. The evil obscurity of the ordinary chart had a hand in a fatality recorded by Joan M. Boissard and R. M. Fry[1] which also raises some other points of interest in diagnosis. A boy aged 12 fell 40 feet, fracturing both forearms and sustaining ruptures of the liver and right kidney; these were dealt with by suture and nephrectomy respectively. Reduction of the fractures under anaesthesia was not undertaken until some days later, when the general condition had improved. Both operations were followed by febrile exacerbations, and there is consequently little contrast between the temperature chart in the early stages and its behaviour after the twelfth day, which was the time of onset of a haemolytic streptococcal peritonitis due to a ward infection. The pulse, on the other hand, which had previously fallen and remained steady for several days, showed a continued rise, which is striking as seen in graphic form in this report, but was recorded on the patient's chart only in figures. When the abdomen was first explored only a serous fluid was found, which was not sent for bacteriological examination, and it was only on the day before death that a bacteriological diagnosis was made. The exudate in this form of peritonitis is sero-fibrinous and not frankly purulent. In the early stages it may contain but few streptococci; it should preferably be collected as a fluid rather than by swabbing, if necessary by aspiration via a catheter passed down the drainage tube. The bacteriologist is well advised to cultivate a large inoculum in glucose broth as well as to make the usual plate culture.

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[1] *Proc. Soc. exp. Biol.*, N.Y., 1941, **46**, 272.
[2] *J. exp. Med.*, 1942, **76**, 103.
[3] *Arch. Pathol.*, 1942, **34**, 199.
[4] *J. Amer. chem. Soc.*, 1942, **64**, 1234.
[5] *J. Morph.*, 1942, **71**, 135.
[6] *J. exp. Med.*, 1942, **75**, 651.
[7] *Proc. nat. Acad. Sci.*, 1942, **28**, 127

PROPHYLAXIS OF RHEUMATIC FEVER

It is now six years since the first attempts were begun in the U.S.A. to prevent recrudescences of rheumatic fever by giving sulphanilamide continuously over long periods. For reasons which are far from clear this drug does harm rather than good during the rheumatic attack itself, but, if administration is begun when the attack is over, the further activity of haemolytic streptococci is suppressed and throat infections such as precede further exacerbations do not occur. Caroline B. Thomas,[2] who was one of the first to adopt this method, now reviews her own experiences with it at the Johns Hopkins Hospital and those reported in five other American studies. Her patients, regardless of their age, which varied from 6 to 37 years, though the majority were between 14 and 26, were given 1.0 and later 1.3 g. of sulphanilamide daily in two doses from October until June; lately some patients have taken the drug all the year round with no summer intermission. This is now thought a better plan, and it is therefore proposed that rheumatic subjects should have an uninterrupted course of treatment lasting five years or even longer in younger patients. That further attacks can so be prevented all authors are agreed: during the first four years of Thomas's study 10% of a control group had recrudescences, and of the treated group none. Since then controls have been abandoned, and two cases only have occurred in which an exacerbation developed during treatment. Repeated throat swabbing showed the presence of haemolytic streptococci in 12% of control cases and in only 4% of the treated. The effectiveness of this treatment is therefore not in doubt, but is it feasible and safe? Apparently these patients can usually be depended on to continue taking the drug indefinitely and experience no ill effects even while engaged in strenuous occupations. They need to be shepherded through the initial stages while still in hospital, and in this series only two showed intolerance which caused the treatment to be abandoned; other authors, who have used larger doses up to 3.0 g. daily, have naturally had more such cases. In no instance have any toxic effects been seen after the first few weeks of treatment, and some of these cases have been under treatment for 3, 4, or 5 years, and one for 6 years, the last 4 without intermission, owing to the occurrence of a rheumatic attack during August of the second year, when treatment had been stopped for the summer. Thomas analyses all the recorded cases of agranulocytosis due to sulphanilamide, and points out that this complication has never been observed after the fiftieth day of treatment given for any condition, and is commonest between the fourteenth and twenty-first; during prophylactic administration for rheumatic fever agranulocytosis appeared on the twenty-ninth day in the only known case which developed it. The idea that prolonged administration is dangerous must therefore be abandoned, at least as it concerns small doses. No mention is made of the possibility that streptococci exposed to these low concentrations of the drug may acquire tolerance to it, and, indeed, there is no apparent evidence that such a thing can occur in this disease, a fact which may perhaps raise some doubts about the alleged development of "drug-fast" variants of susceptible bacterial species during treatment with inadequate dosage. We must therefore conclude that this treatment is effective, feasible, and safe; not only does it prevent further cardiac damage, but it is simple and cheaper than the institutional treatment demanded by rheumatic recrudescences.

Another method of prevention which has been tried in the U.S.A. is the subject of a further report by its authors, Valentine P. Wasson and E. E. Brown[3]; this is a prolonged course of immunization with a streptococcus culture filtrate. Almost all fresh light on the aetiology of rheumatic fever gained in the past few years points to haemolytic streptococci as the major if not the sole factor concerned, and, this being so, immunization by some means should be feasible during quiescent periods. Whether the best method of achieving this has yet been found is another matter, but here at least is an alternative form of treatment which merits further investigation.

THE CONDUCTING SYSTEM OF THE HEART

In twelve and a half pages of the *British Heart Journal* for July, 1942, appear the concentrated results of extensive scientific labour of the first order. A delightful historical note by Sir Arthur Keith tells the story of the discovery of the mammalian auriculo-ventricular node by Tawara (1905), and of the mammalian sino-auricular node by himself and Flack (1906). Prof. Francis Davies carries us further. He criticizes the view of Keith and Mackenzie that the nodes and A.V. bundle of the mammal are remnants of more extensive tissues of similar structure in lower vertebrates, on the ground that the complete nodal rings found at the junction of chambers in primitive hearts are not composed of specialized tissue as in mammals, but of unspecialized cardiac muscle arranged in a spiral so that the necessary delay in transmission of the cardiac impulse is achieved. Having made this discovery in the spotted salamander, Davies's researches to date suggest a similar arrangement in fish, amphibia, and reptiles. The specialized conducting tissue of mammals therefore appears to be a neomorphic development, associated with the need for quicker conductivity in the faster-beating hearts of homoiothermal vertebrates. This conclusion is supported by the even greater development and extension of specialized conducting tissue in birds, discovered by the author and described in this article; and again by the observations of Prof. Shaner, who found that the A.V. node and bundle of the 9 mm. calf embryo appeared to grow like any other embryonic organ, and did not behave like the remnants of more extensive tissues connecting the atria and ventricles at an earlier stage of embryonic life. These discoveries, modestly recorded, are of high importance.

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[1] *Mthly. Bull.*, E.P.H L.S., Nov., 1942, p 6.
[2] *Bull. N.Y. Acad. Med.*, 1942, 18, 508.
[3] *Amer. Heart J.*, 1942, 23, 291.

PRESENTATION TO MADAME MAISKY

The Anglo-Soviet Medical Council has just come to the end of its first year of life. This precocious child anticipated its birthday in an unusual way by giving a present to one of its foster-parents when it handed to Madame Maisky on November 23 the first volume of *Reviews of British War Medicine*, published in Russian. Three thousand copies of this book have been printed, and with them goes the hope of British doctors that this small contribution will be of help to our great ally. The articles have been contributed by experts in the various subjects covered, which range from the treatment of burns to the electro-encephalogram in post-traumatic states. The authors remain anonymous, which we think is a pity. A second volume is on its way.

It was particularly fitting that the presentation should have been made to Madame Maisky, as she has shown a special interest in medicine and a live sympathy with its problems. When the time comes for Russian medical men to be eased of their terrible burden we may hope to welcome here a volume setting forth their knowledge and experience.

EXTRARENAL AZOTAEMIA

Extrarenal azotaemia is a condition in which the nitrogenous constituents of the blood are increased by causes other than primary failure of the kidneys. Urea, which forms the bulk of the non-protein nitrogen, is commonly used as an index of the degree of azotaemia. It is well known that a raised blood urea occurs in a variety of conditions such as loss or deprivation of fluid, gastro-intestinal haemorrhage, alkalosis, diabetic coma, and the crush syndrome. The exact cause of the azotaemia in these conditions is sometimes obscure, and recent studies have been made on two of the conditions with a view to clarifying the subject.

It has been known for many years that in gastro-enteritis of infants a high blood urea is found in untreated cases. With a view to determining whether this is due to a functional disturbance of the kidneys Young and McCance[1] have made a series of observations on normal babies and on infants of the same age suffering from gastro-enteritis. They find that the normal renal function of infants differs in some measure from that of adults, and is intermediate between the adult type and the type which they have previously shown to occur in newborn babies. Infants have lower glomerular filtration rates and urea clearances than adults (in relation to their surface area), and both these vary with the minute volume of the urine even at normal rates of urine flow, which is not the case with adults. In other words, when the volume of urine is decreased, as in gastro-enteritis, the infantile kidney is unable to adjust its function to the altered circumstances and produce a urine sufficiently concentrated to maintain the normal excretion of urea and other substances; there is no evidence of a specific renal lesion.

Azotaemia in gastro-duodenal haemorrhage has been studied by Black,[2] who concludes that several factors help to produce the high blood urea so often found in such cases. Large quantities of nitrogen are absorbed from the blood present in the bowel; but this probably cannot wholly account for the azotaemia. Increased formation of urea may also result from increased protein breakdown in the body; this, in turn, may be caused by dehydration and tissue anoxia. Further, there is decreased elimination of urea owing to a fall in the rate of glomerular filtration in the kidney, and formation of urine is slow. In a few cases a previous state of alkalosis or dehydration may be an aggravating factor. Black holds that the degree of azotaemia in gastro-duodenal haemorrhage is of value as a guide to treatment and in estimating prognosis. Continued azotaemia is an indication for restoring blood volume by transfusion and by the administration of fluid.

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[1] *Arch. Dis. Childh.*, 1942, **17**, 65.

[2] *Quart. J. Med.*, 1942, **11**, 77

DRUGS FOR MYASTHENIA GRAVIS

The use of ephedrine in myasthenia gravis was obscured by the discovery of the value of prostigmine by Walker in 1935, but since that time there have been several reports that prostigmine and ephedrine together are preferable to either alone. The physiological basis for this clinical observation was a little obscure until research in a very different field provided a possible explanation. Bülbring and Burn observed in the course of experiments on the spinal cords of dogs that, while physostigmine (eserine) potentiated the flexor reflex, prostigmine (the synthetic analogue) scarcely influenced it unless adrenaline were present. This suggested that adrenaline might perhaps influence the action of prostigmine at the neuromuscular junction in the same way. In further experiments[1] designed to test this hypothesis Bülbring and Burn used cats anaesthetized with chloralose, and prepared so that the effect of drugs on the contraction of the gastrocnemius after stimulation of the sciatic nerve might be examined. They found that at low rates of stimulation the twitch tension was augmented by adrenaline if prostigmine was injected a few minutes previously. The same phenomenon was seen after physostigmine, though the effect was smaller. At higher rates of stimulation the increased twitch tension caused by the injection of prostigmine is diminished by adrenaline; and, similarly, in muscles tetanized to fatigue the normal augmentation after injection of adrenaline is diminished by prostigmine. There are two conditions now known in which adrenaline augments the contraction of skeletal muscle—first, in fatigue (as in the Orbeli phenomenon), and, secondly, after injection of prostigmine. Bülbring and Burn suggest that adrenaline increases the height of muscle contraction by potentiating the effect of the increased amount of acetylcholine which will in both conditions be liberated at the neuromuscular junction—in the first instance owing to the more frequent stimuli, and in the second because prostigmine prevents the rapid destruction of acetylcholine. Similarly, when too much acetylcholine is formed the effect of adrenaline is again to intensify its action and bring about depression. While this hypothesis may explain all the phenomena, it was also suggested that there may be some special relation between adrenaline and prostigmine; for instance, prostigmine augments the action of adrenaline upon the blood vessels.

To return to the subject of myasthenia gravis, there is no evidence that ephedrine itself bears any such special relation to prostigmine, but it seems very probable that ephedrine will benefit patients suffering from this disease by prolonging the effect of adrenaline naturally formed in the body, either from the adrenals or at sympathetic nerve endings. This constitutes the physiological justification for the use of prostigmine and ephedrine together.

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[1] *J. Physiol.* 1942 **101**, 224.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

SULPHONAMIDE DRUGS IN WAR

BY
L. E. H. WHITBY, C.V.O., *M.C.*, M.D., F.R.C.P.
Brigadier, R.A.M.C.(T.A.R.O.)

It may be emphasized at the outset that there is no essential difference between peace and war so far as the principles which govern the employment of the sulphonamide group of drugs are concerned. Nevertheless, certain infections become more prominent during wartime, and it is with these, particularly meningococcal and wound infections, that this paper deals.

Principles of their Use

The first principle is that the infecting organism must be sensitive to the drug employed, the three drugs more or less readily available being sulphanilamide, sulphapyridine, and sulphathiazole. The meningococcus is sensitive to all three drugs, but the flora of a wound may be so diverse that judicious selection may be required to get the optimum result. The following table gives a rough estimate of the sensitivity of common wound bacteria to sulphanilamide, sulphapyridine, and sulphathiazole, it being borne in mind that there may be considerable variation in the susceptibility of different strains. Thus there are strains of *Staph. aureus* which are sensitive to sulphathiazole but not to sulphapyridine, and vice versa; while most strains are to some degree sensitive to both.

	Sulphanilamide	Sulphapyridine	Sulphathiazole
β-haemolytic streptococcus	+++	+++	+++
Staph. aureus	0	++	++
Proteus vulgaris	++	++	++
Bact. coli	++	++	++
Ps. pyocyanea	++	++	++
Str. viridans	0	±	+
Cl. welchii	++	++	++
Vibrion septique	0	++	++
Cl. oedematiens	0	0	0

A survey of this table shows that sulphanilamide, which is cheap, readily available, and also relatively soluble, has a fair range of activity against wound bacteria, including *Cl. welchii*, the commonest gas-gangrene organism, and is therefore the drug of choice for prophylaxis in the average case, whether oral administration or local application is used, or both. On the other hand, with an established infection either sulphapyridine or sulphathiazole is indicated because of the greater range, while polyvalent gas-gangrene antitoxin should also be administered as none of these drugs has any action on *Cl. oedematiens*.

The second principle is to obtain and maintain an effective blood-stream, spinal-fluid, or local concentration, but with serious generalized infections it is essential that the administration should be four-hourly night and day: too often the night doses are omitted, with the result that the concentration during the night hours sinks below the effective level. It is an axiom that the drug must be in solution to be effective; this is of considerable importance when making local application to wounds, and rules out the insoluble sulphapyridine. For wound application a mixture of sulphanilamide and sulphathiazole gives the greatest chance of success; and in theatres of war, where most gas gangrene has been found to be due to *Vibrion septique* or *Cl. oedmatiens* rather than *Cl. welchii*, sulphathiazole is certainly required. These drugs act best on small numbers of bacteria: this is perhaps the strongest argument for their free prophylactic use in wounds which from their site, extent, or nature are an open invitation to gas-gangrene infection.

A third principle involves the nature of the medium in which the drugs are called upon to act; certain substances completely inhibit action and must be excluded. Pus is one such substance, and it is therefore quite useless to expect the drugs to disperse a collection of laudable pus or to be at all effective when applied to a dirty and purulent wound; this, too, is a possible explanation of failure in deep-seated bony infections in which loculations of pus prohibit action. Nor can any great effect be expected from local application to a dirty, irregular, lacerated, pocket-laden wound, into many parts of which the dissolved drug cannot penetrate and in which foreign bodies, dirt, clothing, or bone provide an impenetrable shelter for implanted bacteria. These features show that the drugs are the handmaidens of surgery and not its master, and that the best results in wound-infection prophylaxis will be obtained by early combination of the two procedures.

A fourth general principle is to avoid prolonging treatment indefinitely when no clinical evidence of effect is forthcoming. What these drugs do they usually do quickly. Provided that adequate doses have been consistently administered at four-hourly intervals for a period of 7, or at most 10, days without beneficial action, no good can be expected from prolonging the course with that particular drug. The inference is that the infecting organism is insensitive. If further chemotherapy is contemplated the preparation should be changed: an early bacteriological examination is a useful check upon useless chemotherapy. As almost a converse to this principle it may be said that too early omission of the drug, especially in dangerous generalized infections, is apt to permit a relapse or an exacerbation; almost full doses should be continued for some 48 hours after the desired clinical effect has been produced.

Sources of Infection

The β-haemolytic streptococcus is introduced into a wound by human carriers and is not implanted at the time of wounding. Prophylaxis is here more a problem of hygiene than of chemotherapy. *Staph. aureus* is present in clothing and on the skin. Most other organisms are introduced by the soil. A gas-gangrene infection is implanted as spores, and the establishment of the condition is assisted by laceration of muscle, by blood clot, by the adjuvant action of aerobic bacteria, and by the presence of calcium salts. The latent period for the activation of anaerobic spores is from 5 to 12 hours, during which time, if proper surgical treatment can be given, the chance of preventing infection is good. Sometimes the infection is fulminating and is well established within a few hours. It is obvious that gas-gangrene infections will be most frequent in mobile warfare when there is unavoidable delay in obtaining surgical treatment.

Wound-infection Prophylaxis

The object of prophylactic chemotherapy is, first, to prolong the latent period before infection has become established until such time as proper surgical treatment can be obtained, and, secondly, to ensure that any residual infection after débridement shall be eliminated. If the two procedures can be combined so much the better. Oral administration is feasible in the most advanced positions in a battle zone; local application is neither so easy nor so likely to be efficient, because the wound has been neither cleaned nor trimmed. Nevertheless, the general opinion is that local application at the earliest possible moment is desirable even though efficient surgery has to be delayed: at least partial inhibition may be accomplished, and if supplies are adequate the procedure is justifiable. A second application at the time of débridement should always be made. Animal experiments have shown that local application alone does not prevent invasion of the blood stream by the β-haemolytic streptococcus; oral administration is also required in order to obtain a sufficiently high blood-stream concentration. On the other hand, local application, properly applied, is more effective in preventing the establishment of anaerobic infection than is oral administration; the anaerobes, too, are far less invasive than the β-haemolytic streptococcus, and the relatively low blood-stream concentration which local application engenders is high enough to prevent this complication. The general conclusion from animal experiment is that local application combined with small doses by mouth is necessary for efficient wound-infection prophylaxis. No extensive systematic assessment has yet been made, but the clinical impression of those who have seen active service is that these measures are effective and certainly superior to the use of antiseptics such as eusol, acriflavine, and hydrogen peroxide.

Dosage in Wound-infection Prophylaxis

For local application sulphanilamide is the drug of choice unless sulphathiazole is available, in which case a mixture of two parts of the former and one of the latter should be employed. From 5 to 15 g., according to the size of the wound, should be applied as a fine powder. However numerous the wounds not more than 15 g. should be used. The application should be made as early as possible and be repeated at the time of débridement. It is necessary to keep the wound moist with a saline gauze dressing or to cover the powdered wound with a vaseline spread. This last is recommended by Mitchell, Logie, and Handley (1941), who have had extensive experience in the Middle East. These same authorities recommend 5% sulphanilamide in 80% glycerin for deep cavities and joints. The powder may be applied with an insufflator, a pepper-pot, or even a tablespoon; it should be distributed evenly and completely, if this is possible, or applied to a moist saline gauze and thrust deep into the wound when circumstances demand. A War Office Memorandum (1940) recommends for oral administration an initial dose of 1.5 g. sulphanilamide followed by 0.5 g. four-hourly for 3 or 4 days as uncrushed tablets. The sooner this is administered the better, but it is important that all doses, and the time, should be recorded on the label attached to the patient, in the same way as morphine and antitetanic serum are recorded. Mitchell, Logie, and Handley (1941) consider these doses far too small for severe cases, and recommend as much as 4 g. for an initial dose, with subsequent four-hourly doses of 1.5 g. for 4 to 6 days, night and day; they state that they have seen many die from too little sulphanilamide but none from too much. To those who have the bogy of agranulocytosis always before them these heroic doses may appear to invite disaster; there is no doubt they are the upper limit, whereas the War Office Memorandum doses are definitely cautious. There is considerable scope for clinical judgment between the two limits according to the nature of the wounds, the higher doses being used when indications suggest that gas gangrene is inevitable. Similarly, clinical judgment will sometimes suggest that an early administration of gas-gangrene antitoxin is justifiable.

Treatment of Established Wound Infection

With acute infections both oral and local treatment should be undertaken. On account of their greater range either sulphapyridine or sulphathiazole should be used for the oral doses. Oral dosage may be as much as 10 to 12 g. daily for 7 to 10 days with a severe and extensive gas-gangrene infection; antitoxin in doses of 20 to 40 c.cm. daily for 4 or 5 days is also advisable. Frankly purulent wounds need to be cleaned up before local application is made. Chronic wound infection does not demand oral therapy unless a generalized infection appears likely; all purulent material must be removed from the wound before local application is made. Excellent results have been obtained, with rapid healing, in wounds resulting from burns. Skin-grafting may be practised on a wound-bed previously sprinkled with sulphanilamide.

Meningococcal Infections

With early administration and adequate dosage bacteriostasis is complete within 12 to 24 hours. In epidemics early recognition of cases is of first importance. With unconscious patients a soluble preparation is required at the outset, but this should give place to an oral one as soon as swallowing is re-established. The soluble preparation should never be administered intrathecally, and most authorities do not advocate the giving of serum. Sulphapyridine and sulphathiazole are somewhat more effective than sulphanilamide, and sulphathiazole is preferred on account of its less nauseating reaction. A normal fluid intake should be arranged. For adults the "loading dose" is 2 to 3 g. and the maintenance dose 1½ g. four-hourly night and day for 2 to 3 days; thereafter 1 g. four-hourly for 2 days, followed by 0.5 g. four-hourly for 2 to 3 days; total dosage 40 to 50 g., according to clinical judgment. Failure to respond to this schedule of dosage usually means that the concentration in the cerebrospinal fluid has not reached the required amount of 3 to 5 mg. per 100 c.cm. When samples of spinal fluid are sent for estimation of drug content care should be taken that no traces of novocain are present in the sample, as this anaesthetic gives a colour reaction similar to that of the sulphanilamide group. Meningococcal septicaemia responds to somewhat smaller doses; the amount recommended is a loading dose of 2 g. followed by 1 g. four-hourly until 48 hours after the temperature has become normal. The meningococcal carrier has always been a problem. Modern opinion is that a bacteriological search for carriers is not worth while in view of the ease with which the infection itself can now be controlled. There is as yet no proper estimate of the value of sulphathiazole snuff in the treatment of obvious carriers; it is claimed, however, that 1 g. of sulphanilamide by mouth six-hourly for 6 days entirely clears the carrier state.

Bacillary Dysentery

Intestinal infections are a major problem in Eastern theatres of war. For the treatment of bacillary dysentery sulphaguanidine, when available, has proved of great value. This drug has the curious property of being soluble in the intestinal contents but of being poorly absorbed unless there is a grossly ulcerated surface. The dosage employed is large, amounting to as much as 20 g. a day for 5 or 6 days.

Reference

Mitchell, G. A. G., Logie, N. J., and Handley, R. S. (1941). *Lancet*, 1, 713.

INJURY TO LIMBS

A ROEHAMPTON CONFERENCE

At the invitation of the Director-General of Medical Services of the Ministry of Pensions, a conference of surgeons was held at Queen Mary's Hospital, Roehampton, last September, Mr. G. R. Girdlestone presiding.

Ward Demonstration

Mr. T. P. Kilner and Mr. George Perkins opened with a demonstration of plastic and orthopaedic cases in the wards. Mr. Kilner urged that "the best dressing for a large open wound is skin," and suggested that all surgeons in charge of accident services should be given the special equipment which facilitates the cutting of large Thiersch grafts of selected thickness. He gave a most useful demonstration of cases illustrating the use of thick Thiersch, tubular, and flap grafts. Mr. Perkins first showed a patient with the moderate but disabling degree of equinovarus associated with the relative weakness of the external popliteal group of muscles after a partial sciatic recovery. These patients are much benefited by an inside iron, outside T-strap, and a toe-raising spring attached to the outer side of the sole opposite, but not distal to, the fifth metatarsal head. He then illustrated by a number of patients his belief that it is the use, as natural as possible, of the muscles surrounding the fracture which stimulates and accelerates union. He limits the extent of his plaster splints to the margin of safety, and dislikes the Böhler iron and the single stick. He likes a heel-and-toe movement, with particular attention to the active use of the toes. Crutches or two sticks with less splintage are preferred to a long plaster which makes full weight-bearing safe. He goes so far as to recommend that splintage can often be discarded, at least during the waking hours, on palpable evidence and before radiographic evidence of union.

Deranged Knee-joint

Prof. R. J. Willan opened a discussion on "failures following operation for derangement of the knee-joint." He stressed the value of an exact history, and the far greater value of the evidence which can be elicited by x-ray examination as well as by clinical examination. Once again it was made clear that the diagnosis of an internal derangement, indicating the removal of a semilunar cartilage, requires great care and much consideration. Furthermore, if this is true in civil life, a decision to operate on a soldier or a pensioner requires even greater and more deliberate judgment. Mistakes in technique were also discussed: accuracy, adequate exposure, and haemostasis by interrupted suture being among the points considered. Finally, Prof. Willan stressed the need for a very thorough "reconditioning." The main concern of Mr. Julian Ord, speaking on the treatment of "minor fractures," was the tendency to keep these fractures in plaster for too long. It was apparent that in his own clinic periods of splintage were safe which others might think dangerously short. Once again the principle emerged that it is the man and his team rather than the method which makes for success. Close observation and a well-drilled staff in a fracture clinic can bring success by methods which in other hands would be dangerous.

Scaphoid Fracture

Prof. T. P. McMurray—on "non-union of fractures, with special reference to the scaphoid of the wrist"—said that, in his opinion, the non-union of the scaphoid could result from missing the diagnosis, or, though not so often, from a failure to reduce a displacement. It was wrong to suppose that the fractured scaphoid was almost always just a crack without displacement. Furthermore, those in which there was displacement, and in which no reduction was accomplished, would be (*a*) less likely to unite, and (*b*) more likely to give rise to a secondary arthritis. There was a practical test of deformity which could be applied very gently and slowly when the case was first seen after the accident. If there were no deformity, and in the absence of post-traumatic swelling, a full range of movement could be accomplished, whereas the presence of deformity would limit the movement. He advocated carrying the plaster to the tip of the thumb, and said that the position of the wrist should not be in dorsiflexion but neutral. As to bone-grafting, this should be limited to delayed union in the presence of perfect reduction, but it was a great mistake to graft a scaphoid where there was malposition of the fragments, whether or no secondary osteo-arthritis had already occurred. Then there was the question of late ununited wrist fractures in which the bone appeared as if it were congenitally bipartite. This condition would not, *per se*, be responsible for pain or for disability. It was possible that the joint might be a little more sensitive to a sprain, but the essential thing was that after *x*-ray examination had disclosed the old fracture the injury should be treated as a sprain and nothing more. On the other hand arthritis might have developed and a sprain or continued occupational strain aggravate and so call attention to the arthritis. In the presence, then, of arthritis with non-union bone-grafting was absolutely contraindicated. If the disability was severe enough the scaphoid should, in his opinion, be removed. He admitted that reported results had not been good, but thought this was possibly due to traumatic methods of scooping out the scaphoid. He preferred a gentle, if tedious, dissection with scalpel and forceps. He admitted that the power of the hand was less than normal, but the hand could be more freely used than in the presence of radio-scaphoid arthritis. After this operation the joint should be kept at rest for six weeks, when active movement should be gradually resumed.

In the discussion there was general agreement with Prof. McMurray's main thesis, but with regard to the secondary radio-scaphoid osteo-arthritis there were advocates of arthrodesis as well as the excision of the proximal row of carpal bones.

The Crippled Hand

Mr. Gordon Irwin's talk on "late surgery for disability of the hand following gunshot wounds or septic infection" was accompanied by a cinematograph demonstration. For old "flares" he favoured delayed incision and active movements throughout. Provocative massage was advisable before doing a plastic operation, on account of the danger of "flares." For Dupuytren's contracture, excision and grafting was better than tenotomy. For stiff fingers, the position of the bones when fractured was immaterial. The motor apparatus was, however, most important. He had never succeeded in restoring movement in stiff fingers by any form of surgery. It was justifiable to amputate a finger if it interfered with the patient's working capacity, but amputation of the hand was done too often. He had performed several successful cineplastic amputations, but the limb-fitters had never been able to fit a suitable prosthesis. Repair of extensor tendons was usually successful; repair of flexor tendons gave poor results. In amputation of the finger the head of the metacarpal should be left, because function was more important than a cosmetic result. He had not seen painful stumps after finger amputation except when there was a question of compensation or pension. Excision of nerve bulbs never succeeded in abolishing the tenderness. Correction of malunited phalanges by osteotomy gave bad results. Fingers should not be splinted for longer than 7 to 10 days. In splinting, the thumb should not be held in the plane of the hand, but be abducted and at a right angle to the plane of the hand. He was not in favour of doing plastic reconstruction of fingers.

Mr. Kilner emphasized that for crippled hands prevention was better than cure. After seeing burns treated in many hospitals he was a strong supporter of the Bunyan method, and, in particular, he advocated the first-aid Bunyan bag filled with a sulphonamide. The important things in the treatment of burns were the early control of infection and the early removal of necrotic tissue, so that the raw area could be covered with a skin graft at the earliest moment. The best dressing for a raw surface area was transplanted skin. Early movement of the fingers was most important—another argument in favour of the Bunyan bag. The nursing difficulties were greatly lessened when this bag was used, because the patient could be moved painlessly. In treating burnt hands the forearm should be slung. Resting the hand on a pillow encouraged deformity. In Dupuytren's contracture, and in burns, the important question was, Has skin been lost? If so, it should be replaced by a graft. He inquired whether any operation on fixed finger-joints was worth while, and he thought that the value of cineplastic amputations should be reinvestigated. Mr. Stevenson thought that scarcity of material would prevent the wide application of the Bunyan-bag treatment; a short arm bag would be economical; a further economy was the manufacture of electrolytic sodium hypochlorite in hospital. He was not satisfied that the ideal first-aid treatment for a burn had yet been found, and thought we might go back to an oily solution. He had had good results by grafting skin on the end of a denuded terminal phalanx, but not much success in repairing flexor tendons in the hand. He was strongly opposed to the treatment of hand and finger injuries in a septic casualty department. All patients with these injuries should be admitted; they ranked in urgency with fractured femurs. Rear-Admiral Gordon-Taylor said that many burns had been treated by tanning, but it was not generally realized how many patients had at times to be looked after by one doctor, who, perforce, chose the quickest and simplest treatment. He deprecated the modern view that cut tendons should not be immediately sutured.

Mr. Irwin, in reply, said he had himself had the two flexor tendons of the index finger sutured two weeks after they had been cut. The result was excellent. He always used to advocate immediate suture of cut tendons, but after reviewing his cases he decided to suture later, and his results since had greatly improved. He advocated the Bunyan bag as a first-aid treatment. Lengthening fingers with bone grafts covered with grafted skin was rarely worth attempting because a finger was very little use unless it possessed delicate sensitivity. In repairing tendons he had successfully grafted extensor tendons, but had failed with flexor tendons.

Dr. E. S. Marshall opened a general discussion on "rehabilitation in Ministry of Pensions hospitals."

The Nov.-Dec. number of *Industrial Welfare and Personnel Management* (the journal of the Industrial Welfare Society, 14, Hobart Place, S.W.1) includes a timely article by Dr. H. M. Vernon on the relation of long hours of work to reduced output, which emphasizes the need to distinguish between the short-sighted policy which aims at an increased output for a few weeks only and the long-sighted policy which aims at a steady output enduring for months and even years. He stresses the point often made in these columns that the hours usually adopted in this country are almost certainly too long for an extended and prolonged effort. There is also a paper on industrial dermatitis by Dr. A. D. K. Peters, being part of an article published in the current number of the *Practitioner*; and an abstract of a lecture by Prof. J. C. Drummond on the nutritive value of canteen meals.

WORK OF THE MEDICAL CORPS IN THE U.S.S.R.

By a Soviet Doctor

Until the end of the 19th century military medicine was influenced mainly by one idea—to treat the wounded soldier because the latter was a sick man and as such had the right to claim medical help. Armies at that time were not large and they suffered fewer casualties because destructive arms were not nearly so developed. New drafts to replace the losses were obtained relatively easily: the proportion of the mobilized among the people was not large. Modern wars, on the other hand, are distinguished by particularly intensive fire; destructive arms have been greatly developed in both quality and quantity; losses have become very high. This means that medicine is now faced with a new problem—the rehabilitation of the greatest possible number of casualties in the shortest time. Were the belligerent Powers to allow themselves the luxury of neglecting medicine, then no war potential could be large enough to replace human losses. Thus the medical service has become not only an organization for the administration of treatment to casualties but an integral part of the military apparatus for Army reinforcements.

Two Ways of Thinking

And even that is not all. The solution of the problem also depends on the approach made to the part which the soldier has to play in the Army, and this, in its turn, is conditioned by the political system. For the Germans, for instance, the soldier is nothing. Man as a human being does not exist for them. The philosophical conception of Nazism, as defined by themselves, consists in the supremacy of race and in the idea of State power dominating the world. There is no place in this conception for the protection of an individual. Hence, also, the "philosophy" of the German military medical service. A wounded man who requires prolonged care and treatment is so much ballast for them, a burden to be dropped and finished off.

The medical doctrine of the U.S.S.R. has as its focus the life of the Soviet man, the Soviet patriot. The strength of our Army is not measured by the number of pawns but by the number of highly intelligent Red Army men; and the conclusion to be drawn from this doctrine is a fight for the life of every Red Army man, every Soviet citizen.

Prophylaxis and Hygiene

The military medical authorities paid the greatest attention to prophylactic measures before the war. Soviet military medical officers are not only surgeons, physicians, narrow specialists, but, in the first place, hygienists—they watch over the hygiene of food, accommodation, clothes, and the personal health of Red Army men. Realizing the importance of sport in the training of troops, it has been placed under the strict control of medical officers; and the whole sports organization in the Army is supervised by the medical authorities. The widespread adoption of prophylactic measures helps to prevent food-poisoning, seasonal respiratory illnesses, and infectious disease.

Field Clinical Medicine

The second principle of our military medicine lies in the wide use made of clinical medicine in the Army. Soviet clinical medicine has long since ceased to regard casualties as surgical cases. The wounded man is, before anything else, sick, and needs as much general as surgical treatment. The wide philosophical interpretation of pathology and therapeutics as "anthropathology" and "anthrotherapeutics," as opposed to local pathology—the treatment of the patient and not of his disease or organ—allow one also to make a different approach to the problem of the wounded man. In addition, the intensity of contemporary battles and the immensely difficult conditions in which modern soldiers are placed cause considerable increase in somatic and neuropsychological illnesses. Clinicians observed this already during the 1914-18 war; a large number of cases of nephritis, hepatitis, and diseases of the respiratory tract caused at times more casualties than gunshot wounds. Soviet medicine therefore started on the road of large-scale clinical medicine in the Army, and introduced into military medicine the new chapter of "field clinical medicine." This means in effect that military medicine must solve the problem of rapid diagnosis and treatment in the operational field environment. Diagnostic laboratories, field x-ray installations, electrodiagnostic and therapeutical apparatus, are all in universal Army use, up to the front-line hospitals. We know that even in times of peace early diagnosis and rapid medical intervention cut short pathological processes or reduce the periods of hospitalization to a minimum. In times of war this is a decisive factor.

Surgery at the Front

As regards surgical treatment, Soviet military medicine is guided by the principle of maximum surgical aid during the first hours. This forced us to employ all means for the speedy removal and evacuation of casualties from the immediate fire zone. In this work medical orderlies, men and women (volunteers), display miracles of courage. The People's Commissar for Defence, Comrade Stalin, compares the work done by the medical personnel to that of the best tank-drivers and airmen. The numbers of men and women decorated for the evacuation of wounded from the battlefield are counted by the thousand. The second measure is the administration of the best surgical treatment to the wounded in the field. Surgical hospitals, equipped with most modern apparatus and staffed by the best surgeons, work under direct enemy fire. If one remembers that these hospitals and medical posts are all stocked with transfusion blood brought by the Air Force, and that they have at their disposal all modern chemical and pharmaceutical supplies, then it is understandable why the percentage of recovery and return of soldiers to their units reaches the high figure of 70.

Non-medical Personnel

In conclusion, a few words must be said about the medical personnel. In the Red Army, medical personnel (excepting doctors) are people who go to the front as volunteers to do this work. Hundreds of thousands of young people (mainly girls) were already trained in peacetime for this work in all factories, institutions, and collective farms. The Red Cross and Red Serpent organizations were able to prepare fully the necessary cadres of the middle and lower medical personnel. They all passed courses in bandaging, blood transfusion, and first aid, and they are all blood donors. Direct blood transfusion on the spot at field hospitals and dressing stations has become an everyday feature at the front. It is also an expression of the unbreakable link which exists between our Army and people.

In summing up it may be said that the Red Army medical doctrine is based on the importance of the human element—the high value of the Red Army man. Its corner-stones lie, therefore, in the prevention of disease and in field clinical medicine. Early surgical intervention and treatment account for the high percentage of cure among the wounded. This implies, in practice, the concentration of all the best medical personnel and equipment at the front. Great capacity for self-sacrifice on the part of the personnel ensures the best possible care for the wounded and sick.

Workers with the Friends' Ambulance Unit, that body of some 700 persons who, unable to reconcile warfare with their religious beliefs, devote their energy and resources to the relief of the suffering which follows in the wake of war, share much of the hazards and dangers with the combatants. In the Middle East the unit has more than 150 members, some 40 of whom, in Egypt and the Western Desert of Libya, have been working under the auspices of the British Red Cross, especially on mobile surgical units. Some of them manned a hospital in Tobruk until that place fell. The report of the third year's work describes the establishment of mobile clinics in Syria, to which come Moslem, and Christian, and Druse; the distribution of medical supplies along the Burma Road; the salvage of £120,000 worth of such supplies from the docks at Rangoon when the Japanese were closing in, and their transport for 3,000 miles into the northerly provinces of Free China; the provision of surgical aid in the raided towns of Burma; the sending of a surgical team for the help of Chinese on the Yunnan front; the organization of first-aid posts in view of the possibility of air raids on Indian cities; and in Ethiopia the sending of 40 men, including 2 doctors, for pioneer medical work in the outlying regions where there are at present few or no facilities for combating the high incidence of sickness. Apart from all this work over-seas, 186 members of the unit are at E.M.S. and other hospitals in this country, and 90 have been seconded to the Friends' War Relief Service in the various raided areas of England. The council of the unit, which includes 9 medical members, one of whom is Sir George Newman, is appealing for at least £30,000 in order that the unit may maintain through a fourth year of war its purpose of serving where the need is greatest.

Reports of Societies

THE PIONEER HEALTH CENTRE

At a meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health on Oct. 24, with the president, Dr. **CATHERINE MORRIS JONES**, in the chair, Dr. **INNES PEARSE**, co-director of the Peckham Pioneer Health Centre, gave an address on the principles which had governed this very successful experiment since its foundation by Dr. Scott Williamson and herself.

The Peckham Centre was conducted as a club, the athletic and social activities offered for all ages serving as an incentive to families to join and also concealing a careful technique whereby physical and mental health was fostered by means of swimming-bath, gymnasium, playgrounds, music rooms, and workshops. The Centre was self-supporting, though each family paid only a shilling a week. The families belonged to the elastic middle class, including artisans and professional men: yet even in this picked class Dr. Pearse reported that 90% of the individuals showed deviations from health which could be detected by clinical examination alone. Health was regarded at the Peckham Centre as a positive condition and not merely the absence of sickness, and the medical directors aimed at the cultivation of mental and physical health in the family as a whole. With careful periodic medical overhauls of each individual and routine laboratory investigations, a feature was made of family conferences and discussions between the parents and the medical man and woman who supervised the health of the family. Dr. Pearse described how fathers and mothers could be brought by this means to realize the biological significance of family life. The health sense of the little community was excellent; diphtheria immunization presented no problem because one family followed the example of another in each health measure undertaken. The Centre achieved its success by the active good will of its members, and the two medical directors had cause to congratulate themselves on a noteworthy achievement. They brought about, at a stroke, the health examination of all members of the family and all ages; they involved the father in the active exercise of parenthood; and they devised a medium whereby leisure could be utilized as a means for the development of physical and mental health. The lessons from Peckham should not be ignored in planning the future of medicine.

MASS MINIATURE RADIOTHERAPY

At a meeting of the Association of Industrial Medical Officers Wing-Commander R. R. **TRAIL** and Dr. F. R. G. **HEAF** spoke on the future of mass radiography in industry.

Wing-Commander Trail said that mass miniature radiography must be conducted on a carefully planned method if economy of time and materials was to be ensured. Both adequate space and suitable staff were necessary to use static apparatus economically, and about 100,000 cases a unit a year could be dealt with. This would mean one-way traffic through waiting and dressing rooms, and the provision of a suitable dark room, drying room, viewing room, and administrative office. The staff needed were the medical officer, radiographer, the positioner, marshal, and clerk. The medical officer should be a competent chest physician and, in common with the rest of the team, have special training in mass miniature radiography. A good team could easily manage up to 100 patients an hour. Miniature radiographs were often difficult to read, and in all doubtful cases a full-sized film should be taken; this was necessary in about 3% of the cases seen. Symptomless heart abnormalities, new growths, cysts, etc., might also be discovered at the same time. As regards the extent to which this new method would crowd out the beds available for pulmonary tuberculosis, there might be some difficulty at first, but any extra expense involved would be more than saved within ten years.

Dr. Heaf said that the use of mass miniature radiography on a large scale was a pleasing dream for the idealist but a nightmare for the realist. There were many difficulties. There would be opposition from the public, who would have to be carefully educated to appreciate the value of early diagnosis. Financial help during treatment and a guarantee that employers would co-operate in finding alternative employment for those that required it would be necessary before the confidence of the public could be gained. Planned liaison between tuberculosis officer, industrial medical officer, and panel doctor would be imperative. The public tested would fall into three groups: (1) Normal cases; these patients must realize that a normal film did not necessarily imply future immunity. (2) Mild or very early cases for whom modification of work or curtailment of working hours would be necessary. (3) Cases which could only be treated in a sanatorium; the scheme for financial help to compensate these patients for loss of income, etc., was one which would be widely welcomed.

There must be some method, Dr. Heaf said, whereby a suspect could appeal against the findings of the radiographic examination. A subsequent examination and further investigation might prove the original diagnosis to be at fault. It had been suggested that before a doubtful case was notified inclusion on a temporary register of suspects might be desirable. This would, in many cases, avoid the stigma attached to formal notification. Cases on the suspect list could be seen at frequent intervals, and progress or otherwise could determine whether discharge or notification was necessary. The ancillary health services must move forward with miniature radiography, improved methods for the relief of bad environment being just as important as improvement in methods of treatment. The effects of miniature radiography on established procedures of life insurance and superannuation schemes might be debated with interest.

RUPTURE OF THE UTERUS

At the last meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland the president, Dr. **NINIAN FALKINER**, gave an account of 12 cases of rupture of the uterus which had occurred in the Rotunda Hospital during the past two years. Of the 12 mothers, 3 died and 9 recovered; of the 12 infants, 3 recovered and 9 were lost. Two of the surviving children were in cases in which the rupture was incomplete, and the third in a case in which the rupture was produced during extraction of a breech. The first maternal fatality was undiagnosed and treated as post-partum haemorrhage, the second was undiagnosed and treated as ante-partum haemorrhage, and the third was a most unusual case which followed a fall in the street. Of the mothers who recovered 4 were treated by subtotal hysterectomy and 4 by suture of the uterus. One was treated conservatively. Of the mothers who died 2 were not treated and one was treated by subtotal hysterectomy after Caesarean section. The average age was 35, and the average parity 5; none of the patients was a primigravida. In 9 cases the patient was in labour; in 3, not. The rupture was spontaneous in 9 and traumatic in 3 cases (fall, injudicious use of forceps, and difficulty with extended arm). The rupture was complete in 8 cases and incomplete in 4; it occurred in 3 cases in which classical section had been performed. The diagnosis was made in 9 cases before treatment was instituted, and in 7 of these it was made by correlating the symptoms and physical signs and in 2 by directly palpating the rupture.

Dr. R. M. **CORBET** said he had seen 35 cases of rupture of the uterus, 16 of which had occurred during the time he was Master of the Coombe Hospital. The mortality of the total collected series was 28.6%. About 1930 he had come to the conclusion that, if rupture were diagnosed or strongly suspected before delivery of the foetus, laparotomy should be performed, the uterus being removed or retained according to the conditions found. Since then he had had 16 cases of rupture of the uterus under his care. The treatment was primary Caesarean hysterectomy in 11 cases, with one death from mesenteric thrombosis. Laparotomy and suture of the rent had been done in 2 cases, with no death, and one patient died just as he arrived on the scene before any treatment could be undertaken. From these 16 cases 8 live babies were obtained. He felt that the advice, given in so many textbooks, to deliver the patient vaginally after rupture had been diagnosed was exceedingly dangerous.

Prof. A. H. **DAVIDSON** observed that the fact that 3 of these ruptures had occurred in "classical" scars should, he thought, teach obstetricians not to do "classical" sections. All ordinary sections done either before or during labour should be done in the lower segment. He was convinced that all cases in which the rupture was in the body of the uterus should be treated by laparotomy, followed by whatever treatment the doctor in charge of the case thought best. He thought that there was still a place left for conservative treatment by plugging the rent. The "classical" scar in a case in which the section had been done for toxaemia was a very bad one.

Dr. O'DONEL BROWNE, Dr. J. G. GALLAGHER, Dr. JAMES APTHORP, Dr. T. M. HEALY, and Dr. EDWARD SOLOMONS also took part in the discussion. Dr. FALKINER, in reply, said that a desperate condition in failed forceps was when the uterus had been even partially ruptured. These cases were often in primigravida, and when the abdomen was opened hysterectomy was the only course to adopt. It was very difficult to decide whether plugging the rent was going to be effective or not Sometimes the control of haemorrhage could be effected only by total hysterectomy. The case of transverse presentation had been treated by external version. In these cases the first thing to be thought of was the patient's life; the second was the necessity for preserving the function of reproduction

At the annual general meeting of the Association of Anaesthetists of Great Britain and Ireland, held at 1, Wimpole Street, London, on Oct. 28, the following officers were elected for the ensuing year: President, Lieut.-Col Ashley Daly, R.A.M.C; vice-president, Dr. C F. Hadfield; hon. treasurer, Dr. Z Mennell; hon. secretary, Dr. A D. Marston.

Correspondence

Pathology of Crushing Injury

SIR,—The circumstances of war have recently been such that cases of crushing injury are now very rarely encountered in this country. The review by Dr. E. G. L. Bywaters (Nov. 28, p. 643) is, nevertheless, extremely valuable, and serves to remind us that the pathology of the condition is still obscure in spite of the continued efforts of large groups of research workers.

Shortly after Dr. Bywaters's first paper appeared in the spring of 1941 I was permitted to study the pathology of 3 cases in considerable detail (*J Path. Bact.*, 1941, **53**, 403). I was not impressed by necrosis or regeneration of the tubular epithelium as a sufficient cause for suppression of urine, and emphasized blockage of tubules by casts. Such epithelial necrosis and regeneration as occurred was attributed to these casts, and tubular basement membranes were well preserved. The kidney lesions were compared with those found in multiple myeloma. The impaction of small casts in the lumen of almost all the tubules in the crush syndrome must result in a rise in intrarenal pressure, and no one tubule can then dilate to pass glomerular filtrate as neighbouring tubules are all similarly involved. In contrast the slow and probably intermittent deposition of casts in myelomatosis does not involve every tubule at once, neighbouring tubules allow the affected tubule to dilate slightly, fluid continues to pass, and the casts grow by accretion until surviving tubules are dilated by large casts.

In the crush syndrome casts occupying only a short segment of tubule may appear relatively unimportant and be found only in a few tubules in any one section, yet almost every nephron may be blocked Other workers have found it necessary to emphasize extensive necrotic and regenerative changes in the epithelium of the renal tubules and to discuss their production by various products of damaged muscle. Such lesions may result from a variety of superimposed factors, including insufficiency of the blood circulation. The problem is to decide what is the basic and essential lesion. The observation of Dr. Bywaters that crushing of the muscles alone in the rabbit will produce all the signs and symptoms of crushing injury except the renal failure is of special interest, and we have made similar observations in the mouse where we now suspect the same explanation—i.e., a low myohaemoglobin content of the muscles. The production by Dr. Bywaters of renal symptoms by the injection of pure myohaemoglobin into a rabbit acidified with ammonium chloride is very relevant. His observations on whether this substance acts by its precipitation as casts in the acid urine or by damage to the renal epithelium will be of the greatest significance.

Animal experiments are, however, often difficult to interpret. For example, Eggleton *et al.* (*Journal*, 1942, **2**, 392) report somewhat inconstant collections of material within the lumina of the terminal part of the proximal convoluted tubules while the distal and collecting tubules are usually free and distended after the compression and traumatization of the limbs of anaesthetized dogs. This is certainly not the pathology found in human cases. Functionally, the kidney of the dog may differ from that of man, but until this is proven the morbid anatomist must insist on a closer correspondence of structural lesions before accepting the identity of these conditions.—I am, etc.,

Queen's University, Belfast J EDGAR MORISON.

Small-pox: Its Diagnosis and Xylol Treatment

SIR,—As small-pox has once again made its appearance in the British Isles in epidemic form, may I, with 33 years' clinical experience in India, be permitted to draw attention to the pamphlet by the late W. McConnel Wanklyn, *The Accurate Diagnosis of Small-pox*, price 6d., printed by Ash and Co., Ltd., Henry Street, Tooley Street, London, S.E.1: This pamphlet should be in the possession of every doctor. After reading and learning its 24 pages it is almost impossible to have any doubt as to the diagnosis of chicken-pox or small-pox or to make any mistake, at any stage, in either disease.

No textbook that I know of or have read gives any specific and definite line of internal treatment for small-pox; yet there is one—xylol. I have used it for years; in my experience this is the only general treatment of any value, and it often acts like a charm. Even in confluent small-pox the results obtained are unique; no other treatment that I am aware of gives a like result. The earlier the treatment is begun the better: one *must* commence early.

This is the treatment: Xylol, 30 min. four times a day in milk —i.e., 2 drachms a day—for 3 days; then cut down to thrice daily for 3 days; then twice daily for 3 days; then stop. The above is the maximum dose for an adult man of 10 stone or over, and usually 90 min. a day is sufficient; for women of 7 to 8 stone, 20 min. per dose as above; for children, 10 min. per dose; and for babies 5 min. per dose. It may be rather nauseating; if so, give smaller doses more frequently.

How xylol acts I do not know, but it appears to be excreted by and in the skin. Its internal administration causes a flattening of the eruption, prevents suppuration, and reduces scarring to a minimum; toxaemia is greatly diminished and often not present. There is no fetid odour. Recovery is rapid. The pustules often become dry, dark, hard scabs in a few days, and instead of a prostrate patient one finds him sitting up in bed This is no fairy-tale: it is true For success xylol *must* be started early. If begun early this is almost an abortive treatment.

Other essentials are: (1) A darkened room. (2) For face, paint spots with tr. iodi or apply iodex. I do not favour potassium permanganate. (3) For mouth, frequent applications of glycerin of borax. (4) For eyes, wash often with boric or saline solution. Apply 3 times a day acriflavine drops gr. 1/2 to ounce (equals 1 in 1,000). At bedtime, half-strength yellow oxide ointment: never omit this. (5) For scrotum, always support with suspensory bandage and apply fuller's earth or other dusting powder. (6) When rash is drying and scabs are forming, apply iodex with methyl salicylate to face and salicylic ointment *B.P.* to the body. (7) Baths: during convalescence give twice daily.

Xylol treatment is equally effective in severe chicken-pox, and good results have been obtained in cases of pemphigus.—I am, etc.,

Haddenham, Ely, Cambs S. G. S. HAUGHTON,
Colonel, I.M S (ret).

⁂ Xylol in the treatment of small-pox is mentioned in several textbooks on fevers. It appears to have been tried first by Zuelzer in 1871, but fell into disuse. Teissier (*Nouveau Traité de Méd.*, 1922, **2**, 281) warmly recommended it in a total amount of 1 to 2 drachms for adults in the 24 hours, divided into 4 or 5 doses. It is not claimed that it possesses any specific action, but that it arrests suppuration, dries up formed pustules, diminishes cicatrization, and acts as a deodorant. It has no action in primary haemorrhagic or the worst forms of confluent small-pox. In a single epidemic in which Belin of Paris tried the method the fatality rate fell to 12.34%, compared with 31.37% for the hospital before xylol was used. Xylol seems to act by reducing in some degree secondary infection of the pocks, provided that the infection is not overwhelming, as in malignant confluent cases. Its use may be superseded by that of the sulphonamides, under which the skin lesions of small-pox are modified, the septic fever diminished or suppressed, and septic complications and consequent mortality rates reduced (P. B. Wilkinson, *Lancet,* 1942, **2,** 67, and N. N. Chari, *Indian med. Gaz.*, 1942, **77,** 91). In the meanwhile Col. Haughton has done well to record his experience: it is not the first time that a remedy of some efficacy has been forgotten.—ED., *B.M.J.*

What Constitutes Diphtheria?

SIR,—May I claim a little space in your columns to raise a matter which I consider to be of some urgency? I want to ask what constitutes diphtheria. In our medical schools we were taught to look for a very definite clinical picture and to confirm diagnosis by demonstrating the presence of virulent diphtheria bacilli. In practice we have swabbed every sore throat which showed any sort of exudate or membrane, and have, with some justification, bundled off to hospital any case in which the "swab was positive." Among these cases there must have been a number when the illness was caused by some other organism, the patient being a "carrier" of *Bacillus diphtheriae* by virtue of natural or induced immunity. Such cases were exposed to no extra risk by being nursed in diphtheria wards, and it was all to the good that carriers should be "out of circulation" until free of *B. diphtheriae.*

But the widespread immunization of children must have resulted in the wholesale manufacture of diphtheria carriers. This (besides being a pressing reason for immunizing all the others) must also have multiplied the number of cases wrongly diagnosed as diphtheria merely because diphtheria organisms were demonstrably present. It is obviously irrational to treat with diphtheria antitoxin a patient suffering from a streptococcal infection who has repelled threatened invasion by diphtheria organisms actually in contact with his mucosa, and it is undesirable to add to the embarrassment of our overtaxed isolation hospitals.

But another danger, less obvious, is perhaps more important. If we continue to diagnose diphtheria on the evidence of the presence of *B. diphtheriae* in patients known to have been immunized (and probably, if we knew it, Schick-negative) we shall inevitably, and possibly unnecessarily, bring discredit on the efficacy of immunization. What is more, whether we like it or not, the Ministry has put on to the profession the responsibility for advocating immunization (*vide* advertisements in Press, etc.). So it is up to us to see that the public does not get wrong ideas about the value of immunization or of the profession in whose name it is proffered.—I am, etc.,

Swinton, Lancashire. G. D. WILD.

First Aid for Fractured Spine

SIR,—Mr. D. K. Mulvany (Dec. 5, p. 676) has given an answer to Dr. J. C. Matthews's question (p. 677) as to how the first-aider is to diagnose a fractured spine.

A great deal of harm continues to be done by meddlesome first aid, condemned in the St. John Ambulance book but encouraged in many competitions. The first-aider must be instructed not to "mess about." I have too often seen a patient stripped nearly naked in the open air by first-aiders in their search for bruises that do not matter. The first-aid books teach that where a fracture is suspected it should be treated as a fracture, and this applies to fracture of the spine. Severe pain in the vertebral column, with or without shock, is sufficient to justify the suspicion of a fractured spine and the treatment thereof.

The method, details of which I have sent to over 100 correspondents who responded to my former letter, has been justified by many years of practical experience of a not inconsiderable number of actual cases. The title *First Aid to the Injured* needs emphasis. It is the injured person, not his injuries, that is of first importance.—I am, etc.,

THOMAS E. A. STOWELL, F.R.C.S.,
Chairman, Advisory Medical Committee,
Industrial Welfare Society.

14, Hobart Place, S W 1.

Tetanus

SIR,—I am glad that my old teacher, Dr. Leslie Cole, has given us his expert views on this subject in his letter (Dec. 5, p. 678). Perhaps I have had more luck than most people in getting cases with sublethal doses of toxin absorbed from their wounds, in that I always treat injuries, particularly air-raid, garden, and street casualties, with suspicion. I do not suture any penetrating wound, however small it may be, until I have flooded the wound with H_2O_2 and excised the skin edges.

I quite agree with Dr. Cole that some cases are hopeless, whatever you do for them, and I therefore feel that the small amount of added shock produced by excision of the wound at once is justified if it either results in a series of cases with sublethal toxaemia or, better still, prevents the onset of tetanus or gas gangrene.—I am, etc.,

Weybridge JOHN H. HANNAN.

Preparation of the Hands for Operation

SIR,—As one who started a surgical career before the advent of gloves, may I add a postscript to Mr. W. A. Cochrane's article (Nov. 28, p. 635) on the possible absence of gloves and the washing of hands. When I was a dresser our method of washing was as described by Mr. Cochrane, except that we did not use spirit soap and we did not rinse in saline after the washing. All our hands got rough and some of our arms got sore. Perhaps the absence of the saline rinse accounted for this. I do not for a moment wish to cast doubts on the results he describes, but with us, on the firms where hands were used freely, there was, I am sure, a much higher incidence of sepsis than would be tolerated now. In Sir Arbuthnot Lane's wards there was little sepsis, but he used a rigid "no touch" technique. Mr. Rutherford Morison operated inside the abdomen without gloves, wearing them only while making the incision and for sewing up. He said he preferred this, and that the peritoneum had such a good resistance that even a gynaecologist could operate in the abdomen with safety (*pace* the present generation: this was 20 years ago). The moral would seem to be: "No gloves—no touch," except perhaps in the abdomen.

Some bacteriological investigations were done at Guy's on the washing of hands, and they showed that washing in running water reduced the bacteria minute by minute for about 7 minutes, then the count rose again slightly. From smooth hands most, but by no means all, the bacteria could be removed; but once the hands were rough the same degree of cleanliness was quite impossible to achieve. The subsequent lysol or cresol soak made no further reduction. The use of lysol, therefore, was useless, and if, as I think it must have been, it was a roughening factor, it was actually harmful.

As Mr. Cochrane points out, thoroughness, as in everything else, is essential, and basins are probably better to wash in than running water, as soap solution is in itself an efficient antiseptic.—I am, etc.,

Guildford E. W. SHEAF.

Stilboestrol for Cancer

SIR,—On the subject of your annotation on "Diethylstilboestrol for Prostatic Cancer" (Nov. 28, p. 641) I would refer readers to Dr. J. Thomson Shirlaw's letter in the *Journal* of July 27, 1940 (p. 133), in which he quotes Sir Gowland Hopkins as follows: "At one level at least of their organization, living tissues are essentially physical and chemical systems, and it is at this level we must expect to find a basis for the differences displayed by cancer cells and normal cells. Cancer-producing substances (oils, tars), though they differ from them in detail, are yet akin to substances natural to the body—for instance, to the hormones which control certain functions of sex. Subjection to prolonged administration of a sex hormone encourages the growth of glandular cancer."

I will summarize what Dr. Thomson Shirlaw says: we know that the anterior pituitary secretes two hormones—one concerned with growth, the other related to sexual development. They are antagonistic to each other. Stilboestrol has an inhibitory effect on the secretion of the anterior pituitary.

Crystals of stilboestrol implanted into adult rats were found to inhibit body growth and secretion of gonadotrophic hormone. Stilboestrol, 1 mg. twice a day, was given to a man with inoperable cancer of splenic flexure of colon; a week later the tumour could not be palpated.—I am, etc.,

Cambridge. J. A. Vaughan.

An Intractable Cough

Sir,—A patient attended at this clinic with a note from her panel doctor which stated that she suffered from an intractable cough, which was worse at night. The patient gave a history of a cough every winter for many years beginning in November. This winter, 1942, the cough had been worse and much more so for the last two months. She had tried everything she knew of—mixtures, inhalants, and cod-liver oil. The doctor's medicine had eased the cough a little. She was getting "fed up" and desperate. She tried her best to cure the cough. For four nights she had been awake all night. She tried to control the cough by holding her breath. There was no evidence—*x*-ray or clinical—of organic disease of the lungs. On further questioning the patient admitted that the cough frightened her. She was afraid it meant serious disease. She awoke with a dry mouth every morning.

I formed the opinion that the cough was not due to organic disease but to the patient's making a mistake in the way she tried to stop it. The condition was aggravated by the mixed feelings stirred in herself and her husband. The dry mouth in the morning indicated that she was breathing through her mouth, and actual observation showed that she breathed through her mouth habitually before each act of coughing. The cough stirred feelings which aggravated the situation and both frightened and annoyed the patient, irritated the husband, and became a source of argument between them.

I told the patient that no organic disease was discovered in her lungs, and the following advice was given: to take any medicine ordered by the doctor; to breathe through the nose during sleep and before each act of coughing; whenever she felt the desire to cough she should close the mouth and breathe slowly through the nose counting six; she should not think of stopping the cough, or try to stop it by holding her breath; she should let herself cough freely without fear, annoyance, or anger. The patient returned to me the following week and stated that she had used the method advised. She had breathed through the nose before each cough and then found that she did not want to cough. Her mind had also been relieved when informed that no disease was present.

This technique or trick of breathing control was found to be effective on one occasion when a patient was having an artificial pneumothorax refill. He said he wanted to cough. I instructed him to close his mouth, breath slowly through the nose counting six, then open the mouth and let himself cough. The patient obeyed the instructions: closed his mouth, breathed through the nose counting six, then opened his mouth, but did not cough. The habitual use of this method will relieve many dry irritating coughs without either sedatives or expectorants. In other cases reduction in cigarette smoking and in the use of condiments may also be necessary. In all cases the patient is advised to place one hand over the mouth before coughing. This method is of great value in cold, foggy weather.—I am, etc.,

P. A. Galpin,

Chest Clinic, Plaistow, E 13 Tuberculosis Officer

Erythroblastosis Foetalis

Sir,—Prof. Leonard Parsons's plea (Dec. 5, p. 675) for adopting another term for the condition usually described as "erythroblastosis foetalis" should be welcomed for the additional reason that this disease is by no means invariably associated with the presence of an abnormal number of nucleated red blood corpuscles in the peripheral blood. Of the four cases which I saw during the last nine months (with the diagnosis confirmed by the finding of the Rh factor in the infantile and of Rh antibodies in the maternal blood), one, while being intensely jaundiced, had only 0.5 to 1 normoblast per 100 white corpuscles, a number well within normal limits. The term "haemolytic anaemia of the newborn," as proposed by Prof. Parsons, though certainly "better and more accurate," has the disadvantage that it would not cover those cases in which production of red blood corpuscles and haemoglobin keeps pace with the haemolytic process to a degree that anaemia never becomes apparent. Of icterus gravis, erythroblastosis, anaemia, and oedema not one is an obligatory feature of the condition. I should therefore like to propose to call it "haemolytic disease of the newborn"; cases of stillbirth with hydrops foetalis and/or liver derangement may then be classified as "haemolytic disease of the foetus."

While speaking of the "ghastly sequelae . . . which so frequently occur in this disease," Prof. Parsons mentions bone changes. To the best of my knowledge severe bone lesions have so far not been described as sequelae of this condition, but zones of increased and decreased density in long bones were recently described in five cases (three stillborn and two dying within 48 hours after birth) by Follis, jun., *et al.* (1942). These authors quote two other cases (2 and 6), which showed similar lesions, reported by Caffey (1939) in a paper on "Syphilis of the Skeleton in Early Infancy: the Non-specificity of Many of the Roentgenographic Changes."

I should like, however, to present some evidence for the suggestion that a truly ghastly bone disease of so far unknown aetiology is in fact a late sequel to haemolytic disease of the newborn. I am speaking of the conditions described as polyostotic fibrous dysplasia and as Albright's syndrome, of which the latter shows in addition to a polyostotic fibrous dysplasia certain endocrine disturbances and patches of cutaneous hyperpigmentation. In an excellent paper on this latter condition Falconer and Cope (1942), in tabulating the findings in the 25 cases published in the literature prior to their own two cases, noted that four of them were said to have had icterus gravis neonatorum. They state: "Icterus gravis neonatorum has been recorded in only a few cases, although its frequency seems to indicate more than a chance association." Now, as haemolytic disease of the newborn does not always produce icterus gravis, the proportion of cases with such a history may well be higher than 4 in 27; and the fact that this bone disease is self-limited and first noticed in childhood seems also relevant in this connexion. My hypothesis that such severe fibrous dysplasia as is found in Albright's disease may be due to the effect of maternal iso-agglutinins (anti-Rh, anti-A, or anti-B agglutinin) seems further supported by the work of Nettleship (1942), who produced very similar bone lesions in rabbits by injecting them with guinea-pig anti-bone-marrow serum.

Proof or disproof of this hypothesis will fortunately be easy —namely, by examining whether any relevant serological differences can be found between the patient and the mother. I think it would also be worth while to examine radiologically cases known to have had haemolytic disease of the newborn, as one may thereby find symptomless bone changes transitional between the lesions in Follis's cases and in fibrous dysplasia —I am, etc.,

Herbert Levy.

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Volvulus of Ileum in a Newborn Infant

Sir,—I should like to put on record a case of volvulus of the ileum in a newborn baby girl. I have looked through the available literature on the subject and cannot find a case recorded.

The infant had a normal birth, and passed meconium once quite soon afterwards, but not again. She began to vomit, first only after feeding and then more frequently. I first saw her when she was two days old, and found her to be crying with pain, refusing to take the bottle, and vomiting even water. The abdomen was a little distended, the umbilical cord appeared healthy, and the little finger could be passed well up into the rectum without encountering any stenosis. With great difficulty the infant was persuaded to take a small barium feed, and screening showed the feed to pass into the stomach, which was pushed up well under the diaphragm. Subsequent radiographs showed the feed to have reached the jejunum, but 24 hours later the meal had advanced no further.

A diagnosis of intestinal obstruction probably due to congenital atresia of the small bowel was made, and operation decided upon the third day after birth. By now the baby was losing ground rapidly, and after a subcutaneous saline required no more than a small dose of cyclonal sodium, 0.005 g., into the anterior fontanelle to provide anaesthesia for laparotomy. To our surprise we found the whole of the ileum completely gangrenous, the peritoneal cavity containing the most offensive fluid. Volvulus of the whole ileum had occurred, twisted at least five times, the axis being the mesentery in the right iliac fossa. The jejunum was distended with barium up to the strangulated ileum. Owing to the distension of the bowel and the state of decomposition it was impossible to determine what developmental abnormality had given rise to this condition. The baby died soon afterwards.

We concluded that the twisting of the ileum had probably started during birth, and that subsequent distension had only served to twist the bowel again and again. It seemed amazing that a baby of this age could be alive at all with an abdomen distended by gangrenous gut and putrid fluid. We also felt that had we been quick enough to recognize the condition on the first day and had decided upon immediate operation we might have saved the child's life.—I am, etc.,

Chelmsford. M. D. SHEPPARD.

Phosphorus Poisoning from Bullet

SIR,—In his article (Dec. 5, p. 664) Mr. A. J. Blaxland remarks that a further antidote for use in such cases would be important. May I suggest that a weak solution of potassium permanganate to oxidize the phosphorus would very likely answer the purpose. The solution would have to be weak as the reaction is violent, and would probably be best given by the continuous drip method.—I am, etc.,

Stoke Poges. W. L. PEACOCK

Medical Planning

SIR,—The Medical Planning Commission has presented us with a very comprehensive survey of the present position of medical work, but I cannot help feeling that it has not so clearly defined the foundations on which to build a sound practice of medicine. Medicine to-day is a large subject, and therefore it is necessary for its practice to be classified into workable departments.

In approaching this subject I think it is desirable to assess what is good in the present system. For my part I cannot imagine the British public yielding its freedom in such a personal matter as health to full bureaucratic control; neither can I see the British public shopping for health at chain medical stores, such as are envisaged. In short, any scheme which does not adopt the family doctor as its basis must fail, and any scheme attempting to dispense medical service without an individual doctor accepting direction for a particular patient must lead to chaos.

Still all is far from well in the world of medicine, since facilities are not available for all doctors to practise their profession up to the extent of medical knowledge. Too much is made of "opinions" when it is "facts" that are wanted. Facilities for acquiring "facts," such as are forthcoming from *x*-ray investigations, biochemical tests, etc., are a prime necessity in any scheme. Medicine could perhaps be put on a workable basis by classification into two departments: (1) practical medicine; (2) social medicine.

1. Practical medicine might be defined as that part of our science which pertains mainly to the individual, and all aspects concerning the health of the individual should be carried out by, or planned in association with, the general practitioner. Here preventive measures should hold a prominent place. It seems to me desirable to do away with the term "preventive medicine"; its association with public health has led to a false differentiation in the mind of the physician, and particularly is this true of the minds of our teachers of medicine. If prophylactic measures were an integral part of practical medicine their application would become automatic.

To carry out such a conception of practice I would suggest nationalization and co-ordination of all hospitals with mainly whole-time staff. A department of the principal hospital should be available as a diagnostic and specialized treatment centre for the use of practitioners in the area served by the hospital. A health centre, including ten doctors, could not be equipped economically to meet all requirements of diagnosis, etc., and therefore, though an improvement on the present situation, would not be a solution of our difficulties.

The general practitioner might be left as at present to start with, but having the hospital facilities outlined above. He would be working an improved panel system which might be more economically conducted by a State Department. Since 90% of our population will soon come under State medical control it is idle to discuss State Medical Service; our concern is rather with the best method of carrying out medical practice.

2. Social medicine, on the other hand, covers the whole realm of collective medicine and cannot possibly be incorporated in any scheme of practical medicine. Those responsible for social medicine are in a different category: their associations and endowments of authority could not be vested in every medical practitioner and made workable. As a possible plan I would suggest that social medicine be a whole-time State service. It involves most departments of civil administration, and can only be properly co-ordinated as a State Department. Its object would be positive health in the political sense—the welfare of the State—and include housing, conditions of work in the factory, epidemic control, statistics, etc. In this connexion I feel that school medical inspection and services for tuberculosis, venereal diseases, fevers, and possibly maternity services, are more perfectly administered and conducted under social medicine than under a diffuse system in medical health centres. These services have a collective social character requiring specialization if they are to be effectively carried out.

All specialized and diagnostic facilities should be open to all members of the community. After a period of 5 or 10 years general practice could be reviewed and then more aptly coordinated in a comprehensive scheme. Consultant work and research could be adapted within the scheme suggested. I should perhaps elucidate the standpoint taken on the term "preventive medicine." To me this term suggests insurmountable inimical forces against which the public must be protected—surely a negative attitude. "Positive health," on the other hand, must mean not only the health of the individual but also his environment. It stands for a positive basic approach to health, and involves in its achievement dealing with those inimical factors whether they be of the individual or the social order. This is more than tilting at nomenclature; it is a question of concept.

This very general outline offers the basis of a scheme wherein every practitioner would acquire "the tools" for his particular "job."—I am, etc.,

Southport. S. H. STEWART

Reporting of Deaths to Coroner

SIR,—I was interested to read the letter on this subject from Dr. W. B. Purchase (Dec. 5, p. 677). The possibility of some confusion of thought, to which Dr. Purchase rightly draws attention, is increased by the fact that neither the full text of counsel's opinion nor the letter upon which he was asked to advise has been published. I have hesitated previously to enter your correspondence columns in relation to this subject, both because I am the coroner whose letter to the hospitals was the subject of counsel's opinion and, not less, because the opinion of counsel appeared to me fully to support the legal position set out in that letter. There is, however, an important misconception which has crept into the matter, and which is not entirely removed by Dr. Purchase's letter.

My letter was, as Dr. Purchase points out, a request that certain deaths should be reported to me. To this request was added a statement that in certain classes of deaths (including those within 24 hours of an anaesthetic or operation) there was a duty at common law to report to the coroner. The opinion of counsel entirely supports this view of the common-law duty of medical practitioners. My letter then went on to say that it was desirable that certain other deaths should be reported, including those within 24 hours of admission to hospital. I did not, and of course could not, suggest that there was any legal duty on the part of medical practitioners to report this latter class of case to the coroner.

I am anxious to clear up any misunderstanding that may exist about the two classes of cases, more particularly as the necessarily compressed article in the *Supplement* of Sept. 12 does, I think inadvertently, convey the impression that I had drawn no distinction between them. The unabridged copy of counsel's opinion, which I have had the advantage of seeing, does draw the necessary distinction.

I am of course in entire agreement with Dr. Purchase as to the desirability of co-operation between the medical profession and the coroner in these matters.—I am, etc.,

CYRIL BARON,
H.M. Coroner, County of Surrey, Eastern Division.

Pasteurization of Milk

Sir,—The Poole Borough Council, on the recommendation of its medical officer of health, has just adopted a resolution asking the Ministry of Health to pasteurize all milk intended for human consumption. I hope local authorities throughout the country will look into the condition of their milk supplies, and will likewise press the Ministry to take action in this important matter.

I have before me the latest quarterly report of the milk inspector of one of our important agricultural counties, which I have reason to believe represents in some approximate degree the average throughout this country. Out of 758 samples taken *from farms* in the county, 384 were unsatisfactory—i.e., over 50%. Out of 73 samples taken *from depots* where milk is collected, 57 were unsatisfactory—i.e., about 75%. From depots the milk goes to a variety of distributors. What deterioration takes place in their hands is not recorded. Perhaps it is just as well. In the same report it is stated that 62 samples of milk were taken for examination for the presence of tubercle bacilli, during the quarter, under Section 68 of the Food and Drugs Act, 1938. No results were given. The omission is very significant. One's mind turns to the free and subsidized distribution of crude milk to our young scholars and children generally under State direction, and to the recent increase of tuberculosis, and it becomes abundantly obvious that urgent measures are needed without delay to remedy a really serious menace to public health.

Poole Borough was seriously affected by the milk-borne outbreak of typhoid fever in 1936, and is still therefore milk-conscious. The Ministry of Health performed most meritorious service in connexion with that outbreak. Pasteurization may not be a perfect answer to the demand for a healthy and wholesome milk supply, but it is a ready and effective one. Even if it does deprive milk of a small percentage of food value, it ensures comparative safety.—I am, etc.,

J. Ross MacMahon.

Bournemouth.

⁂ A leading article on pasteurization of milk appears at p. 727.—Ed., *B.M.J.*

Control of Venereal Diseases

Sir,—I welcome your leading article (Nov. 21, p. 611), which I assume is an expression of disappointment with Defence Regulation 33B. It is difficult to see how the regulation can make much advance in the control of infections in the civilian population, which are increasing rapidly. In any case, no one (including the Ministry of Health) has any accurate knowledge of the incidence of these conditions in this country; surely that is the first question to tackle, and notification seems to me the only way to do it.

As regards comparison with other countries, I doubt exceedingly whether Dr. Margaret Rorke is right in suggesting that there is not the same sense of shame associated with V.D. in Scandinavia as still exists in this country, and unless we are prepared to change our moral ideas completely I suggest that it is a good thing that, in most cases, such a sense of shame should still exist. Neither am I prepared to accept Major S. M. Laird's 2.5% defaulter rate which he quotes for Sweden. One would need much more information as to how the figures were compiled; for a default rate of 2.5% means that for practical purposes default in Sweden is negligible and Utopia has been reached.

I, for one, am not among those who think that the present V.D. scheme in Britain is a failure; on the contrary, I am convinced that in many ways it has been a great success, but undoubtedly it can be improved, particularly by better education of our own profession. Heaven forbid that I should suggest additional compulsory examination in V.D. for final-year students, but I am sure that the ignorance to be seen, even to-day, in all classes of the medical profession is a very great contributory factor in the spread of these important diseases.

I think that the Ministry of Health or the General Medical Council might encourage the study of venereal disease by perhaps giving an annual prize—say of £10—to be awarded as the result of a voluntary examination for final-year students at each of the universities. I believe the money would be well spent.—I am, etc.,

E. W. Assinder.

Birmingham

Obituary

RUSSELL JOHN HOWARD, C.B.E., F.R.C.S.

The London Hospital has lost one of its best-remembered men in the death of Mr. R. J. Howard—"Russell John" to his colleagues—which took place on Dec. 4. He had been associated with the London Hospital as student, teacher, and member of the visiting staff for not far short of half a century, and was regarded by all with esteem and affection.

Russell John Howard was born in January, 1875, and educated at King's College School, London. He entered the London Hospital as a student in 1895, and graduated M.B.Lond., with first-class honours and the gold medal in medicine and forensic medicine, in 1899. He served as house-surgeon at "The London," and as demonstrator of anatomy at the medical college, also as surgeon to out-patients at the Royal Waterloo Hospital for Women and Children. Choosing general surgery as his department of practice, one for which he was excellently endowed, he took the M.S., again winning a gold medal, in 1903, and the F.R.C.S. in the same year. In 1908 he was elected to the honorary staff of his hospital, and there, alike for his ability in surgery and for his personal qualities, he built up a great reputation as surgeon—ultimately becoming senior surgeon—and as teacher. For teaching, Howard had exceptional gifts. Even after his retirement from the staff of the hospital three years ago on reaching the age limit he still continued to lecture to the students on surgery and on surgical nursing, the latter a subject to which he had devoted particular attention. It is fitting that on the walls of the college his portrait, beside those of Treves and others, should show him, not in academic robes, but in his more familiar white coat, giving a lecture.

Among other posts which he held were those of examiner in surgery for the Royal College of Surgeons, and examiner in nursing at Westminster Hospital, and he did good work as surgeon to the Poplar Hospital for Accidents. He also carried on a large consulting practice in Queen Anne Street, and he wrote a number of textbooks bearing such titles as *Practice of Surgery, Surgical Nursing, Surgical Emergencies,* the last a highly commended book published in 1924, and *House Surgeon's Vade Mecum.*

In the early part of 1939, in the emergency arrangements of sectors for the hospitals of London and the Home Counties, Russell Howard, as senior surgeon, was made head of the sector which has the London Hospital as its base. His retirement from the honorary staff of the London took place later in the same year, and was made an occasion by staff and students, past and present, for expressing appreciation of his outstanding work, his ever-ready helpfulness, and his modesty. In the report of the House Committee to the Court of Governors he was described as an eminent surgeon and an exceptional teacher. A fellow-surgeon who had been associated with him for seventeen years said how happy he would be to work under him as chief for another seventeen. He was described as an "institution" of the London, one who had exercised a profound influence on generation after generation of students and nurses; while as for his medical colleagues, he was one of the great promoters of professional amity, able to rub away any rough edges which may develop among men working together, and to make the staff into something resembling a happy family. In "London" men, wherever they might be, and however remote or recent their connexion with the Mile End Road, he took an immense interest. For many years he was treasurer of the Hospital Clubs Union, to which he gave long and untiring service, particularly in the raising of the funds for a new pavilion at Hale End. At the end of the last war he was made a Commander of the Order of the British Empire.

Dr. **Henry Ingeldew Daggett** died at Boroughbridge, Yorks, on Nov. 7, aged 78. He studied medicine at the University of Cambridge and at St. Mary's Hospital, graduating M.A., M.B., B.Ch. in 1890. Before setting up in practice at Boroughbridge fifty years ago he had held house appointments at the Nottingham General Hospital. Dr. Daggett joined the B.M.A. in 1893, was chairman of the Harrogate Division in 1927-8, and served as its representative at the Annual Meeting of the Association in 1906. He was also a past president of the

Harrogate Medical Society, and an honorary life member of the St. John Ambulance Association. On his retirement from active practice in 1931 he received a public presentation from his friends and patients. His son, Mr. W. I. Daggett, F.R.C.S., is surgeon to the nose and ear department of King's College Hospital.

Medical Notes in Parliament

Bagassosis

Mr. **Herbert Morrison** said on Dec. 3 that he had received from medical inspectors of factories reports on the condition described as bagassosis, caused by the inhalation of dust from cane fibre or bagasse (see *British Medical Journal*, Oct. 24, p. 478, and Nov. 14, p. 577). It was now being considered by the Medical Research Council. Pending this investigation action could not be considered, but inquiries suggested that the condition was not suitable for inclusion in a scheme of compensation on the lines of the schemes for silicosis and other forms of pneumoconiosis.

Supplementary Medical Service of Scottish War Workers

On Dec. 8 Mr. **Pethick Lawrence** asked the Secretary of State for Scotland whether he had extended the area of the experiment in diagnosis and treatment of workers initiated in the Clyde Valley. Mr. **Johnston** replied that the supplementary medical service which had operated in the Clyde Valley since January last had now been extended to cover workers of all ages in the industrial areas of Scotland. He had the entire concurrence of the doctors in this matter. The first experiment covered 44% of the insured workers. Replying to Dr. Summerskill, who asked if the extension included dependants, Mr. Johnston said it dealt with workers. Dr. Summerskill asked if a housewife was a worker, and Mr. Johnston said she was if she was a war worker. He also told Mr. McNeil that he was absolutely satisfied that there were sufficient beds to meet all kinds of cases referred for hospital treatment under this scheme.

Small-pox and Vaccination in Scotland

On Dec. 8 Mr. **Viant** asked the Secretary of State for Scotland in how many cases in the recent vaccination campaign in the Methilhill district was vaccination carried out in several insertions in violation of the instructions issued to public vaccinators. Mr. **Johnston** said that the instructions to which Mr. Viant referred did not apply to Scotland. The recommendations on technique issued by the Department of Health for Scotland included scarification with three strokes one-eighth of an inch apart, but these recommendations were not legally binding. It was not known in how many cases this recommendation was carried out by doctors.

Mr. Johnston added that he was aware that some of the original cases of small-pox at Methilhill were at first diagnosed as chicken-pox by the assistant medical officer called in by the medical attendants. He was advised that the diagnosis of small-pox in its early stages was not always easy.

In reply to another question Mr. **Johnston** said that according to the information at present available there had been 9 deaths in Scotland following vaccination during the recent outbreaks of small-pox, when about 1,000,000 vaccinations were performed. Seven of these were registered as due to encephalitis (2 in Glasgow, 3 in Edinburgh, and 2 in Fife), 1 in Glasgow due to erythema, and 1 in Lanarkshire due to toxaemia. In addition, there was 1 death in Glasgow due to measles, vaccination being stated to be a contributory cause.

Compensation for Pneumoconiosis

The Workmen's Compensation Bill was set down for consideration in the House of Commons on the next sitting day after Dec. 3. This Bill proposes to extend Section 47 of the Workmen's Compensation Act, 1925, to workmen suffering from pneumoconiosis and to provide for the payment of benefit in the case of such workmen; to enable the Treasury to contribute to certain medical expenses; to amend certain provisions of the Coal Mines Act, 1911, relating to siliceous rock; and to amend the provisions of the Workmen's Compensation Acts, 1925 to 1941, relating to examining surgeons. The term "pneumoconiosis" is defined as fibrosis of the lungs due to silica dust, asbestos dust, or other dust, and includes the condition of the lungs known as dust-reticulation.

In the House of Commons on Dec. 8 Mr. **Peake** moved the second reading of the Workmen's Compensation Bill, which, he said, made provision for an industrial disease that had been the subject of an inquiry begun by a committee of the Medical Research Council in 1936. The committee's investigations had established a form of pneumoconiosis which differed from silicosis and could not be said, on present information, to be due to silica dust. It could be distinguished by both radiological and pathological methods, and was due to inhalation of air-borne dust in the course of employment. It was found to exist not only in the anthracite area but throughout the South Wales coalfield, though incidence and severity varied greatly in different regions. It was also found in surface workers employed on the screens, and in coal-trimmers in the dockyards of South Wales. There was confirmation of this from the Silicosis Medical Board, which had examined cases from other coalfields similar to those found in South Wales. In the mines the root cause of the trouble was the dust inevitably produced in the normal process of getting coal, and was accentuated by shot-firing.

Clause I extended Section 47 of the Act of 1925, which enabled compensation schemes to be made for fibrosis of the lungs due to silica dust or asbestos dust, to any form of pneumoconiosis. It would enable a unified compensation scheme to be made for silicosis and pneumoconiosis. The liability for compensation in respect of future cases would fall on the individual employer. Clause 2 enabled a benefit scheme to be made for dealing with cases of men who had already left the industry since the comprehensive scheme for silicosis in coal mines was introduced in 1934 but who had no right to compensation. It was proposed to pay 15s. a week in addition to national health insurance benefits in cases of total incapacity, and a death benefit to a widow at a flat rate of £250.

Under Part II of the Act of 1925, in the case of industrial disease, a certificate of disability could be granted only by the examining surgeon for the district in which the disease was contracted and the workman was employed. Directions would now be given which would empower an examining surgeon in the district in which a workman might be residing to give the necessary certificate.

Mr. **David Grenfell** expressed a hope that out of the scheme provided in Clauses I and II there would come a regularly constituted board with a fund, financial resources, medical advice, and a clinical organization. Mr. **Isaacs** said that the clause which allowed the Home Office certifying surgeon to certify in the district where a man happened to be living was a very valuable concession.

National Service: Earlier Enrolment of Youths

In the House of Commons on Dec. 8 Mr. **Ernest Bevin** moved the second reading of the National Service Bill. He explained that the Government did not intend to lower the age of liability to military service below 18, but the military situation was such that it was necessary to make it possible to enrol young men at 18. At present it was from 18 years and 4 months to 18 years and 6 months before a person liable at 18 could be enlisted, and it was necessary to have a Proclamation and registration and medical examination after reaching 18 years of age. The Bill provided that all these preliminary steps should take place at 17 years and 8 months. It might well be necessary, as the war progressed and casualties occurred, to go up into the higher age limits, but the Government desired to avoid that as much as possible. Experience showed that it took about four age classes at the upper end of the scale to give the same number as one class at the lower end. That was mainly due to reasons of health and to physical capacity of the people called up.

Mr. **John Dugdale**, speaking of the medical inspection of the boys who were called up, said he served for some months in a young-soldier battalion. These men were volunteers, but some of the medical inspections were nothing short of ludicrous. At least 10% of the boys who came into the young-soldier battalions were totally unsuited to go into the Army at all.

Mr. **Harvey** asked for an assurance that where a university student was in the academic year in which he would become 18, if his work was satisfactory and he had a certificate to that effect from the proper authority, he should be able to complete the academic year.

Mr. **McCorquodale**, replying to the debate, said it would not be possible to defer calling up beyond June, 1943, to enable boys to take a course of study in arts at the universities. In the present strenuous and serious position of the war, they could not continue those courses. They were continuing to make arrangements for the reservation of boys accepted as medical and dental students. The Bill was read a second time by 267 votes to 5.

False Certification and Criminal Proceedings

Sir **Donald Somervell**, replying on Dec. 9 to Sir Jocelyn Lucas, said the Director of Public Prosecutions made a full investigation in 1940 into the activities of a doctor who was recently struck off the *Register* for giving bogus certificates to men to enable them to evade military service, and into other similar cases. It was decided then that the available evidence did not afford a basis for criminal proceedings. Since Sir Jocelyn put his question down inquiries had been made to see whether the position had altered so far as evidence for criminal proceedings was concerned. Sir Donald did not think it had. He added that as a result of the investigation in 1940 a Defence Regulation was made strengthening the law on the subject. This was not applicable to acts done before it was made.

School Medical Inspection.—Mr. Lipson on Dec. 3 asked Mr. Butler to withdraw Circular 1604, which recommended curtailment of medical inspection of children in elementary schools. Mr. **Butler** said he could not do so. The medical man-power position necessitated the recommendations made in the circular. He regretted that in some areas the staff was insufficient to carry out the full programme of medical inspection.

Diet of Tuberculous Persons.—Mr. Brown stated on Dec. 3 that the special dietary needs of tuberculous persons had been considered by the medical committee, including medical officers of the Ministry of Health, which advised the Minister of Food. Persons with active tuberculosis had a priority right to an extra allowance of milk, but limitations of supply and the needs of others did not at present permit an extra ration of eggs to tuberculous persons nor provision of extra milk for their contacts.

Notes in Brief

The number of cases of non-pulmonary tuberculosis notified in the County of London was 1,281 in 1938 and 903 in 1941, representing a decrease of 29.5% between those two years. Deaths from tuberculosis among children under 15 years of age in the administrative county of London numbered 197 in 1938 and 220 in 1941—a 12% increase.

Universities and Colleges

UNIVERSITY OF LONDON

G. A. R. Kon, M.A.Camb., D.Sc.Lond., has been appointed as the first occupant of the University Chair of Chemistry tenable at the Royal Cancer Hospital (Free), which was instituted just before the outbreak of war. Dr. Kon has been a member of the staff of the Imperial College of Science and Technology since 1925, the title of Reader in Organic Chemistry being conferred on him by the Senate in 1935.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following candidates were successful in the recent Primary Fellowship Examination:

R. C. Barclay, H. W. A. Baron, M. S. Brett, J. B. Brierley, A. E. Carter, J. C. Dundon, N. Gillman, M. Harty, H. G. S. Korvin, R. W. P. Mellish, S. Muntarbhorn, W. S. Peart, J. H. Penrose, P. F. Philip, A. F. Robinson, Mary G. Shaw, O. L. Wade, Christine M. Weddell, W. R. Welply, F. R. Wilde.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on Dec. 7, the President, Mr. J. H. MacDonald, in the chair, the following were admitted Fellows of Faculty *qua* Physician:—J. Black, M.B., C. Borg, M.D., G. G. Browning, M.B., A. J. V. Cameron, M.B., G. M. Currie, M.B., D.P.H., A. Dunn, M.B., D.P.H.; H. B. Young, M.B., Ch.B.; D.P.H., was admitted a Fellow of Faculty *qua* Surgeon.

The Services

The King has approved the publication of the name of Lieut. (Temp. Capt.) K. I. H. Henry, R.A.M.C., as having been commended for brave conduct.

Prob. Temp. Surg. Lieut. G. H. Murray, R.N.V.R., has been mentioned in dispatches.

CASUALTIES IN THE MEDICAL SERVICES

Temp. Surg. Lieut. **Alfred Leigh Phillips**, R.N.V.R., is reported "missing, presumed killed" on active service last month. He was the son of Dr. F. E. and Mrs. Leigh Phillips of Milton, Berks, and graduated M.B., B.Chir. of the University of Cambridge in 1939. After holding a post at the Victoria Hospital for Children, Chelsea, he entered the R.N.V.R. in April, 1941.

Prisoners of War.—War Subs. Capt. R. W. Doyle, R.A.M.C., Lieut. B. I. Evans, I.M.S., War Subs. Capt. B. F. B. Gulliver, M.C., A.M.C., Acting Major T. McLardy, R.A.M.C., War Subs. Capt. McQuillan, R.A.M.C., War Subs. Capt. F. J. D. Webster, A.M.C.

DEATHS IN THE SERVICES

Major-General **Howard Ensor**, C.B., C.M.G., C.B.E., D.S.O., late R.A.M.C., died on Nov. 22 at the age of 68. He was educated at Trinity College, Dublin, and graduated B.A. in 1895 and M.B., B.Ch. in 1897, in which year he also obtained the L.M. of the Rotunda Hospital. Before joining the regular Army he was in the West African Frontier Force. He served in the South African War with the R.A.M.C., receiving the D.S.O., the Queen's medal with four clasps, and the King's medal with two clasps. In 1902 he was seconded to the Egyptian Army and did excellent work in the Sudan, being awarded the Order of Osmanieh in 1910 and of the Medjidieh in 1912. After promotion to the rank of major he was restored to the British establishment and served with much distinction in the war of 1914-18, being mentioned six times in dispatches, promoted brevet lieut.-colonel, and awarded the C.M.G. He became substantive lieut.-colonel in 1915, colonel in 1925, and major-general in 1929. For the next four years he was D.D.M.S. Eastern Command, and honorary surgeon to the King 1930-3; in 1937 he was appointed Colonel Commandant of the R.A.M.C. He had been awarded the C.B. in 1923 and the C.B.E. in 1928. General Ensor was a member of the B.M.A. and had served on the Egyptian Branch Council.

Col. **George Washington Brazier-Creagh**, C.B., C.M.G., late R.A.M.C., died in London on Oct. 10. He was born on June 20, 1858, and was educated at Trinity College, Dublin, where he took the L.Med. and L.Ch. in 1880. Entering the Army in 1881, he became lieut.-col. after twenty years' service, and retired in 1911. During his service he conducted missions to South-East Persia in 1893-4; to Seistan, Persia, in 1896-7, making extensive explorations of little-known regions throughout Eastern Persia and Baluchistan, and opening up the Seistan-Nushki trade route, being thanked for his work by the Government of India. He took part in the Punjab frontier expedition of 1897-8 (medal and clasp); accompanied the Peking syndicate throughout North China in 1898-9; served throughout the South African War of 1899-1902, taking part in the relief of Ladysmith, including the actions at Tugela Heights, Vaal Krantz, Spion Kop, and subsequently in operations in Natal, the Orange Free State, and the Transvaal, being three times mentioned in dispatches. He received the Queen's medal with six clasps and the King's medal with two clasps, and was appointed a C.M.G. in 1901. He rejoined for service in the war of 1914-18 and was promoted col. in 1919. He served in France and Flanders as A.D.M.S. of the 39th Division, was mentioned in dispatches four times, and was appointed a C.B. in 1917.

Medical News

A gift in kind of drugs to the value of £1,015 has been made to Mrs Churchill's "Aid to Russia" Fund by Lord Trent on behalf of Boots Pure Drug Co. Also as a gift to this fund the employees of George Gill and Sons (Sheffield), Ltd., in their own time are replacing 500 Spencer Wells forceps valued at £100 and lost by enemy action.

Sir Bernard Spilsbury has been appointed honorary treasurer of the Medico-Legal Society, in place of the late Sir Walter Schroder.

Dr. M. T. Morgan, medical officer of health for the Port of London, has consented to act as consultant to the Ministry of War Transport on questions affecting seamen's health.

Dr. W. St. John Cogan has been appointed a justice of the peace for the County of the City of Edinburgh.

Dr. Jean-David Buffat has succeeded the late Prof. Jean Rossier as director of the Surgical Clinic at Lausanne.

Persons suffering from certain skin diseases may buy "household type" rubber gloves without a permit if they have a medical certificate stating that they are suffering from long and intractable eczema, or cheiropompholyx, or intractable dermatitis, and need these gloves for their household duties.

Fifty per cent. of the inhabitants of Central and Eastern Finland and from 2 to 30% of the inhabitants of Western and Northern Finland are infested with *Dibothriocephalus latus* owing to the consumption of raw and badly salted fish.

Medical officers of health are now asked to send to the Ministry of Health, in accordance with Public Health (Tuberculosis) Regulations, 1942, the necessary particulars concerning women born in the year 1922 who have a history of tuberculosis. The information should be supplied as before on Form T.147(W).

Dr. William Chisholm, who was on board a ship in the Merchant Navy which was sunk by a torpedo, is reported to be missing.

A recent conference called by the Hospital Almoners' Association to discuss a survey of the almoner's work in hospitals to-day which had been prepared at its request agreed that the almoner's most important function—her medico-social work among patients—was often either overlooked by committees of management or seriously limited by far too many clerical duties. Only those administrative duties, it was considered, which affected the welfare of the patients should be done by the almoner's staff. Both the Ministry of Health and the subcommittee of the Royal College of Physicians which has under consideration the teaching of social medicine to medical students recognize the contribution to be made by almoners in this field. The former has asked the profession to draft plans of the part practising almoners can take in this instruction, while the Royal College has asked for outlines of an almoner's model unit in a hospital to facilitate the teaching and the practice of social medicine.

A Joint Council of Professional Scientists, representing over 10,000 qualified scientists, has been set up under the chairmanship of Sir Robert Pickard, F.R.S., by the Institutes of Chemistry and Physics in association with representatives of professional botanists, geologists, mathematicians, and zoologists. It has been established for the period of the national emergency, but it may form the nucleus of some more permanent organization to facilitate the close collaboration between professional men and women practising in all branches of science. Communications to the Council should be addressed to Dr. H. R. Lang, honorary secretary, Joint Council of Professional Scientists, c/o the Institute of Physics, at its temporary address, the University, Reading, Berks.

It is reported that the total area under cultivation with medicinal plants and herbs in the German Reich amounted in 1941 to about 40 square miles. Of this about 5 square miles is in the newly acquired territories.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the incidence of measles rose by 1,833 while the notifications of diphtheria fell by 140. Dysentery notifications went up by 46, and further rises were reported in the other infectious diseases.

Small increases in scarlet fever were fairly general throughout the country, the largest being 38 and 32 for Essex and Surrey. But in Yorks West Riding there was a decline of 67 cases.

There were fewer notifications of diphtheria in most counties, the only notable drop occurring in Lancashire, where there were 38 fewer cases than in the preceding week.

There were 29 and 23 fewer cases of whooping-cough in Middlesex and Yorks West Riding, and 22 more in Staffordshire.

The notifications of measles are still higher in the North than in the South. The largest rises were Yorks West Riding 527, Lancashire 373, Wales 245, Leicestershire 197, Nottinghamshire 119, Southampton 102. Despite the upward trend throughout most of the country, a fall in the notifications was recorded in Derbyshire 117, and London 55.

The only new outbreak of dysentery during the week was from Derbyshire, 26 cases (Belper R.D. 25, Ashbourne R.D. 1). Increases occurred in the existing widespread outbreaks in Lancashire, from 24 to 32 cases, and in Surrey, from 7 to 18 cases. In Lancashire six administrative areas were involved, with the principal centre in Manchester C.B., 14 cases; and in Surrey the cases were recorded from five areas, the largest total being Banstead U.D. 11. In London there were 14 cases (a decrease of 4) in ten boroughs.

In *Scotland* there were still further rises in the incidence of measles and whooping-cough, but diphtheria and scarlet fever are on the downgrade. Measles went up sharply from 80 to 139 in the city of Dundee.

In *Eire* the most notable feature of the returns was the sudden fall from 25 to 5 in the weekly number of cases of poliomyelitis; this was the lowest total since the week ending Aug. 22, when the outbreak began. Notifications have averaged just over 20 a week during the past three months. There has been a further case of typhus in the rural district of Galway, Co. Galway.

Small-pox

After an interval of eight days without a case 5 more cases of small-pox have been reported from Edinburgh: in 3 of these the patients belonged to one family, and 1 woman of 58 died after admission to hospital, thus bringing the deaths in Edinburgh up to 6.

Returns for the Week Ending December 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,900, whooping-cough 1,195, diphtheria 1,011, measles 11,205, acute pneumonia 890, cerebrospinal fever 73, dysentery 191, paratyphoid 5, typhoid 4.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county) (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	77	4	27		9	114	5	32		2
Deaths		—	2				1	1		
Diphtheria	861	39	228	97	12	1,082	38	324	56	43
Deaths	17	—	4	5	—	27	—	7	2	1
Dysentery	163	15	65	—	—	209	7	66	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	1		—	2	1	1	—	—
Deaths		2	—				—	—		
Erysipelas		—	67	9	—		—	55	8	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				42						
Deaths	36	5	19	20	2	35	2	7	17	4
Measles	10,649	307	456	33	43	639	47	32	49	4
Deaths	10	1	2	—	—	—	2	—	1	—
Ophthalmia neonatorum	82	5	22		2	59	2	23		—
Deaths										
Paratyphoid fever ..	4	—	3	—	1	18	—	6	—	
Deaths		—	—	—	—		—		—	
Pneumonia, influenzal*	766	51	13	3	11	1,100	45	15	1	2
Deaths (from influenza)	35	7	3	—	—	25	5	5	2	1
Pneumonia, primary ..			216	10				205	14	
Deaths		—		16	13		34		11	4
Polio-encephalitis, acute	6	—				—	—			
Deaths		—					—			
Poliomyelitis, acute ..	18	—	—	5	4	13	1	2	4	—
Deaths		—					—	—		
Puerperal fever ..		—	14	—	—		—	13	—	—
Deaths	—	—				—	—			
Puerperal pyrexia ..	161	11	21	—	1	142	11	13	1	
Deaths										
Relapsing fever ..	—	—			—	—	—			
Deaths										
Scarlet fever	2,970	148	401	61	68	1,417	46	256	59	40
Deaths	2	—	1	—	—	3	—	—	1	—
Small-pox	1	1	3	12	—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever† ..	13	—	—	12	2	10	1	3	6	3
Deaths	—	—	—	1	—	1	—			
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	1,263	75	52	35	5	1,995	210	83	39	8
Deaths	13	2	3	1	—	9	2	4	1	—
Deaths (0–1 year) .	309	40	71	52	19	358	22	74	44	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,508	703	615	212	141	4,461	624	630	198	121
Annual death rate (per 1,000 persons living)			13·8	14·2	‡			13·7	13 1	‡
Live births	5,576	675	789	363	256	4,773	392	809	249	221
Annual rate per 1,000 persons living ..			16·3	24 2	‡			16 5	16 5	‡
Stillbirths	188	7	36			192	13	34		
Rate per 1,000 total births (including stillborn) .. .			44					40		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Wartime Diet and Miscarriage

Dr H. W. H. HOLMES (Burnham-on-Sea) writes: With reference to your article, " Wanted: A Nutrition Policy " (Nov. 28, p. 640), is there any indication that the present wartime diet has any effect on miscarriages, which seem to be taking place in an unusually large number, and how can it be rectified?

Dressing for Cancer of Breast

Dr. W. G B. HALLIDEN (Stroud) writes: In answer to " Deodar " (Nov. 28, p 654) I would suggest the daily application of a liberal quantity of sulphanilamide powder This can be dusted on straight from the container and a dressing of liq. paraffin or liq. paraffin and eusol emulsion applied. I have found with this treatment that the ulcerating area shows a healing tendency, the discharge diminishes, and a marked deodorizing effect is obtained.

" INOFFENSIVE " writes: A mixture of charcoal and iodoform will prevent the smell. This can be used as a powder or made into an ointment, and 5% or less of iodoform will suffice.

" M " writes to say that " Deodar " will find eusol effective

Income Tax

Liability to Tax

" Colonial " arrived from abroad, on leave, in this country on Oct. 10, 1942. He has no permanent residence here. He inquires as to the circumstances in which he may become liable to British income tax.

⁂ It is assumed that he has not paid habitual but only occasional visits to this country in recent years. The statutory rule provides that a person who is resident abroad and comes to the United Kingdom is *not* liable for tax if he is here for some temporary purpose, without the intention of establishing his residence here and his stay does not last for a period of six months in any one financial year. It follows, therefore, that " Colonial " cannot be regarded as a British resident until Oct. 5, 1943—as the present financial year ends on April 5, 1943—unless in the meantime he forms the intention of establishing his residence here If he does become liable as a resident he will be assessable *for the year* in which he becomes liable, but not in respect of pay not remitted to the United Kingdom.

LETTERS, NOTES, ETC.

Adequate Vaccination

G. D. G. (Dalkeith) writes: Sir Alexander Macgregor and Dr. Peters refer in their article on the 1942 outbreak of small-pox in Glasgow (*Journal*, Nov. 28, p. 627) to unsuccessful vaccinations and revaccinations. Frequently people say they have " been done " but as it never took they suppose they are immune; this is a widespread fallacy. I have received a letter from a retired matron of Indian Government hospitals who says: " I have been in the throes of vaccination. In India I used to be done every year but it never once took I was done last July by a doctor on the Edinburgh M.O.H.'s staff without result, so when small-pox started I was again unsuccessfully vaccinated The doctor told me to come up again to see him in a week. This time a lady doctor did me and it took very well. This is the first time in all my life that it has taken at all. I was always told I was immune but never believed it." A weak spot in the Vaccination Order of 1929 was the direction given to public vaccinators to make a single linear incision instead of the scarification hitherto practised. In [illegible] Glasgow outbreak the single-stroke technique was discarded and three incisions were adopted as the standard practice A single unsuccessful vaccination was not accepted as evidence of immunity There is room yet for more attention being paid to *adequate* vaccination. The lack of this adequacy has given the conscientious objector a weapon to hammer against this wonderful measure for securing small-pox immunity.

First-aid Treatment for Fractured Spine

Dr. A. R. NELIGAN (Droitwich) writes: I agree with Lieut.-Col. J. L. Moir (Oct. 31, p. 529) about the need for a simple standard method. I suggest that the following way of lifting men on to the stretcher is better even than his five bandages, if only because poles will not always be handy. Four bearers: one for the head, one for the legs, one on each side of the trunk grasping the tightly rolled edges of the unbuttoned blouse (or jacket) with hands as far apart as possible. Untrained men can lift a heavy patient easily and correctly in this way; he lies, as it were, in a hammock but with no sagging, and can be moved with very little disturbance.

Lieut-Col. J. L. MOIR (Anglesey), in the course of a further letter, states that in order to distinguish his method for the first-aid treatment of fractured spine (*Journal*, Oct. 31, p. 529) from others it has been decided to call it the Clarke-Moir method, and he will bring it to the notice of the B.R.C.S. and the Orders of St. John and St. Andrew. But before doing this, as the matter is of considerable importance, he is referring the method to the British Orthopaedic Association for their consideration and approval or otherwise. He continues: Dr. J. L. McKenzie Brown, First-aid Commandant, Civil Defence Service, Walthamstow, wrote me that he thought Procedures VI and VII in the order of my treatment should be transposed—that is, the lower limbs should be tied together by triangular bandages *before* the patient is turned on his back. We quite agree with this, and think this alteration should be made

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MEDICINE 100 YEARS AGO

Extracts from a leading article on the regulations of the Royal College of Surgeons relating to admission to the college diploma; from the *Provincial Medical Journal* of Dec. 17, 1842:

" In October, 1841, the college published certain regulations, respecting the professional education of candidates for their diploma. Under these regulations a very respectable course of education was prescribed, including, amongst other improvements, attendance on the practice of surgery at some recognized hospital during a period of three years; and attendance on the practice of medicine during a period of one year. It was also announced by the council ' that after October 1, 1842, candidates would *only* be admitted to examination under the regulations alluded to, except under peculiar circumstances of apparent hardship.' The amended regulations of October, 1841, were promulgated under the authority of the council of the College of Surgeons, and students had prepared themselves for the more costly and extensive acquirements expected from them, when, in the course of the present year, a rumour got abroad that the college was privately admitting great numbers of practitioners, without any regard to their own regulations—without requiring from them the same proofs of professional education, which less favored individuals were compelled to furnish. . . . On the 18th of November last the college sent forth the following extraordinary document:—

" ' ROYAL COLLEGE OF SURGEONS OF LONDON

" ' The Court of Examiners having found that erroneous statements have lately been published respecting the mode in which gentlemen engaged in the practice of surgery may obtain the diploma of the college, and that other candidates for the diploma have experienced difficulty and inconvenience from inattention to the regulations, by which the required course of study has been, from time to time, augmented, or from inability to comply with those regulations, have resolved: That gentlemen who were practising surgery prior to 1835, be admitted to examination on producing proofs of such anatomical and surgical education as may be deemed sufficient by the Court of Examiners. That other candidates be admitted to examination upon the production of the several certificates required by the regulations in force when they began their professional education by apprenticeship, or by attendance on lectures or hospital practice.

" ' EDMUND BELFOUR, Sec.

" ' November 18, 1842.'

" Though unwilling, at any time, to attribute other than honorable motives to respectable men, we must say that the preceding resolutions of the college require explanation. The motive alleged in the preamble, if we may so call it, is illusory, and a contemptible blind to deceive the profession. If ' erroneous statements had lately been published,' why not correct them in the usual manner? The periodical press is ever ready to assist the college in the correction of error and the dissemination of truth. But the statements were not erroneous. The error—the deceit—lay with the college; and it is little less than a barefaced subterfuge to make the correction of an error, which was of their own making, the pretence for issuing regulations totally unworthy of the college, and at variance with the spirit of the age."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 26 1942

THE SCIENCE OF HEALTH*

BY

JOHN A. RYLE, M.D.

Regius Professor of Physic in the University of Cambridge; Consulting Physician to Guy's Hospital

For my annual wartime lecture I have chosen on this occasion a subject which, curious though it may seem, finds no special place or mention in the curriculum. Medicine is primarily concerned with the observational study (with a view to its relief) of disease at the bedside, in the consulting-room or clinic, and in the laboratory. Disease also has its own science of Pathology, which is concerned with the more intimate laboratory investigation of its causes, processes, and consequences. But, notwithstanding that the study of health would seem to be the proper preliminary to the study of disease, we find no counterpart to medicine, no parallel observational science devoted to the fireside or field-side or laboratory study of health. Nor is there a science comparable to pathology which deals with the more intimate causes, processes, and consequences of health.

Hygeia, the daughter of Aesculapius, was the goddess of health, a subject in which the Greeks were intensely interested, and hygiene originally meant the science of health; in modern usage, however, it has come to convey the narrower meaning of sanitary science. Physiology and anatomy, it is true, concern themselves with some of the processes and attributes and supply some of the standards of health; but as a rule they have little to say of its outward manifestations, of what may even be called its "symptoms and signs," or of that elaborate co-ordination of functions by which it is constituted. They touch scarcely at all upon its causes and consequences.

Please do not think that I wish to extend or complicate the curriculum, but it is surely an omission that so little attention has been paid by the students of disease and their teachers to that state from which some deviation or departure must occur before the existence of disease is recognized. And so, because it has a bearing on your future tasks and outlook, I suggest that we give our minds to the subject of health and how it might be better regarded and how more usefully observed and studied. Let us begin by asking ourselves five questions: (1) What is health? ; (2) Why is it important to know more about health? ; (3) What are the principal symptoms and signs or other criteria of health? ; (4) What are the causes and consequences of health? ; and (5) How in the future can we make a better contribution to the promotion and maintenance of health?

What is Health?

There are difficulties in the matter of health as a concept. It is not at all an easy thing—less easy even than disease—to define, and most existing definitions are inadequate. My *Oxford English Dictionary* defines it as "soundness of body," my medical dictionary as "a normal condition of body and mind." The first of these is clearly insufficient. The second leaves us with the old indecision as to what we mean by normal. It is possible for a man to pass every physical and chemical test known to medicine and yet to be a very sick man—to suffer, for instance, from severe recurring bodily discomfort or continuing mental anguish. On the other hand, he may be left by disease or injury with gross physical defects, including loss of limbs, and nevertheless be abounding in vigour and surpass in efficiency and happy achievement the majority of his unscathed contemporaries. We must also allow that the criteria of health vary with age, sex, occupation, and race.

A good definition of health in the individual should convey the idea of competence to perform and enjoy the tasks and functions appropriate to his or her age and sex. It should convey the idea of well-coordinated function, of life vigorous, well balanced, and attuned to its environment. It should certainly mean something more than a state of "no disease." In the training camps for the Army there are at present gathered together many young men who have been passed as fit for military service. After a few months of training they are already an entirely altered set of men in appearance and bearing and physical efficiency and mental outlook, and they not infrequently gain half a stone or more in weight in that period. In addition thousands of men accepted for service are later found unfit to go through with their training. All these were medically examined and labelled as fit for a virile profession, but they were obviously a long way from the optimum or possible vigour and development due to their manhood and original physical endowments. They had not really achieved health.

If we go back to the *O.E.D.* and look up, not its definition but an earlier alternative for the adjective "healthy," we come, I believe, a little nearer to what we are seeking. The old adjective for healthy is "hale." From "hale" the word "whole" is also derived. "Hale," we are told, means "free from infirmity; sound; vigorous"; but "whole" has also come to convey the idea of completeness. By "the whole man" we can understand not merely the "total man" in a structural regard but man in the fullness of his functional development and integrity—that is to say, in a physiological and a psychological regard. The B.M.A. Medical Planning Commission has recently coined a much-disputed phrase—"positive health"—implying thereby something better than "no disease." It does not bear close analysis, and, if we accept the idea of health as wholeness—implying fulfilment or completeness and co-ordination of function—the prefix "positive" becomes unnecessary.

We are not, however, to infer that there is only one pattern of health or wholeness; for we know that the human species, like other domesticated species, shows a wide range of variability. Health manifestations, like disease manifestations, can vary from individual to individual. But we may insist that for each main type or variation due to race, parentage, age, and sex there can be laid down certain criteria over and above the mere absence of detectable disease which stand for wholeness or health. These criteria have still to be more precisely determined and described, for reasons which we must shortly discuss. Their description and measurement are among the tasks of the science of health.

Why is it Important to Know More about Health?

This question may be considered from the point of view of the student of medicine, the individual citizen, and the community. Unless the student of medicine (be he qualified or unqualified) has a good working knowledge of health and health standards and manifestations, of the nature or physiology of what I shall describe as the "symptoms" of health and of its surface markings, he is not in a position to detect or investigate the early deviations from it. Unless, furthermore, he appreciates that most of the symptoms of disease can be explained physiologically as exaggerations or depressions of the ordinary symptoms of health he will fail to appreciate those natural gradations between healthy and morbid function which are constantly discoverable in practice, and he will tend to think vaguely in terms of "normal" and "abnormal" as though there were a sharp division between the phenomena of health and the phenomena of disease.

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* An undelivered lecture prepared for the students of the Medical Faculty, University of Cambridge.

Dyspnoea in response to vigorous exercise is a symptom of health. Dyspnoea at rest or with trivial exertion is a symptom of disease. Flushing in a hot atmosphere is a symptom of health. It is also a symptom of fever when the internal, as opposed to the external, environment is modified by disease. Appetite is a symptom of health; poor appetite and loss of appetite are among the most significant symptoms of disease.

There is, however, quite another reason why the student of medicine should wish to know more about health. It is linked with a present and important reorientation of our professional thought. It is becoming steadily more apparent that in the future the emphasis of medicine will be increasingly upon its preventive and protective aspects, upon the social as distinct from, but supplementary to, the individual applications of accumulating knowledge. Instead of waiting to cure—or to try to cure—the individual of preventable disorders and diseases we shall endeavour to see that conditions are such that fewer and fewer individuals develop them; and, not content with those states of body and mind which can only be called "no disease," we shall encourage by every method within our power the preservation of health and the elevation, in the minds of doctors and laity alike, of the idea and the standards of health. Apart from the hundreds of thousands of people in these islands who suffer from active and diagnosable disease and are either bed-ridden or in other degrees incapacitated from full and useful citizenship, there are millions, like the recruits to whom I have referred, who might by our present rough standards be placed in category A, but who could not—while lacking signs of evident disease—be considered as really healthy or whole. Although unalterable ancestry would commonly be found to have provided initial handicaps, environmental factors (in many cases alterable), operating on body or mind, or both, would be found to have the more widespread adverse influence.

The better and earlier assessment of the lesser degrees of what we have come to call "ill-health" (really a contradiction in terms) in individuals and the community is becoming an urgent duty. The study and recognition of the causes of disease and debility, and of those states which have no name and often evoke no open complaint but which fall just short of health, have led us back at last to the recognition and the need for the better discrimination of the causes of health itself. To some of these I must shortly refer, but they are nowhere better illustrated than in the field of nutrition.

If you want illustrations of what I have in mind you have only to keep your eyes open in buses, tubes, and trains and to ask yourselves what proportion of your fellow travellers, even on a superficial and untrained inspection, would be likely to prove really healthy or whole. In mining and industrial districts and slum areas you would find the levels of fitness more conspicuously on the debit side; for here you would see at all ages a far greater proportion of stunted bodies, pale faces, and bad teeth. Here, too, on a basis of the same crowding and poverty, tuberculosis, rheumatic fever, and diphtheria find the opportunity which they are ceasing to find in kindlier social climates. Briefly we may say—and none could dispute us—that health or wholeness is far too rare, that the standards of health which we have allowed to pass are far too low, and that many of the causes of this state of affairs are now apparent and are to be found in defects of environment, of education (both mental and physical), and of rest, recreation, ventilation, and nutrition. As the doctors of the future you must begin to think how this situation can be remedied. By demonstration of what can, in fact, be quickly achieved, as through the provision of better conditions for two sections of the community only—the elementary-school child in peacetime and the recruit in wartime—the people as a whole must eventually be persuaded of the possibility of the real health that is their due. What they ought to possess and its importance in a national regard have long been recognized, as witness the old adage, *Salus populi suprema est lex,* or Disraeli's insistence that "the health of the people is really the foundation upon which their happiness and all their powers as a State depend."

The health of the people has been greatly served, let us admit, by a number of epoch-making discoveries, by numerous public health measures, by political and economic changes and (except in the matter of war-proneness) by the general upward trend of our civilization. Curative medicine and surgery have also played no inconsiderable part. In future the preservation and wider distribution of health in the community, based upon a better understanding of its causes and not only on a knowledge of the causes of disease, will make contributions as remarkable as any of these.

But if we are to control health we must know how to diagnose it and we must further elucidate its causes. It is by such means that we have learned to control disease. Pathology has provided the basis of much physiology. Similarly clinical study can point the way to the study of health, for clinical training provides the right methods and encourages the right aptitudes, although it has not always led as promptly as it might have done to the right inferences and actions.

The Symptoms and Signs of Health

We all know vaguely what we mean when we say that we "feel fit." The top-of-the-world feeling at the height of a good holiday; the keen appetite and good digestion and regularly acting bowel; the pleasing muscular aptitudes; the tingle of bare skin in sun or wind and its free response to changes of temperature and to exertion; the pleasant sense of muscular fatigue at the day's end (so different from city weariness); the even temper; the gay spirit and the ready laughter—all these are symptoms of health. In youth many of them are experienced apart from holidays. The older we become and the more occupied with affairs and cares and sedentary occupations, the less fully aware are we of all these pleasant sensory phenomena and the more surely does it require a long holiday in good surroundings to recall them. As the mode of our lives becomes less wholesome we become, indeed, less whole. We may well wonder whether the working men or women in the poor streets of our crowded cities, whose holidays seldom if ever run to a week and whose incomes rarely allow of rest and refreshment in the country or at the seaside, have ever enjoyed what most of us here have enjoyed of true health or wholeness.

Now, just as loss of appetite, irregular bowels, undue fatigue, poor sleep, greasy or dry skins, ruffled tempers, and low spirits—not to mention more definite aches and pains or depression, dyspnoea, or dizziness—have their diagnostic significance and physiological interpretation, so too have the subjective phenomena of health their diagnostic significance and physiological interpretation. Their more intimate meanings have not in most instances been fully worked out as yet, for bodily and mental sensitivities are still more delicate than our chemical and physical tests. Professor Adrian has not tapped or taped them all with his electro-encephalogram, or taught us how to amplify them with his loud-speaker for purposes of demonstration or analysis. But this does not mean that they cannot in the meantime be usefully studied by observational and descriptive methods and elucidated by inference and comparison; or that their causes cannot be sought as physicians have long sought, by patient watching and record, the causes of their counterparts—the symptoms of disease. Their study is naturally helped by parallel observations on the objective manifestations or "signs" of health. The fresh colour and fine texture of the skin, the crispness and lustre of the hair, the good teeth, the sweet breath, the upright and graceful carriage, the firm limbs, the easy breathing, the frank manner, the free movements on the track or the tennis court or in the swimming-pool—all these are among the eloquent signs of health in youth. In the child we see the softer skin and other sprightliness of movement, other gaieties, the skipping progress of the small girl home-coming from school; in the infant the firm roll of fat at the wrist, the contentment, the absence of crying (except under the compulsion of hunger or a passing pain), the earnest attempts at crawling, standing, or walking, the lovely postures of sleep; and in the old—even though movements now be slow and memory less quick and laughter a less boisterous affair—we sometimes witness the silver locks and rosy porcelain skins and a serenity of mind which are the true manifestations of health in age.

And when as physicians we have occasion to make our routine examinations at these various ages we learn that there are behaviours in respect of body-weight and build and growth and sleep and bowel and bladder function, of menstruation, of pulse rate and blood pressure and haemoglobin percentage, which are appropriate and natural and may be counted among the measurable criteria of health. Or we may detect departures from them which give us pause or, may be, lead our inquiries to the discovery of incipient or established disease.

Why should you not begin your training in the observation of these things now? Why should you not seek for physiological explanations of the familiar symptoms and signs consistent with well-being or its borderland states, that you may the better recognize those of more patent disorder or disease when they begin to come your way? Appetite, hunger, satiety, laughter, blushing, hiccups, yawning, sneezing—here are familiar symptoms ready to hand and inviting your inquiry. I suggest that you try and write a full description of any one of them to-morrow. I should like one day to see some good cinematographic illustrations of man's strange convulsive phenomena—of laughter, sneezing, and hiccups—and to study them in slow motion. The better you can describe and explain these events, the better, later on, will you describe and understand fits and flatulence, nausea, vomiting, and vertigo when you take up your work in the clinic. There, although it is common—too common—to account as "interesting cases" only those of the more rare or advanced diseases, it should really be our first pride and purpose—remembering the features and phenomena of health—to detect the earliest departures from it, to recognize morbid conditions when they are more susceptible of arrest or cure, to be more familiar with those multitudinous shades and varieties of unfitness which might have been altogether avoided. For the physician with a naturalist's eye, moreover, the study of all these phenomena of life, whether healthy or morbid, can come to have a fascination of its own, and quite apart from special uses.

The Causes and Consequences of Health

The causes of health, like those of disease, are to be found in ancestry and environment. In nature (which we will assume to mean in all wild species living under conditions unmodified by man) the survival of the more robust and adaptable breeds and individuals, together with natural activity, results in the maintenance of a high and even curve of health. The unfit do not long survive, and, whether in a nest of ants, a flight of swallows, a school of porpoises, or a herd of deer, it is unlikely that the most skilled clinical survey would reveal anything like the variability in body-form, weight, colouring, vigour, and other criteria that such a survey would reveal, shall we say, in domesticated cattle or a native tribe. In a so-called civilized community the variability is far greater, and deviations from the mean in respect of stature, colouring, and health, and even the unlovely features of declared disease, are all more frequent and more apparent. Variation under domestication was, as you know, one of Darwin's special studies. Man has constantly increased his variability as well as that of his domestic animals. His animals he has bred for new types, for quality, and for quantity. By his own modes of living and social organization, however, he has produced many deviations from health, and by his self-protective measures he has made it possible for the unfit to survive in large numbers, whether their unfitness has been due to genetic or environmental factors, or to both. He has both bred morbidity and preserved it. And now he is seeking the answers to his mismanagement.

Students of eugenics (which has been defined as "the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally") formerly applied themselves especially to those hereditary influences which are accounted inimical or favourable to man. To-day they are more alive to the importance of environmental influences and to the fact that these are also more controllable. Medicine and preventive medicine and other forms of social service, together with physical training and education, are among the agencies whereby we have sought to keep individuals and communities in health. It is clear that we cannot at present influence national health to any great extent by applications of genetics. We cannot adopt the methods of the stock-breeder with his flocks and herds. Such is our respect for the liberty of the individual—and, I might add, our disrespect for the race—that we cannot yet control, by segregation or sterilization, the excessive fertility of village half-wits who perpetuate their kind with multiple illegitimate births. We cannot at present even do much towards encouraging the general fertility of the fit and discouraging the general fertility of the unfit. Economic and other insecurities have tended to the serious artificial limitation of families on the part of those most worthy to rear them.

There are, however, a number of things that could be done to ensure and assist the health of the people by modification of their actions and habits, their nutrition, and their environment. Better food, better education in the purchase and preparation of foods, better general and technical and sex education, better wages, better housing, social insurance, holidays with pay, opportunities for games and recreation, the provision of every advantage which infantile and child health and growth require—these are possible things. These are themselves among the more important causes of health. And in the schools and the universities, in the Services and the training camps there should be ample opportunities for the more intimate study and measurement and cultivation of health, and for physiological experiments in health regulation and control. The study of growth in childhood and adolescence and of the relative influences here of nature and nurture awaits a full inquiry.

You will rightly comment that the social reorganization needed to provide the adequate causes of health is not within the immediate province of science or the doctor. It is not my purpose here to go outside that province except to remind you that it is upon the wise application of science to human problems that some of our greatest human and social advances have been and must in future be based. The more carefully you use your eyes and other sense-organs, the more accurately you collect and correct your data, the more factual arguments you can assemble to show that health or wholeness is something better than "no disease," that its symptoms and signs and measurements are this and that and its causes or antagonists such and such, the more incumbent will it be upon peoples and their Governments to ensure that the lessons of your science are eventually and effectively applied. They took the advice of doctors about infectious disease as it were but yesterday. To-morrow they will take it about nutrition and housing and working hours, and that degree of security of prospect without which it is impossible to maintain full sanity of mind and soundness of body.

Of the consequences of health need we say more than that it paves the way for happiness and performance and makes for more effective individual and national life and labour, and so helps production and prosperity and provides, in fact, a nation's best economy? How much fitter our recruits would have been, how much less striking the contrast in stature between many of our home troops and their cousins from overseas, and by how much our war output might have been increased in these war years, if we had attended to health as assiduously as we have attended to wealth in the pre-war years! And what a nation we could become again if we would but accept and act upon the fundamental principle that, for the individual and the community, health of body and mind and the things that secure them are the most important of all economies and the surest shield against adversity and discontent and conflict! To quote Disraeli once again, "The health of the people is really the foundation upon which their happiness and all their powers as a State depend."

The Future

If the human world can be saved from its most immediate enemies and dangers, the future, or an important part of it, will be in your hands. To its better building you must direct your science and your humanism, and you must see that these two forces work in the closest partnership. The word "doctor" means "a teacher," although in this country it has also come to have the more special meaning of "healer." One of the functions of doctors is to contribute of their knowledge and experience to the development of a healthier and happier state and to the education not only of the people but of the people's leaders. I would urge that your science and your humanism must come to serve the State in fuller measure than the science and humanism of the older generations have done.

Will you accept, therefore, that you are going out into the world in a few years' time not only to cure and palliate disease but—true to your title of doctors—to teach health and the causes of health and the necessary provisions for health, remembering always that this teaching must first find a firm basis in the science of health? Towards all this your present studies provide an important introductory discipline—but only a partial one, for the emphasis of teaching is often in the wrong place, and the co-ordination of your many subjects is not yet what it might be. In much the same way it may be urged that our existing medical services often apply the emphasis in the wrong place and lack the co-ordination we would one day like to give to them. And so will you in your generation also help us in ours to bring health or wholeness to our educational systems and to those collaborations of social and individual medicine with which it will one day be your privilege and responsibility to serve the people of this and other countries?

Last of all, for I have not yet mentioned your very proper duty to yourselves, remember that the doctor who has poor opportunities or a scant regard for his personal health—which above all other blessings should bring balance to his life and judgment to his work—can scarcely become the most respected and effective teacher.

TREATMENT OF SUPERFICIAL TUBERCULOUS LESIONS BY LOCAL APPLICATION OF PROMIN*

BY

W. H. TYTLER, M.B.Toronto
David Davies Professor of Tuberculosis in the Welsh National School of Medicine

AND

A. D. LAPP, M.D., D.P.H.Toronto
Senior Resident Medical Officer, Glan Ely Tuberculosis Hospital, Cardiff

(From the Welsh National Memorial Association)

The results obtained by Feldman, Hinshaw, and Moses (1940, 1941, 1942) in the treatment of experimental tuberculosis in guinea-pigs by promin (sodium salt of *p,p'*-diaminodiphenylsulphone - N , N'- di - [dextrose sulphonate]) have aroused great interest both in America and in this country. Not only did the drug, given daily by mouth, prevent or limit the development of disease, in animals inoculated with a virulent bacillary strain, when treatment was begun on the day of infection, but even when it was delayed for six weeks thereafter the effect was pronounced, and in some animals no tuberculous lesions were found at necropsy 192 days after inoculation. Feldman, Mann, and Hinshaw (1942) have now repeated the experiments, but have proved by biopsy the presence of microscopic tuberculous lesions in the livers of the animals when treatment was started, six weeks after infection; and again several treated animals showed no lesions at necropsy, at 224 days. While some factors involved in these results require further discussion, they appear to be the most impressive yet reported in the chemotherapy of tuberculosis in the guinea-pig.

The guinea-pig tolerates a daily dosage, by mouth, of 300 to 400 mg. over long periods. In man, unfortunately, much lower dosage relative to weight may soon produce toxic effects, particularly haemolytic anaemia. Trial treatment of pulmonary tuberculosis has been fairly extensive, though published results are yet scanty. But, from wide informal discussion, it appears that outstanding success has not been attained with any dosage which is well tolerated.

One of us (W. H. T.) has had in hand for some seven months a guinea-pig experiment similar to those of Feldman, Hinshaw, and Moses, with comparable results, so far as they are yet apparent. The very evident effect of the drug in this experiment suggested that it might be exploited in the treatment of accessible non-pulmonary lesions, to which effective concentrations might be applied locally without producing a toxic blood level. After treatment of this type had begun, we learned that in America promin has been applied locally by spray or inhalation in some cases of laryngeal or tracheo-bronchial tuberculosis, with good results. More recently we have heard, by personal communication, that Dr. G. T. Allerton of Torquay has been applying the drug to superficial lesions with much success.

Method

The high solubility and rapid absorption of promin indicated that the maintenance of an effective concentration in the lesion might require frequent application of strong solutions unless the drug were incorporated in a medium which would limit diffusion. The medium first tried was tragacanth, which at relatively low concentrations gives a stiff insoluble jelly; and this medium has proved so satisfactory that no extensive trial has been made of others. One preparation of promin and tragacanth in glycerin was made, in the hope that the gum, by absorbing water in the lesion, might produce a stiffer gel than could be injected, but the preparation in itself proved difficult to handle and to inject. The use of tragacanth, however, makes sterilization difficult. Promin in 40% solution may be autoclaved at 120° C., and if cooled slowly remains in solution, particularly if 5% glucose has been added. If the solution is cooled rapidly, or with weaker solutions in any case, precipitation occurs, though solutions of 1% or less only become hazy. But, owing to the insoluble nature of the tragacanth gel, and to the stiffness required, it is not practicable to sterilize the gel separately and then add the necessary promin in sterile form. For the lesions so far treated, therefore, we have not attempted sterilization, but have relied on the bacteriostatic effect of the drug, which is considerable at the strength used. For injection into closed serous or similar cavities, however, it would be desirable to develop some method of sterilization which would exclude the presence of viable spores, particularly those of *Cl. tetani.*

In the preparation of a smooth jelly the most important step is the rapid dispersion of the tragacanth powder throughout the aqueous solution, before swelling and lump formation occur. The promin solution, in a beaker, is stirred mechanically by a rapidly rotating propeller blade, and the tragacanth is dusted in directly over the blade. The jelly is then smoothed out by sucking in and expelling through the bare nozzle of a large syringe, and finally by expelling through an attached needle (18 S.W.G.). Two different batches of tragacanth have given satisfactory gels at 3.5% and 3.0% respectively, the stiffness being such that considerable pressure is required to force it through the needle. In use the jelly is either sucked into the syringe through the bare nozzle, or may be filled into the open barrel, and injected either through the needle or, for sinuses, through a fine catheter tied to the nozzle. The first jelly contained 5% promin, which caused no irritation, and was increased to 10% and then 20%. The latter caused increase of exudation, and though the end-results were good we have now gone back to 5% as giving equally satisfactory results.

At the time of writing 10 cases have been treated in Glan Ely Hospital, Cardiff, of which notes are given below. So far, only such lesions have been selected as were easily accessible either to aspiration and injection or to instillation into open sinuses.

Case Notes: Closed Abscesses

Case 1.—Man aged 25. June 13, 1942: Admitted Glan Ely Hospital. Pulmonary tuberculosis, caries dorsal spine. Abscess pointing in lumbar region; 170 c.cm. pus aspirated; 5 c.cm.

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* The drug has been developed by Messrs. Parke, Davis and Co. Ltd. in America, where the name "promin" was given to it; but in this country, owing to difficulties in registration, it will be known as "promanide." It will, however, be referred to in the article as "promin."

promin (5%) in glycerin injected. Repeated nine times to July 17; about 40 c.cm. pus each time. Aug. 4: 140 c.cm. pus aspirated; 5 c.cm. P. jelly (10%) injected. Sept. 18: 42 c.cm. pus aspirated; 8 c.cm. P. jelly (20%) injected. No further aspiration necessary. *Laboratory Report.*—May 12, 1942: Pus; acid-fast bacilli found after concentration. Culture yields growth of human type T.B. No other organisms in film or blood-plate culture.

Case 2.—Man aged 37. June, 1941: Admitted Glan Ely Hospital. Advanced pulmonary tuberculosis. Fair progress to June, 1942, when red swelling appeared in midline above sternum, and another in right axilla, both fluctuant. June 23: Neck abscess; 4 c.cm. pus aspirated; 2 c.cm. P. jelly (5%) injected. June 25: Repeated. June 28: Abscess broke down, and healed completely in a few days. July 2: Axillary abscess; 14 c.cm. pus aspirated; 4 c.cm. P. jelly (5%) injected. July 6: 22 c.cm. pus; 4 c.cm. P. jelly (5%) injected. Abscess did not refill. Sept.: Abscess formed over middle of sternum. Aspirated three times at three-day intervals; each time 3 c.cm. pus: 2 c.cm. P. jelly (10%) injected. A few days later the abscess broke down, and then healed rapidly. Nov.: General condition improved; no further abscesses. *Laboratory Report.*—June 23, 1942: Pus; acid-fast bacilli in film. Culture yields growth of human type T.B. No other organisms in film or blood-plate culture.

Case 3.—Man aged 33. Sept., 1941: Pain in back. April, 1942: Dorsal swelling; pus aspirated in hospital. July 7: Admitted Glan Ely Hospital. Radiograph showed caries D.V. 12 and L.V. 1. Large abscess lower dorsal region; aspirated. July 20: 3 c.cm. P. jelly (5%) injected. July 23: 3 c.cm. (5%). Aug. 26: 14 c.cm. (20%). Aug. 30: 9 c.cm. (10%). Sept. 3: 8 c.cm. (10%). Sept. 8: 5 c.cm. (10%). Sept. 18: 5 c.cm. (10%). Nov.: Abscess remains flat since last treatment.

Case 4.—Man aged 34. 1931: Tuberculous left testicle removed. Discharging sinus from right testicle for four or five years. Dec., 1938: Pain in back. Aug., 1939: Radiograph showed caries D.V. 11. Sent home on plaster bed. July 2, 1942: Readmitted Glan Ely Hospital for observation. Nervous disturbance, diagnosed functional. Aug.: Up. Sept. 5: Abscess lumbar region; aspirated, no pus obtained; 2 c.cm. P. jelly (20%) injected. Sept. 11: Fluctuant, 4 c.cm. thick pus aspirated; 3 c.cm. P. jelly (20%) injected; abscess gradually became non-fluctuant. Nov.: Only small hard area remains. *Laboratory Report.*—Aug. 11, 1942: Urine—pus, but no acid-fast bacilli in film. Culture yields growth of human type T.B.

Case 5.—Man aged 41. June 11, 1942: Admitted Glan Ely Hospital. Suspected tuberculous spine. Diagnosed probable new growth, belied by steady clinical improvement. Oct. 16: Abscess lumbar region; 35 c.cm. creamy pus aspirated; 5 c.cm. P. jelly (5%) injected. Abscess disappeared fairly rapidly. No further aspiration necessary or possible. *Laboratory Report.*—Oct. 16, 1942: Pus; no acid-fast bacilli after concentration. Culture for T.B. negative so far (21 days). Film shows cocci. Blood-plate culture gives pure growth *Staph. aureus.*

Open Sinuses

Case 6.—Man aged 31. Nov., 1940: Injury to back; pain ever since. July, 1941: Lumbar abscess. Nov. 15: Admitted Glan Ely Hospital. Caries lumbar spine, sinus lumbar region, persistent to July, 1942. July 7: 1 c.cm. P. jelly (5%) instilled by catheter; continued daily to Sept. 1, when sinus was too small to retain jelly. Nov.: Still a superficial remnant; small discharge. *Laboratory Report.*—July 11, 1941: Pus; acid-fast bacilli in film. Culture yields growth of human type T.B. No other organisms in film or blood-plate culture.

Case 7.—Man aged 28. Jan., 1941: Abdominal pain; fever. Feb. 28: Laparotomy; tuberculous peritonitis. Aug. 10: Persistent sinus in laparotomy wound, no progress. Feb. 2, 1942: Admitted Glan Ely Hospital. Faecal fistula, which closed but left persistent sinus. July 17: No fistula; sinus remains, 1 c.cm. P. jelly (5%) instilled by catheter daily to Sept. 1, when sinus was dry. Nov.: Healed scar, firm and healthy.

Case 8.—Man aged 31. June, 1941: Swelling left loin. July: Opened in hospital. Nov.: Radiograph showed caries of lumbar spine. Feb. 19, 1942: Admitted Glan Ely Hospital. Sinus discharging thick foul pus, continuing to July. July 17: 5 c.cm. P. (5%) in glycerin instilled to bottom of sinus; continued daily. P. jelly (20%) used for three weeks, continued to present; now using 5%. Discharge at first increased and thinner; later decreased. Nov., 1942: Sinus still open, but much shallower, with little discharge. *Laboratory Report.*—July, 1941: History states pus reported sterile.

Case 9.—Man aged 22. Treated in Glan Ely Hospital, Oct. 15, 1936, to July 7, 1937, for caries of lumbar spine. Discharged quiescent. Worked to Jan., 1942, when he fell and injured back. May 25: Readmitted Glan Ely Hospital; abscess pointing in right groin; repeated aspirations. Aug.: Sinus formed. Aug. 30: 5 c.cm. P. jelly (5%) instilled to bottom of sinus; since then, 3 or 4 c.cm. 20% every four days. Nov.: Sinus very shallow; no pus. Treatment continues. *Laboratory Report.*—May 28, 1942: Pus; acid-fast bacilli after concentration. Culture yields growth of human type T.B. Film shows some Gram-negative bacilli, but blood-plate culture sterile.

Case 10.—Man aged 23. April, 1941: Doubtful history of pain in back. Nov.: Swelling left groin, opened in hospital. May 21, 1942: Admitted Glan Ely Hospital; discharging sinus; radiograph showed caries L.V. 4 and 5. Sept. 8: Abscess pointing over right ilium; aspirated every three or four days, and 5 c.cm. P. jelly (20%) injected. Sept. 29: Abscess broke down; catheter passed into sinus 16 in. deep; 5 c.cm. P. jelly (5%) instilled to bottom, continued daily to present. Nov.: Discharge less, and thinner. Sinus about 6 in. deep. The first injections into closed abscess did not reach beyond superficial part of the large cavity.

Three other cases of cervical adenitis with abscess formation were treated, but as the lesions were opened and scraped shortly afterwards the results are without significance.

Discussion

With the exception of Case 5 all the lesions treated were considered on clinical grounds as undoubtedly tuberculous. In 4 cases tubercle bacilli were demonstrated by film and culture, and in a further case, No. 4, in culture from the urine. All cultures were human type. In the two closed abscesses, and in one of the two sinuses, in which tubercle bacilli were demonstrated, there was no secondary infection at the time of examination. In the other sinus Gram-negative bacilli were seen in film but did not grow in culture.

While the results were somewhat irregular the clinical opinion is that the improvement in all was greater or more rapid than would have been expected by orthodox methods applicable. In Case 2 the results were spectacular, in that three different abscesses each healed completely within two weeks of starting treatment, leaving only small fibrous residues.

In two cases, each on one occasion, there was a rise of temperature on the day after treatment, probably depending on disturbance of large abscesses. Apart from these isolated events nothing that could be interpreted as a toxic effect was seen.

It is thought that these results justify a more extensive trial of the drug by local application to suitable lesions, and possibly to more deep-seated lesions which can be injected. At present we are turning our attention particularly to cervical glands in which softening has occurred. These lesions can be treated by injection in the dispensaries, and it is hoped in this way to obviate the need for operative measures, often involving a long wait for admission to hospital, with prejudice to the patient and the occupation of valuable bed-space when admitted.

We wish to express our gratitude to the manufacturers for liberal supplies of the drug, and to their medical representative, Dr. J. Stanley White, for much assistance and information. We also acknowledge gratefully our obligation to Dr. A. Brownlee, medical superintendent of Glan Ely Hospital, for permission to carry out the investigation in that hospital.

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Those who claim that they derive valuable information about the heart from the quality of its sounds may find some graphic support in the vibrocardiograms of Kountz and Smith (*Southern med. J.*, 1942, **35**, 713). Using a special microphone actuating a cathode ray, they record all sound vibrations between 1 and 500 cycles per second generated by the heart. Certain features of the graph so produced appear to change in quality in patients with "myocardial disease." It is impossible to evaluate the results because clinical details are entirely lacking. However, the method deserves attention, for the quality of the heart sounds and its relation to disease is still a vexed question, and if it can be settled by graphic means it will be helpful.

TUBERCULOSIS DEATHS AND THE WAR

BY

PERCY STOCKS, M.D., D.P.H.

Medical Statistical Officer, General Register Office

Tuberculosis mortality has been described as a social barometer, and this it is in more than one sense. The actively tuberculous population, numbering somewhere about a quarter of a million persons, is very sensitive to environmental changes such as periods of unusually cold weather, industrial depression, increased crowding due to various causes, shortage of certain foods, enhanced stress of living conditions produced by war, and even, it seems likely, to psychological stresses affecting large bodies of people. The immediate effects of cold winters and influenza epidemics, for example, are reflected in the deaths from respiratory tuberculosis occurring in the March quarters, which are given below for England and Wales in the period 1924-38:

1924	**9,690**	1929	**10,140**	1934	7,429
1925	9,126	1930	8,227	1935	6,947
1926	8,517	1931	**9,018**	1936	6,892
1927	**9,240**	1932	8,244	1937	**7,147**
1928	8,444	1933	**8,912**	1938	6,004

The bold figures indicate levels higher than in either the preceding or succeeding year, and, of the six quarters in which they occurred, those of 1924, 1929, and 1931 were unusually cold, while those of 1927, 1929, 1933, and 1937 had rather severe influenza epidemics. The tuberculous have not the normal reserves of strength to meet additional stresses and strains, and they react very quickly by a rise in death rate. If the increase in deaths is considerable or if it is long continued and not accompanied by a corresponding rise in incidence of new cases, the reservoir of persons in an advanced stage of the disease may be thereby so much reduced in numbers that a rapid fall in deaths at once follows when the stresses are removed. This probably accounts for the rise and fall in deaths from respiratory tuberculosis noticed at the beginning of wars, though it does not account for the increase in deaths from tuberculous meningitis which also appeared early in the present war.

In another sense tuberculosis deaths are an index of social conditions because if changes in the latter are such as to increase the incidence of active disease this is inevitably followed by a rise in death rates, and in so far as the new infections are of the meninges and nervous system this increase becomes quickly evident. In the case of new respiratory disease, however, the effect on deaths may be so long delayed as to appear as a secondary wave after the initial wave referred to above has almost passed. In the present war, so far, we have experienced the initial wave due to hastened deaths of the already tuberculous, and, starting rather later, a wave due to fresh meningitic infections. It will be seen below that each of these waves reached a peak in 1941 and that a rapid fall towards the normal has since been registered in the first half of 1942; but a resumption of harder conditions may yet produce further temporary increases of the same kind. Furthermore, the reservoir of tuberculous persons is probably greater now than at the onset of the war owing to increased incidence of active disease in 1940 and 1941, and if that is so a return to the normal peacetime trend of deaths is likely to be delayed.

For a long period preceding 1939 we had become accustomed to a continuous decline in tuberculosis deaths, and it is necessary to bear this in mind when estimating the effects of the war. When deaths have merely returned to the 1938 level this will not mean that the debt has been paid, because had there been no war there is no reason why the steady decline should not have progressed, bringing 1942 deaths much below the 1938 level. In order to obtain a proper base level of peacetime expectation it is reasonable to assume that the rate o proportional annual decline experienced during the pre-wa period would have continued year by year. The figures belo designated as "expected" are based on that assumption, bu they are necessarily only approximate owing to the impossibilit of taking into account at this stage any changes in the popula tion at risk which may have been occasioned by the war. I must suffice to say that the deaths here recorded comprise al deaths in England and Wales, whether of civilians or of non civilians.

Respiratory Tuberculosis

The average numbers of deaths from respiratory tuberculosis classified according to the method of assignment in use up t 1939 and occurring in the first and second halves of the year in triennial periods from 1924–6 to 1936–8 were as follows:

Period	First Half of Year		Second Half of Year	
	Average Deaths Occurring	Fall from Previous Period (%)	Average Deaths Occurring	Fall from Previous Period (%)
1924–6	17,299		14,458	
1927–9	17,102	− 1 1	13.662	− 5·5
1930–2	15,866	− 7 2	13,041	− 4·5
1933–5	14,357	− 9 5	11,690	−10 4
1936–8	12,578	−12·4	10,618	− 9·2

Between 1931 and 1939 the population was increasing by abou 1.5% every 3 years, so, adding this to the average percentag increase in deaths in the last two triennial intervals, it is eviden that the crude death rates must have been falling by about 4% annually during the immediate pre-war period. Assuming n substantial changes in the population at risk since, a continuance of a 4% fall annually in the deaths was to be expecte if there had been no war, and the actual and expected death up to mid-1942, classified throughout according to the revise International List and method of assignment in force from 1940 may be compared, as below:

Years	First Half			Second Half		
	Expected	Registered	Excess	Expected	Registered	Excess
1936–8*	—	12,199	—	—	10,305	—
1939	11,243	11,859	+ 616	9,497	9,683	+ 186
1940	10,793	13,322	+2,529	9,117	10,338	+1,221
1941	10,361	13,504	+3,143	8,752	10,129	+1,377
1942	9,947	11,828	+1,881	8,402	—	

* Average.

The first half of 1939 registered a substantial excess over th expected figure and also over the first half of 1938, when th deaths numbered 11,412. This cannot be explained by a col winter or by influenza, but whether it had anything to d with the depression and anxieties of the post-Munich perio is a matter for conjecture. The increase over 1938 was almos confined to males between 40 and 70 and females aged 30 t 34. Leaving 1939 out of account, the excess of deaths ove expectation in 1940 totalled 3,750, in 1941 about 4,500, an in the first half of 1942 about 1,900, giving an aggregat excess up to June, 1942, of some 10,000 deaths. Part of th excess in the first halves of 1940 and 1941 was probably du to the exceptionally cold winters of those years; but the differed from 1929 in having no appreciable influenza epidemic and it seems unlikely that more than 2,000 of the excess i the two years can have been caused by the climatic conditions It may be estimated, therefore, that a total excess of som 8,000 deaths is attributable, so far, to the war. The first hal of 1942 showed pronounced improvement over the two preceding years, the number of deaths returning to the 193 level, though still some 1,900 above the number whic would have been reached if the pre-war rate of decline ha continued.

The increase was relatively greatest among children under 15 at which ages the deaths are few in number. Other age group specially affected were men of 35 to 44 and women of 20 to 24 The improvement in the first half of 1942 was apparent i every group, and particularly among females of 15 to 19 an 35 to 44.

Tuberculosis of Meninges and Central Nervous System

The trend of deaths during the 1924–38 period is indicated by the figures below:

Period	First Half of Year		Second Half of Year	
	Average Deaths Occurring	Fall from Previous Period (%)	Average Deaths Occurring	Fall from Previous Period (%)
1924–6	1,708		1,282	
1927–9	1,535	−10 1	1,128	−12·0
1930–2	1,420	− 7·5	1,074	− 4·8
1933–5	1,189	−16·3	860	−19·9
1936–8	1,029	−13·5	746	−13·3

Allowing for the population increase as before, a rate of fall of at least 5% annually was to be expected, leading to the following comparison with the actual deaths registered:

Years	First Half			Second Half		
	Expected	Registered	Excess or Defect	Expected	Registered	Excess or Defect
1936–8*	—	1,062†	—	—	770†	—
1939	959†	969†	+ 10	695†	715†	+ 20
1940	911	1,047	+136	660	839	+179
1941	865	1,422	+557	627	944	+317
1942	822	1,169	+347	596	—	—

* Average. † Classified according to method used from 19-0 onwards.

The increase in deaths from this form of tuberculosis began in 1940 and reached its maximum in the first half of 1941 with an excess over expectation of about 550, the excess then falling to about 350 in the first half of 1942. The total excess of deaths probably attributable to war conditions up to June, 1942, was over 1,500.

The sex–age distribution shows that while every group was affected, males aged 20 to 24, children under 10, and young adult females registered the highest relative increases. The improvement in the first half of 1942 was limited to children, males aged 20 to 24, and young adult females, other groups showing further increases.

Tuberculosis of Other Sites

To complete the picture, the trend of deaths in the pre-war period for all other forms of tuberculosis led to an expectation of an annual fall of about 6%, the numbers of deaths being as follows:

Period	First Half of Year			Second Half of Year		
	Average Deaths Occurring		Change from Previous Period (%)	Average Deaths Occurring		Change from Previous Period (%)
1924–6	2,659			2,304		
1927–9	2,233		−16·0	1,938		−15·9
1930–2	2,013		− 9 9	1,659		−14·4
1933–5	1,670		−17·0	1,349		−18·7
1936–8	1,394		−16·5	1,211		−10·2
	Expected	Registered	Excess	Expected	Registered	Excess
1936–8*	—	1,377†	—	—	1,207†	—
1939	1,216†	1,303†	+ 87	1,067†	1,094†	+ 27
1940	1,143	1,410	+267	1,003	1,188	+185
1941	1,075	1,452	+377	943	1,218	+275
1942	1,010	1,412	+402	886	—	—

* Average. † Classified according to method used from 1940 onwards.

An increase in deaths was again evident early in the war, and the excess over expectation has increased progressively, although the number of deaths fell slightly in the first half of 1942. The total excess from 1940 to June, 1942, probably attributable to war conditions was about 1,500 deaths.

For all forms of tuberculosis the cost of the war up to mid-1942 may thus be estimated as about 11,000 deaths, and the initial waves of respiratory and meningeal tuberculosis deaths seem now to be rapidly declining. But the improvement which was to be expected from the normal downward trend of the pre-war period has yet to be overtaken, and a secondary, perhaps more lasting, wave may yet appear as a delayed result of the increased incidence in active disease of the respiratory form which is believed to have occurred in 1940–1.

ARTIFICIAL RESPIRATION AT SEA

BY

G. H. GIBBENS, M.B., M.R.C.S.
Surg. Lieut., R.N.V.R.

In England we are apt to think that nobody questions the supremacy of the method of artificial respiration introduced by Sir Edward Sharpey-Schafer in 1904. Yet Silvester's method is preferred in Eastern Europe and in Nordic countries, and even in an official British publication (see Refs.) Cordier writes: "All experimenters agree that Silvester's method introduces in the respiratory tract of the apparently dead subject the biggest volume of air." The figures of lung ventilation by these two methods (Table I) are, to say the least, inconclusive, and the almost ideological frenzy in the attacks of the opposing advocates leaves the impression that it is the nationality of the promoter which determines the choice of method.

TABLE I.—*Lung Ventilation in c cm.*

Method	Schafer (1908) Burton-Opitz (1922)	Cordier	Killick and Eve (1933)	Liljestrand et al. (1913)	Bruns (1927, 1930)
Silvester's	175	200–250	200	190	200–280
Schafer's	500	100–150	350–550	under 30	under 30

But the subject is not academic: it is urgently practical. Many otherwise uninjured men are rescued after only a short immersion and yet do not survive. This is undoubtedly because the normal methods of artificial respiration are not very efficient, need many skilled men, and are so tiring that they are not carried out thoroughly or for long enough. It was a relief to read of Eve's rocking method, which can be practised by unskilled men, efficiently and with little fatigue. Unfortunately, the impression has been created that this method requires special apparatus and is not suitable for emergencies outside hospitals. It does not seem to have become widely known. Killick and Eve (1933) have given detailed figures which show the rocking stretcher's superiority over other methods, and it is eminently practicable at sea. It is the object of this article to emphasize the simplicity of the method and to urge its adoption in ships.

Principle of Artificial Respiration by Rocking

In 1932 Eve wrote: "Formerly I regarded the breathing thorax as a concertina bellows; my present work suggests that it resembles rather a cylinder and piston. In older men the cylinder wall is often rigid and is scarcely used in respiration at rest. Hence in artificial respiration it seems much better to exploit the piston action of the diaphragm rather than to try to compress the rigid walls of the cylinder—leaving the piston flapping passively up and down and thus frustrating much of one's efforts to squeeze air in and out of the trachea." Essentially the method consists in laying the patient on a stretcher, which is pivoted about the middle on a trestle, and rocking up and down rhythmically so that the abdominal viscera push the flaccid diaphragm alternately up and down.

Apparatus

Simple apparatus is required. Although Keevil (1934) extemporized successfully, there is little time for invention when a drowning man is on deck. (Scott (1941) quotes Canadian statistics which show that if artificial respiration is given to men within a minute of electrocution 90% recover; if after 6 minutes, only 10% recover. In other words, drowning is as urgent a condition as a spurting artery.) The essential apparatus consists of (1) a plane to which the patient can be fastened; (2) a fulcrum; (3) a stop to prevent the plane sliding to and fro on the fulcrum.

1. A ladder or a door might be used, but for present purposes we can assume that a stretcher is available. The man may be held

on by an assistant; or a rope, suitably padded, may be secured to pass above and below the buttocks to prevent his slipping. We find it simpler to bandage the wrists and ankles to the handles of the stretcher. This is not only firmer but much more comfortable. The upward pull on the extended arms gives an additional Silvester effect to inspiration, and bandaging does not interfere with the "Schafer," which must continue up to the very moment of rocking.

2. A simple and practical fulcrum is the loop of a rope which is secured overhead at two points a few feet apart. Failing an overhead support with space below it, a metal bar may be fixed above a convenient space by means of two ropes, just as an acrobat's horizontal bar is fixed above a stage. The bar must be fairly strong; a broom-handle is not stout enough. However, it is more convenient to use a trestle, for which 32 to 34 in. is an ideal height: when the stretcher handles touch the deck a tilt of 45 to 50 degrees will be given. The trestle's crosspiece should be of round section at both ends Folding trestles are always valuable, and it is well worth having four or six made. In pairs they are useful in bringing stretchers to a suitable height for surgery and major dressings. They can also be employed to maintain a man in the Fowler or Trendelenburg position.

3. A rocking stretcher will slip to and fro on a rope or trestle. In an emergency, and even during rocking, this can be prevented by hammering two nails or staples into the underside of each sidebar on both sides of the rope or crossbar. W-shaped pivots of wood or metal are better, and are easily made: they should be permanently attached below the centre points of the sidebars of several stretchers. The patient's abdomen, which sags below the level of the sidebars, is then prevented from resting on the rope or crosspiece of the trestle These pivots must be shorter than the feet of the stretcher, or the stretcher will be unstable on the deck.

Method of Resuscitation

Immediately the man is rescued from the sea, Schafer must be started on deck. A stretcher is brought and he is rushed below. His wrists and ankles are tightly bandaged to the stretcher handles, Schafer being continued on it right up to the moment when it is hoisted quickly on to the trestle or rope. Any available man starts to rock the stretcher at the rate of a cycle every 4 or 5 seconds—that is, 12 to 15 double rocks a minute. It helps some people if they hum a tango or a slow tune, moving the stretcher at the beginning of each bar. The pumping movement should start abruptly, almost roughly, so that the abdominal contents begin to move early in the stroke. At first the handles of the stretcher should be allowed to rest on the deck at the end of the head-down stroke, the steep angle of 50 degrees giving very efficient chest drainage. Later it is easier to check the handles at about a foot from the deck. This gives a slope of 30 degrees, which is effective and is less work for the operator. If the Novox apparatus is available it should be placed on a table close to the pivot.

When rocking is in progress and the Novox is working, there is time to remove the man's clothes and to rub him down gently. He is covered with warm blankets, if possible an electric blanket. Hot-water bottles are placed around him, and some form of heating apparatus such as a hotplate may be introduced below the stretcher. The outer blanket may be allowed to hang down on each side of the stretcher to keep the warm air below.

Advantages of Eve's Rocking Stretcher

1. *It is Efficient.*—If doctors and first-aid men could make a personal trial of Schafer's, Silvester's, and Eve's rocking methods there would be few who would willingly use either of the older methods for longer than the time taken to fetch a stretcher and trestle. In view of the conflicting figures of earlier writers, the opinion of many volunteers may be of value. All agree that whereas the Schafer method produces a quick expiratory gasp, rocking gives a prolonged expiration of much greater volume. During Schafer it is difficult to auscultate any sound of inspiration, nor can the conscious patient feel it: during rocking it is easily heard and felt. This is so when the methods are practised on conscious men of normal tone: the difference will be greater in unconscious men. Henderson and Haggard (Cordier, loc. cit.) showed that chest elasticity is considerably diminished within 10 minutes of cessation of respiration; and everybody who has used Schafer's method on drowned men will agree that after the first few compressions far less air is expelled than when one is practising on healthy men, elasticity being noticeable by its absence. Schafer demands chest elasticity; rocking does not.

2. *It is Much Simpler and Less Tiring.*—Any bystander can carry on efficiently after watching only a few moments to pick up the rhythm. Consequently it can be kept up for many hours or even days without skilled assistance. Since recovery has taken place after 8 hours of unconsciousness, work must be continued for that time or until rigor mortis sets in. With several casualties, and using the older methods, this may be impossible, for it involves the whole-time employment of many skilled men and their reliefs. Absolutely any "gash hand" can rock a stretcher rhythmically.

3. The patient can be stripped and warmed while rocking is going on. Wounds and burns of the trunk may be cleaned.

4. The stomach and respiratory tract are drained not only by gravity but by the pressure of the abdominal viscera.

5. In patients with wounds of the front of the body which need early treatment the method can be employed with the wounded man lying on his back. In this position the tongue must be held forward.

6. The method can be used for patients suffering from electrocution and gas poisoning, and it is a valuable alternative to the "iron lung" in cases of respiratory paralysis. The tilted stretcher is also useful for gravity drainage of the body cavities. It can be employed for counterextension (Eve, 1939; Blackburne, 1939).

7. It is harmless, and the ribs or liver cannot be injured. At rocking rates over 15 a minute there may actually be hyperventilation; but with the Novox apparatus in position there is no risk of washing out the CO_2. The complete lack of any feeling of sea-sickness during rocking may be explained by Boothby's observation that 75% of sea-sickness can be cured by oxygen inhalation.

Medical officers and first-aid personnel are urged to submit themselves to the rocking. It looks very unpleasant, but they will be amazed to find that there is no uncomfortable strain on the arms or legs—in fact, there is a tendency to go to sleep. For the first time, they will not even have to bother to breathe!

Summary

Eve's rocking method of artificial respiration is described. The patient is placed on a stretcher and rocked through a total angle of 60 to 90 degrees 12 to 15 times a minute. The method is especially suitable for ships, as it is efficient, simple, unfatiguing, and needs no skill. Simple apparatus is desirable and useful, but is not necessary.

The kind help of Surg. Cmdr. J. J. Keevil, R.N., Surg. Lieut. D. de Launay, R.N.V.R., and Dr. F. C. Eve himself is gratefully acknowledged; and thanks are due to the officers and men of this and other H.M. ships for helping in the work with their usual cheerfulness.

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J. J. Miller and T. M. Saito (*J. Pediat.*, 1942, **21**, 31) record their observations on 100 children who underwent concurrent immunization with combined alum-precipitated diphtheria and tetanus toxoids and *H. pertussis* vaccine. The results were satisfactory as determined by Schick tests, tetanus antitoxin titrations, *H. pertussis* agglutination tests, and exposure to whooping-cough. Concurrent injections of fluid diphtheria and tetanus toxoids together with *H. pertussis* vaccine yielded relatively poor responses in tetanus antitoxin but satisfactory immune responses with respect to diphtheria and whooping-cough. In tetanus immunization a three-months interval between the first and second injections of combined alum-precipitated toxoids is recommended; and a third injection of alum-precipitated tetanus toxoid without diphtheria toxoid three or four months afterwards.

COMMUNAL FEEDING

A PRELIMINARY REPORT

BY

E. B. GUNSON, M.D., F.R.C.P.

Hostels Branch of Ministry of Supply

The feeding of Royal Ordnance Factory workers resident at hostels adjacent to the factories provides certain data which bear upon the provision and the nutritive value of communal meals. During the past twelve months their number has slowly risen until to-day there are 10,000 occupants in various hostels throughout the country. The great majority are women, but at a few hostels there are a small number of men. The total round figure of 10,000 includes Ordnance Factory workers and staff. Most of the workers have previously been occupied in industry, although a considerable number have been drawn from distressed areas and for long periods had been either unemployed or not fully occupied.

Medical Examination

All the entrants to the factories are medically examined, and no workers are admitted who are found to be suffering from gross defects or active disease. At the same time the average standard of physique and health on admission is not high. After three months' stay at the hostels the management and the sisters in charge of the sick bays report a notable improvement in the general appearance and well-being of all the girls, particularly in those who came from distressed areas and who were evidently below par on admission. No precise data are available to support this general observation except the sick-bay returns, which indicate a very low incidence of morbidity (Table I).

TABLE I.—*Weekly Hostel Sick-bay Returns from March 28 to June 27, 1942*

Date	Total Occupants	Total Patients (excluding those with Industrial Rashes)	Total suffering from Scabies
27/6/42	10,009	138 (1·37%)	6
20/6/42	10,009	155 (1·54%)	12
13/6/42	8,973	147 (1·64%)	18
6/6/42	8,973	124 (1·38%)	16
30/5/42	8,973	113 (1·26%)	17
23/5/42	8,847	120 (1·35%)	16
16/5/42	8,847	137 (1·55%)	11
9/5/42	8,847	136 (1·54%)	13
2/5/42	7,753	101 (1·30%)	6
25/4/42	7,320	120 (1·64%)	16
18/4/42	7,320	124 (1·69%)	16
11/4/42	7,320	149 (2·04%)	7
4/4/42	5,687	117 (2·06%)	9
28/3/42	5,687	124 (2·18%)	7

From this table patients suffering from industrial rashes are excluded. The number of scabies cases, all of which are included, is so small as not appreciably to affect the position. Only 2 cases of pulmonary tuberculosis occurred during the period under review.

Hostel Regime

The low incidence of morbidity among hostel occupants is attributable in large part to the general regime in operation. The girls, who mostly work on three shifts, retire at regular hours and get an ample measure of sleep and rest. Opportunities are afforded for rest and exercise. Special facilities for recreation are provided, and every hostel has a library. The girls have access to a well-equipped laundry, and an up-to-date hair-dressing establishment operates on a low scale of charges. The social halls of the hostels all have an excellent dance floor. The hostels are provided with regular entertainment by dance bands, orchestras, and concert parties.

The residents elect a committee of their own to co-operate with the management in the provision and operation of all these amenities, and they take a very large and direct share in the running of the hostel. The managements are at great pains to meet all reasonable wishes of the hostel occupants. As a hostels medical officer I have had the opportunity of staying in these hostels, of examining their working conditions closely, and of meeting the girls. I have observed and been impressed by the general feeling of well-being and contentedness which they manifest. The impressive feature of hostel life, however, is to a medical observer the communal feeding. The conditions under which this is carried out make it of particular importance at this juncture, when the provision of communal meals is being extended to an increasing proportion of the population.

Catering Management

Great care has been taken to appoint to the charge of catering departments highly qualified and experienced managers. These catering managers, in consultation with the general management, have given very detailed attention to the menus which they provide. Under the national system of rationing there is not a wide range of foodstuffs which can be provided, and the supplies are limited. Rationing operates rigidly in these hostels, as in private homes, but there is one great distinction, in that all the ration cards are taken over by the management and the rations are pooled. Table II indicates the frequency with which the more important protective foods are supplied.

TABLE II

(*a*) *Milk.*—Served in custards, milk puddings, and tea or coffee for at least one meal a day, and, in addition, on porridge or corn flakes each morning.
(*b*) *Cheese.*—Served 3 or 4 times a week. *Butter.*—Served for tea and supper; *margarine* for breakfast.
(*c*) One egg per person each week.
(*d*) *Fruit.*—Fresh rhubarb twice a week; prunes and apples once a week.
(*e*) *Green Vegetables.*—Every day: the varieties on the market at the time.
(*f*) *Salads.*—About 5 times a week.
(*g*) *Meat.*—One meat dish daily. *Liver.*—There has not been enough available to supply this for meals recently.
(*h*) *Fish.*—2 or 3 times weekly.
(*i*) *Standard Bread.*—Unlimited supply.

Table III, supplied by an average small hostel, indicates more precisely the daily consumption of the listed articles of food.

TABLE III

(*a*) Milk, 1/2 pint.
(*b*) Cheese, 2/7 oz.; butter, 3/14 oz.; margarine, 16/35 oz. Total, 67/70 oz.
(*c*) Eggs, 1/7.
(*d*) Fruit, 18/25 oz. (all varieties).
(*e*) Green vegetables: Cabbage, 3/14 lb.; cauliflower, 3/80 lb. Total, 141/560 lb.
(*f*) Salads: Lettuce, 18/285 lb.
(*g*) Meat, 9/7 oz.; liver, 3/7 oz. Total, 12/7 oz.
(*h*) Fish, 8/7 oz.

A menu for the week ending June 27, 1942, is shown below. The preparation of these menus is a matter to which the general management and the catering management give particular attention. They have the advantage of seeing and discussing menus drawn up and provided at other hostels, and all the menus are considered from the point of view of providing, so far as possible, a sufficiency of the protective foods. The major difficulty which faces the catering manager arises from the shortage of fresh fruit and, in some cases, a relative shortage of green vegetables. It is a general practice in these hostels to pay particular attention to the preparation of vegetable soup, and all the vegetable water finds its way into the stock-pot, together with as many varied greens, carrots, and other suitable vegetables as are available.

Specimen Menus for the Week Ending June 27, 1942

June 21.—Breakfast: Porridge or puffed wheat, scrambled eggs, bread-and-butter, jam, marmalade, tea. Dinner: Oxtail soup, roast lamb, mint sauce, cauliflower, carrots, baked or mashed potatoes, ginger sponge, custard, tea or coffee. Tea: Currant bread, bread-and-butter, tea. Supper: Vegetable soup, cold meat, salad, mashed potatoes, rhubarb tart, custard, tea or coffee. Snack: Vegetable soup, potato cakes, cheese, bread-and-butter, tea or ovaltine.

June 22.—Breakfast: Porridge, fish or jam, bread-and-butter, tea or coffee. Dinner: Brown soup, vegetable stew, potatoes, steamed date pudding, tea. Tea: Bread-and-butter, cake, tea. Supper: Lentil soup, grilled liver, potatoes, cabbage, pudding, tea or coffee. Snack: Soup, buttered toast and cheese, tea or coffee.

June 23.—Breakfast: Porridge, liver, bread-and-butter, tea. Dinner: Vegetable soup, roast beef, cabbage, baked or boiled potatoes, steamed jam pudding. Tea: Bread-and-butter, cake, tea. Supper: Tomato soup, roast beef, cabbage, potatoes, rhubarb and custard, tea or coffee. Snack: Soup, chips, bread-and-butter, tea or coffee.

June 24.—Breakfast: Porridge, bacon, bread-and-butter, tea. Dinner: Soup, roast beef, baked and boiled potatoes, cabbage, tapioca whirl, tea or coffee. Tea: Cake, bread-and-butter, tea. Supper: Soup, macaroni and cheese, mashed potatoes, almond sponge, custard. Snack: Soup, cottage pie, bread-and-butter, tea or coffee.

June 25.—Breakfast: Porridge, rissoles, bread-and-butter, marmalade or jam, tea or coffee. Dinner: Vermicelli soup, cold ham, cabbage, semolina and custard, tea or coffee. Tea: Scones, bread-and-butter, jam, tea. Supper: Mannastorme soup, cold roast beef, lettuce, beetroot, jacket potatoes, steamed chocolate pudding, tea or coffee. Snack: Soup, fried cheese sandwiches, tea.

June 26.—Breakfast: Porridge, boiled eggs, bread-and-butter, tea or coffee. Dinner: Kidney soup, Irish stew, haricot beans, potatoes, rhubarb tart and custard. Tea: Cake, bread-and-butter, tea. Supper: Vegetable soup, Irish stew, cottage pie, cabbage, potatoes, steamed marmalade pudding, custard. Snack: Vegetable soup, lentil cutlets, lettuce, pickled cabbage, tea or coffee.

June 27.—Breakfast: Porridge, liver, sausage, or bacon, bread-and-butter, jam, tea. Dinner: Potato soup, steamed fish, parsley sauce, mashed potatoes, rice pudding, tea or coffee. Tea: Currant loaf, bread-and-butter, tea. Supper: Vegetable soup, roast lamb, mint sauce, cabbage, mashed potatoes, Swiss roll, custard, tea or coffee. Snack: Soup, sardine sandwiches, tea or coffee.

Commentary

Catering Management.—The general standard of trained catering managers is high. At the same time there are evident weaknesses in kitchen methods.

Nutritive Value of Meals.—Specific instruction by nutrition authorities on the nutritive value of meals would be welcomed by caterers. This could with advantage include cold dishes and hot meals.

Cold Salads.—These are not always well chosen or effectively served, and there is not a sufficiently wide appreciation of the food values available in salad form. I consider instruction is needed in this connexion.

Stock-pot.—This is a wartime necessity and must be given a higher status in the kitchen. While the value of vegetables and vegetable water is appreciated, there generally is lacking any precise knowledge of the effect of boiling on foodstuffs. Great variation is to be seen in different kitchens. A few stock-pots and soup-containers are well handled, but it is doubtful whether the bulk of the soup that is served contains the qualities that the food used could provide. Too much water is employed in the preparation, or too little; the soup is boiled either longer than is desirable or not long enough. In fact, soup preparation is still considered too simple a matter to particularize, and it calls for more attention from the catering management.

Fish and Chips.—Fish and chips is the *pièce de résistance* of the factory working-girl. My view is that the girls are good judges of body needs. Fats under wartime conditions are in minimal supply, while both fish and chips are excellent foods. The girls describe the dish as "tasty," but it is no more so than many dishes could be made if properly cooked. The savoury element in fish and chips points the way to the better handling of savoury dishes.

Cheese.—Cheese dishes, generally speaking, are unpopular in the hostels, though in some cases they are appreciated and favourably commented upon. I have sampled these dishes in various hostels, and it does seem that while as a rule they are well prepared, they are produced very differently by different caterers. Where cheese dishes are rejected and unpopular, these have a particular character that does not appeal to the girls' taste. The importance of cheese and its availability under present circumstances make it desirable that this aspect of catering should be looked into.

Conclusion

In general the types of food necessary for health are well appreciated, and these are supplied to the limit to which they are available. The food provided appears fully to meet the health needs of the residents. The catering management is in good hands, but more precise direction in respect to particular aspects of preparing some of the foodstuffs is desirable and would be welcomed.

The preparation and provision of a communal meal is a practical and economic proposition so far as Royal Ordnance Factory workers living in hostels are concerned. In fact, the health of the girls resident in these hostels notably improves, and this improvement can be attributed, in part at least, to the manner and method of the feeding arrangements.

Medical Memoranda

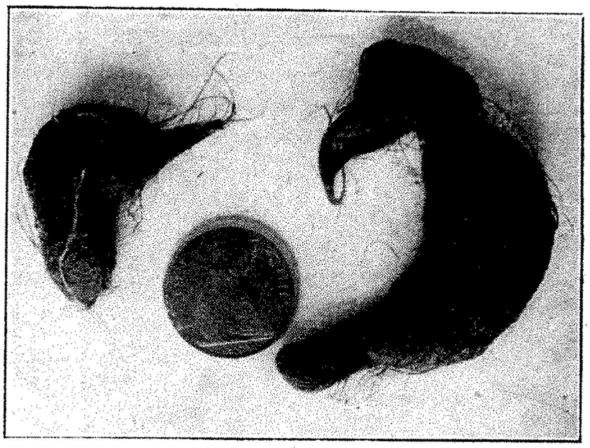
Unusual Case of Intestinal Obstruction in a Child

The following case appears to be uncommon enough to warrant record.

CASE HISTORY

The patient, a girl aged 3, was admitted to the Whitehaven and West Cumberland Hospital with a history of 4 days' abdominal pain and vomiting. The pain, which was intermittent in character, was becoming less frequent, but the vomiting, which had at first merely consisted in the return of any fluids given by mouth, had become bilious. The bowels had not been opened for 4 days. The child, though obviously ill, was quiet between the attacks, the temperature was normal, and the pulse rate 140. She was not markedly dehydrated. The tongue was normal; the abdomen was distended and tympanitic. There was no visible peristalsis and no definite tenderness. A small hard mass was palpable in the right iliac fossa; the lower bowel was empty. The white cell count was normal. A diagnosis of intestinal obstruction was made, and it was thought that this was probably due to adhesions to tuberculous glands in the right iliac fossa.

A general anaesthetic (open ether) was administered, and a right lower paramedian incision made. The abdomen contained slightly turbulent free fluid. A distended and inflamed coil of small intestine presented. This was followed down, and in the lower part of the ileum a hard mass about the size of a mouse was found in the lumen; there was a similar smaller mass a few inches further down, and below that the bowel was collapsed. The larger mass was firmly impacted and fixed, but it was possible to "milk" the smaller one back to the larger fixed one. The bowel over this was friable, and the peritoneum had split longitudinally. The bowel was clamped and incised and the two foreign bodies removed. These were found to consist of tightly matted hair, with strands of cotton interwoven (see Fig., compared with a penny). In view of the state of the bowel it was considered advisable to do a resection, and about 6 in. of bowel was removed and an end-to-end anastomosis performed. The abdomen was closed without drainage.



The child was very ill for the first 3 days and vomited twice. After this she started to improve, and a week later the bowels were moved. There was a slight residual superficial infection of the wound. This quickly resolved, and the patient was discharged 3 weeks after operation.

COMMENT

Cases of hair-ball in the gastro-intestinal tract are relatively uncommon, and those which have been described have usually been in the stomach and in older persons. The condition is often associated with mental disorder. The child under discussion is of a highly strung nervous type, and had been known to chew her hair, though not for several months previously. Immediately she came out of the anaesthetic she started to clutch her hair, which was short. It was kept covered for the first few days after operation and the parents were warned to watch the child carefully in future.

The condition, which is known as trichobezoar, is found in domestic animals and cattle; it is also described as occurring in fowls (Hutyra and Marek) due to feathers, and is said to be caused by protein deficiency in the diet.

V. C. J. Harris, B.A., M.B., F.R.C.S.Ed.,
Honorary Surgeon, West Cumberland Hospital.

Reviews

PREVENTION OF AIR-BORNE INFECTION

Aerobiology. Edited by Forest Ray Moulton. (Pp. 289. No price given.) Washington: American Association for the Advancement of Science, Smithsonian Institution Building.

An imposing volume entitled *Aerobiology* contains 36 papers by a total of 55 authors presented at a meeting of the American Association for the Advancement of Science held in Chicago in September last. It is a sign of the wide interest now being taken in air-borne infection and its prevention that the study of this subject should now be given the status of a distinct science. These papers deal with many aspects of it, from the origin and behaviour of infected particles to their destruction or elimination. There are many excellent photographs of the products of sneezing and coughing, reminiscent of those obtained by Bourdillon and Lidwell in this country (including one showing that droplets can traverse a gauze mask), studies of the subsequent behaviour of particles of different size, and a discussion of their fate when inhaled: an important fact is that the smaller the particle, the more likely is it to reach the lungs. A paper on air-conditioning reveals that down-draught ventilation has the disadvantage of throwing floor dust into suspension: experiments are described with filtered air which show that it is possible to maintain Caesarean-born animals for periods up to 6 weeks in a completely germ-free state—a technical achievement of a high order. No fewer than 12 papers deal with ultra-violet light as a means of air disinfection, and there is sound evidence of its efficiency, both when used more or less diffusely and when applied as a barrier between the patient and his surroundings. The most elaborate practical installations described are cubicles for infants furnished either with filtered air or light barriers; the general adoption of such systems would of course be enormously expensive. The only method of chemical air disinfection considered is the use of propylene glycol: it certainly seems at first sight—for this method is newly discovered—that for efficiency combined with complete harmlessness propylene glycol vapour is at present unequalled.

This is "intramural" aerobiology: its "extramural" aspect, the inclusion of which justifies the use of so broad a title, is dealt with in 8 papers on the atmospheric distribution of insects, pollen, fungus spores, and bacteria. Special devices attached to aeroplanes were required for some of these studies, and much of the information is of great general interest, especially that on the dissemination of plant pathogens, such as the spores of wheat rust, over enormous distances. Medically, its chief interest lies in the fact that both pollens and fungus spores are potential allergens.

For anyone who either has not followed the rapid development of this subject, or wishes to study it more deeply with the aid of the numerous references given, this volume is indispensable.

ABNORMALITIES OF SPEECH

Speech and Voice: Their Evolution, Pathology, and Therapy By Leopold Stein, M.D. With a foreword by J R. Rees, M.D. (Pp. 233. 15s.) London: Methuen and Co. 1942.

Books on the physiology of speech and the treatment of its defects and abnormalities are apt to be diffuse, sometimes exploit pet theories, and are sometimes based upon insufficient scientific training. *Speech and Voice*, by Dr. Leopold Stein, is free from these common faults. He expounds his subject in excellent clear English, though this is not his mother tongue, he rides no particular hobby-horse, and his book is the work of an accomplished physician. The foundations are laid elaborately, and the reader must regard with respectful awe the extent of the author's reading in biology, embryology, philosophy, philology, psychology, and neurology, besides the references to general literature. In neurology the author depends largely upon the writings of Hughlings Jackson, to whom he turns again and again to explain the nature of abnormalities in speech. He recognizes the importance of the psychological background and that psycho-analysis may be of service, but he does not labour this aspect unduly. The treatment he recommends has a proper scientific basis of diagnosis and avoids empiricism.

Such a flood of loose writing and jargon has been released on these matters, especially in relation to the treatment of stammering, that this carefully prepared and erudite work is the more welcome, and will be of great value to speech therapists, because the basic facts, drawn from various scientific sources, are clearly and accurately stated. All interested in education, child welfare, and the neurology of children will find the book interesting.

HISTORY OF CARDIOLOGY

A Short History of Cardiology. By James B. Herrick. (Pp. 258; illustrated. $3.50 or 19s. 3d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1942.

This survey of the history of cardiology by Dr. James B. Herrick is a remarkable book. In the first place, it is written by one of the masters of clinical cardiology who throughout a lifetime has watched the evolution of modern knowledge of heart disease and who himself has made important contributions to it. Secondly, the outline here presented with a light but sure touch, and with a blend of philosophy, reflection, and occasional gentle irony, covers a vast retrospect embracing the development of cardiology during more than 2,000 years.

Dr. Herrick shows how the discovery of clinical methods and the extension of necropsy studies hastened the progress of the science in the later years of the seventeenth century, and how in the time of Laennec and in the decades which followed up to the first half of the nineteenth century great strides were made in physical diagnosis. The microscope, and later the discoveries of bacteriology and radiology, marked in turn the period from Virchow to Pasteur and Roentgen. The advances in cardiology during the present century have received little attention. The author points out that this era of instruments of precision and laboratory methods has called for a revision of many of the earlier conceptions of the anatomy and physiology of the heart. But this epoch, which is still in progress, cannot yet be viewed in the perspective appropriate to a work such as this. Dr. Herrick's graphic style in his description of personalities—as, for example, in the lives of James Hope and William Stokes—lends additional interest to the text. The 48 reproductions of engravings and portraits are well chosen and beautifully executed. A feature of the work which will delight readers in these days of small print and cramped margins is the excellent typography.

Notes on Books

Hydrogen Ions, by H. T. S. BRITTON, D.Sc., appears in its third edition now bound in two volumes (Chapman and Hall, 36s. each volume). The book has become well known among teachers, students; and also many technicians, for there are few technical processes which are uninfluenced by variations in the concentration of ionized hydrogen. The book presents a comprehensive theoretical treatment of the subject developed from basic principles and extended to include the most modern views. It describes the various methods and apparatus used for the determination of *p*H, and discusses particularly their applicability to different circumstances, with remarks on their merits and limitations. To the new edition is added a useful chapter on oxidation and reduction systems. The book gives abundant information on the influence of *p*H on the technical operations of a number of industries of many kinds; they include the electro-deposition of metals, the tanning of leather, sugar manufacture, brewing, baking, and other operations.

Abstracts of dissertations approved for the Ph.D., M.Sc., and M.Litt. degrees in the University of Cambridge during the academical year 1940-1 are published in the usual form by the University Press. Ten of the dissertations are grouped together under biochemistry, one appears under anatomy, and one under pathology.

No. 7 of Volume II of *The Advancement of Science*, published by the British Association, Burlington House, London, W., at 5s., includes the first interim report of the Association's Committee on Post-war University Education, but by far the greater part of this number is devoted to an account of the conference on mineral resources and the Atlantic Charter, held last July under the presidency of Sir Richard Gregory.

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INFLUENZA

It is now some two years since London was under almost nightly fire, and, although most Londoners have rational fears for the future, few have emotional fears. Logically there is—as minor Ministers remind us at week-ends in those dreary speeches which almost reconcile us to illegibly small print—no reason why London should not be " blitzed " again; indeed a quite plausible argument could be made in favour of the hypothesis that the likelihood of mass attack varies inversely as the enemy's hope of victory. But in fact the people of London do not worry very much about a blitz; time is a healer. The same kindly obliteration of fears and sorrows by the hand of time has reduced the word " influenza " to its customary semi-humorous role. Pan is piping, not stamping on the earth. Yet, here too, quite plausible arguments can be drafted for the view that the menace of influenza on a pandemic scale is greater than it was in 1918. If, for instance, the great virulence of the last pandemic were due to the opportunities of commingling of men of like ages but from widely different environments, leading to the emergence of a strain of virus of special potency, certainly the circumstances of our time are not reassuring. If exclusion from the west of Europe is an epidemiological advantage, it will be, we are sanguine enough to hope, only a temporary advantage. It is, therefore, opportune to digest the teaching of past experience, some of it quite recent experience, and to see how we now stand, on what might possibly be the eve of another major epidemiological event. Drs. Burnet and Clark have written a monograph[1] for which we have nothing but praise; it is a lucid account of researches old and new in which the senior author has had an important share, and sets out necessarily technical facts in a manner which can be understood by those without recent experience of laboratory work. It is evidently not possible within the limits of an article to abstract the contents of a monograph; it should be read. We shall do no more than try to convey the impression made by such a reading.

The isolation in 1933 of the virus which has been renamed influenza virus A made an epoch in the history of research. Since then much work has been done, and now strains of virus A are known which may be regarded as intermediates between virus A and the virus B isolated in 1940. Although since 1933 no epidemic on the scale of 1918-19 has occurred, there have been epidemics of a disease which, judged by the pre-1933 criteria, would be regarded as homogeneous epidemics of influenza. Often, but not always, in these a strain of virus has been isolated, and the clinical individual features of the disease have been produced by deliberate or accidental infection with virus. It is plainly impossible to prove that the primary aetiological factor of the 1918 pandemic was a virus infection, but, as Burnet and Clark show, there is no feature of that epidemic which is inconsistent with a hypothesis which analogy makes reasonable. The events of 1918 are differentiated from later and earlier experience by (*a*) the change of age incidence and fatality, (*b*) the greater dispersiveness, the former being the more drastic. It is possible to think that the phenomena were due to the emergence of strains qualitatively different from their predecessors—perhaps the acquirement of ability to infect alveolar epithelium and vascular endothelium as well as ciliated epithelium. " Both changes can reasonably be ascribed to the unprecedented opportunity afforded for the spread of infection in large bodies of men from various parts of the world, and in particular to the arrival of American troops in Europe."

Are we in a better position than our predecessors to control influenza? Burnet and Clark think that the experience of Australia in 1918-19 shows that maritime quarantine may at least delay invasion, and (if we are dealing with a *materies morbi* the biological characters of which change rapidly) this is important. If quarantine is to be useful it must be simplified, and an essential point is to determine the duration of infectivity. The development of the amniotic technique has made practicable an investigation on a fairly large scale which should, in the authors' opinion, be carried out as soon as opportunity offers. Specific prophylactic immunization naturally appeals to our sense of drama, but the authors are far from being facile optimists. There is little doubt that it is technically possible to prepare virus of any grade of human virulence, but the practical problem of choosing from the variety of possible strains that which will be effective in the given circumstances of an outbreak is another matter. Most amateurs of chess can foresee adequate replies to the move the " master " might make; it is the move he did make which dismays them. Probably by far the most important precautionary measure is so to mobilize our scientific forces that at the earliest possible moment we may understand the move the great enemy has made, for, as in chess, it is not always the one move which is decisive but the following sequence.

If this survey of the position gives no ground whatever for optimism, it at least makes plain that we are not now so completely helpless as we were a generation ago.

HOURS OF EMPLOYMENT AND HEALTH

In the latest report of the Chief Inspector of Factories[1] the subject of hours of employment is discussed by Miss F. I. Taylor, a deputy chief inspector. She points out that the number of Emergency Orders granted, under which there are modifications in the hours of work permitted by the provisions of the Factories Act, nearly doubled between 1940 and the early part of 1942, and about 10,000 factories now have permission to employ women and young persons over the age of 16 either on a system of day and night shifts or for more than 48 hours a week. The permitted hours ranged from 55 to 60 a week in rather less than half the factories, so they do not show a substantial improvement on the hours recorded in the report of the Chief Inspector for 1940. Still, there was a slight improvement in the later months of 1942, and it must be remembered that the fact that permission has been obtained for certain hours does not necessarily mean that these hours will always be worked. On the other hand, Miss Taylor regretfully admits that in some factories women and young persons were employed continuously for 60 or nearly 60 hours a week, and it is difficult to understand why the Factory Department sanctions such hours, except for a very short period in a time of great emergency. The effects of long hours on casual absenteeism were revealed at a factory where the women worked for six full days a week, with a total of 56 or 57 hours. The absenteeism became so acute, owing to the women needing time for shopping and domestic duties, that the firm introduced a rota system, whereby the women had only 5½ days of work a week and a total of 52 hours. Since the change the casual absenteeism has practically ceased. The effect on output is not stated, but a firm is mentioned where the women were employed on making hand-grenades, and they were found to produce more grenades when working a 50-hour week than on a 56-hour week. At another factory, where scientific glass was made, the hours of work were reduced from 9 hrs. 50 mins. a day to 8¼ hrs., and after two weeks the majority of the women were producing as much in the shorter hours as they had done in the longer ones.

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[1] *Influenza, a Survey of the Last 50 Years in the Light of Modern Work on the Virus of Epidemic Influenza*, by F M Burnet and Ellen Clark (Monographs from the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne No 4) Melbourne. Macmillan. (17s. 6d)

[1] Cmd 6397 H M Stationery Office. (6d)

The hours sanctioned by the Factory Department are often exceeded illegally, especially in the employment at night of young women under 18 and of boys under 16. In one case boys under 16 were employed on night shift for between 60 and 70 hours a week, and in another girls of 16 and 17 were employed on alternating day and night shifts with an average weekly total of 63 hours. Again, adult women were employed in the assembling of motor vehicles for 70 hours a week. In these and many other cases proceedings were taken by the inspectors against the occupiers, and there must be numerous instances of illegal hours which escape their notice altogether. Many married women with domestic responsibilities are taking up employment on a part-time basis. The most popular plan has proved to be a two-shift system by means of which two sets of women put in, between them, a full day of work between 8 a.m. and 6 or 7 p.m. An extension of this method is to work three short shifts per day, the hours of the shifts being 7 a.m. to 12 noon, 12 to 5 p.m., and 5 to 10 p.m. Or, again, four short shifts may be worked, running from 6 to 10 a.m., 10 a.m. to 2 p.m., 2 to 6 p.m., and 6 to 10 p.m. Another alternative is to get the women to work "overtime" hours in the evenings, after the ordinary workers have left at 5, 6, or 7 p.m. The women continue the work till 9, 10, or 11 p.m.

The long hours of work must often have an adverse effect on the health of the workers, but Dr. J. C. Bridge, the Chief Medical Inspector, maintains that, speaking generally, there is no reason to think that it has been so affected. He says that if industrial employment had produced deterioration in health there would have been an obvious increase in the notifiable infectious diseases, and that such has not been the case. Yet on another page of his report he briefly mentions the increasing incidence of tuberculosis among young adults, particularly females. What more striking evidence can we have of the adverse effects of war conditions than the vital statistics of Dr. Percy Stocks,[2] which show that the tuberculosis mortality of young women (aged 15 to 25) rose 16% between 1939 and 1941? It is apparently dependent in considerable degree on hours of work, for Drs. Laidlaw and Macfarlane[3] found that the pulmonary tuberculosis cases in Glasgow among industrial workers in general increased 21% between the same periods, while those of clerks and shop employees increased only 3%. Now these two classes of employees mostly worked for 48 hours a week or less, whereas the industrial workers were usually employed for 56 hours or more, and in many cases for 72 hours. Dr. Bridge considers that the maintenance of health is largely attributable to the steps taken to provide meals in the factory canteens at a reasonable rate; but other and perhaps more important factors must depend on the wise food policy of the Government, and on the fact that good wages are now being earned by hundreds of thousands of workers who were previously unemployed and suffering from malnutrition.

In regard to specific cases of poisoning, there were 41 cases of T.N.T. poisoning in 1941, of which 12 were fatal. There appears to have been a considerable increase on 1940, but cases of anthrax fell from 37 (5 fatal) in 1940 to 22 (3 fatal), probably owing to a reduction in the import of infected material. A serious increase in the number of gassing accidents is noted, there being nearly 200 cases and 10 deaths more than last year. The greatest increase was in cases of carbon monoxide poisoning—258 (24 fatal), compared with 162 (20 fatal) in 1940. Of the excess cases, no fewer than 56 (9 fatal) were due to miscellaneous causes such as coke braziers and exhaust gases from internal-combustion engines. The number of dermatitis cases has risen, owing to the increase in the number of entrants into industry and of materials used which may give rise to dermatitis, but Dr. Bridge deprecates the somewhat alarmist view that is taken of this skin condition. He points out that in the vast majority of cases the harm to the skin caused by the irritant quickly subsides on removal of contact, and that with appropriate treatment and protection of the affected part continuance at work, even at the same work, is not altogether impracticable. Success depends on the co-operation of the individual worker.

GASTRO-INTESTINAL CONCRETIONS

It is pleasant at times to turn from the everyday to the out-of-the-way in medicine. Most practitioners at one time or another run across a number of odd swallowed foreign bodies ranging from buttons or kirby grips to screwdrivers and watches, but few in this country are likely to have heard of the "persimmon belt" or the unusual condition of persimmon bezoar. Persimmon is the American date-plum. Bezoar is a Persian[1] term used to describe concretions of various kinds found in the stomach and intestines of animals and man, and the persimmon belt is a general description given to a part of the United States in the Middle West with Kansas, Oklahoma, and Texas as its western boundaries. It is in the persimmon belt that persimmon eaters, and especially those who impatiently eat them before they are ripe, may once in a while develop a persimmon concretion in the stomach. The risk, however, would not appear to be great, for under 120 cases have as yet been recorded in the literature, and Feldman in Baltimore observed none among 30,000 *x*-ray examinations of the gastro-intestinal tract. Chont, living in the heart of the persimmon belt and facing the daily risks of phytobezoar formation, now records a further series of 9 cases and makes a number of interesting observations upon this condition. While hair balls (trichobezoars) are more frequent in women—a case in a girl of 3 is recorded by Mr. V. C. J. Harris in this week's *Journal*—persimmon bezoar is mainly confined to men, and the coincident occurrence of gastric ulcer is very high among these patients. Gastric acidity is mostly normal, and the *in vitro* formation of bezoars was found by Chont[2] to demand the presence of acid, though pepsin was not essential; in weak acid unripe persimmon fruit beginning to solidify in 24 hours. The radiological diagnosis was in most instances simple, and in some the concretion was of considerable size, measuring up to 5 inches across. In a case described by Guthrie a large bezoar had broken in two and one portion had become impacted in the jejunum, causing some degree of actual obstruction. This writer mentions a number of other types of gastric concretion, among which is included the shellac bezoar found among painters who drink alcoholic solutions of shellac; this apparently forms by precipitation of the resins if the addict rashly reverts to the more usual custom of drinking water. One excessively rare occurrence is the formation of a bezoar caused by prune or raisin seeds and skins, by celery or salsify fibres, by pumpkin, and once by peaches. As with other things rarity brings its reward, and prices of bezoars—when supplies were available—were apt to be high in olden times, for they enjoyed a great reputation as remedies for poisonous and pestilent diseases. Even the temporary use of small pieces cost a high figure; in the scale of values the porcupine and monkey bezoars held the place of honour. The peach bezoar must be almost beyond price.

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[2] *British Medical Journal*, June 27, 1942, p. 789; and this week's issue, p. 750.
[3] Ibid., July 18, 1942, p. 63.

[1] *Proc. Mayo Clin.*, 1941, 16, 846.
[2] *Radiology*, 1942, 38, 14.

HIGH FLYING FOR WHOOPERS

Some three years ago an article in the German medical press described how children with whooping-cough had been taken up in aeroplanes with resulting amelioration of their symptoms.[1] Now two members of the Berne school medical service record[2] their investigation of this therapy in Switzerland, with the co-operation of local aviation and transport companies. P. Lauener and E. Maeder made the first attempt in the late spring and the early summer of 1939, but weather conditions were particularly unpleasant, and it required further studies in 1940 and 1941 before enough patients had been obtained to make statistical analysis possible. The patients were mostly school children, but some infants and toddlers and a few adults were included in the series. Each flight lasted about 90 minutes, of which about 40 were spent at a height of approximately 11,000 to 12,000 ft. A sudden transition to great height by a rapid ascent was ruled out as being too dangerous. The flights generally took place in the mornings, and observations on weather conditions and humidity were included in the records. Only a few children showed any apprehension before going up, and this quickly disappeared once they were in the air. The infants and small children usually went to sleep at a height of about 6,000 ft., and they woke again only on landing. About 30% of the children and adults experienced some nausea—the only disturbance caused by the flights—and none of the infants was sick. The authors collected 250 patients all in the paroxysmal stage of whooping-cough. In 57 cases (22.8%) an abrupt cure took place after one flight. Within at the most two or three days, and often immediately after the flight, these patients stopped whooping, and their astonished parents exclaimed that with the flight the whole picture of coughing and vomiting "had blown away." Another 80 (32%) were "cured" more slowly, a period of eight days being necessary to secure freedom from paroxysms. Thus in 55% of cases the flights may be said to have given good results in a short enough time to justify the conclusion that they had some therapeutic effect. A further 411 cases were improved; in 69 there was no change. Two of this last group were taken up a second time with good effect, and 4 children were taken up as a prophylactic measure, none developing the disease. Of the series 12 were adults, and all but 1 were benefited. Here the possible psychological effect has to be considered, but this could not be present in the case of infants, only 10 out of 34 showing no appreciable improvement. No very clear relation with weather conditions was established: some days gave better results than others, and it appeared that low humidity was better than high.

The Berne authors conducted two further series of observations, one on the Jungfrau and the other in low-pressure chambers. A group of 23 children and 1 adult were taken up by railway to a height of over 10,000 ft. and kept there for three hours before returning to Berne. The results were disappointing. In 16 out of the 24 cases there was slight improvement but no sudden disappearance of symptoms as after the aeroplane flights. The results with the low-pressure chambers were better. A group of 68 children were studied. They spent 60 minutes in the pressure chamber, with about 15 minutes for decreasing the pressure, 30 minutes at a pressure corresponding to a height of about 14,000 ft., and another 15 minutes coming back to normal pressure. Sudden "cure," as after the aeroplane flights, occurred in 31%, undoubted improvement in 50%, no improvement in 16%, and in 3% the disease became worse. Clearly the low-pressure chamber had advantages over the aeroplane, for it is independent of weather conditions. The psychological effect of the flight is also eliminated. When we recall that during the first half of 1941 between 3,000 and 5,000 cases of whooping-cough were being notified weekly in this country, aircraft firms, we imagine, would look upon the opportunity as one not to be sneezed at. Lauener and Maeder do not explain how this unusual method of treatment works. Does exposure to low pressure have an effect on *H. pertussis*? Or does it break a link in the chain of an ill-conditioned cough reflex?

HOSPITAL CONTRIBUTORY AND PROVIDENT SCHEMES

Two brief reports that have reached us throw sidelights upon the revolutionary changes in health and medical services which underlie the Beveridge plan. While Sir William Beveridge proposes that 100% of the population should be entitled to domiciliary and hospital treatment as part of the benefits of a universal compulsory insurance scheme, the Bristol Hospitals Fund publishes an interesting analysis of hospital contributory schemes—that voluntary system of comparatively recent growth which provides for the collection of regular contributions towards the cost of hospital care and treatment from some 10,000,000 people.

The author of the Bristol memorandum, Mr. John Dodd, sees two dangers ahead. One is that financial provision for hospital and ancillary services should be grafted on to national health insurance and be operated through a multitude of competing approved societies. But the other danger is that the present haphazard and inadequate methods should indefinitely continue. He urges regionalization of hospital services and of hospital finance, with only one contributory scheme in each of the divisions into which the several regions would be split up, and also that all contributory schemes should pledge themselves to observe minimum standards of contribution and of benefit, to provide unlimited services in general wards for acute sickness and to practise universal reciprocity. In the second report the British Provident Association, whose subscribers are people of moderate means, discusses the position of provident schemes in the future. Its executive council and its medical advisory board are strongly of the opinion that, whatever form future medical services may take, the two principles of free choice of doctor, hospital, and nursing home and of non-interference in the relationship of doctor and patient should be maintained. The council has circularized its subscribers on this subject, and reports that there is a large body of opinion that the facilities available for medical and institutional treatment for those with moderate incomes are in need of improvement in two main directions —namely, suitable institutional accommodation at reasonable charges, and means of mitigating the effects of the financial burden of serious illness. They think also that the extension of pay-bed provision in voluntary hospitals is the best method by which institutional accommodation should be secured, and that the development of provident schemes on similar lines to those operated by the association, providing for free choice of doctor and institution, should form an essential part of any improved service.

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[1] See *British Medical Journal*, 1940, 1, 900

[2] *Schweiz. med. Wschr.*, 1942, 72, 819.

CHEMOTHERAPY FOR TUBERCULOSIS

Tuberculosis is the most important single infection which has not hitherto been brought within the scope of sulphonamide treatment. Its chronicity, the avascularity of the lesion, and perhaps the capacity of the tubercle bacillus for long survival under unfavourable conditions, all discourage the belief that any drug of this type can bring the infection under full control. There is nevertheless evidence that the dissemination and extension of acute tuberculosis in the guinea-pig can be retarded. That sulphanilamide is capable of doing this was reported more than four years ago by Rich and Follis[1]: since then a similar effect has been obtained from sulphathiazole, and an even more striking retardation by promin, a soluble derivative of 4,4′-diaminodiphenylsulphone.[2] These effects have only been achieved by dosage on a scale which could not be contemplated for clinical use, as much as 1% of the drug being incorporated in the animals' food over long periods. Guinea-pigs can apparently tolerate this treatment, but according to B. E. Hall *et al.*[3] quite moderate doses of promin frequently produce a haemolytic anaemia when given for the treatment of tuberculosis in man: recovery is fortunately rapid after withdrawal of the drug. These authors treated 70 cases, and they state neither the effect on the disease nor the actual frequency of the consequent anaemia, but it is evidently a factor which must seriously curtail the efficacy of the treatment. If long-continued systemic treatment with promin is not feasible, there remains the more limited possibility of its local application, and this has been exploited by W. H. Tytler and A. D. Lapp in a study described on p. 748. The advantage of local sulphonamide treatment is that a high concentration of the drug can be attained in the neighbourhood of the lesion itself, while that in the blood remains relatively low. In Hawking's[4] studies of the experimental prophylaxis of gas gangrene, sulphanilamide attained a concentration of about 1,000 mg. per 100 c.cm. in the wound fluid when introduced in powder form: sulphapyridine, being much less soluble, reached a concentration of only 40 mg. per 100 c.cm.; and sulphathiazole, with an intermediate degree of solubility, approached the ideal by combining adequate concentration with persistence. The solubility of promin is no less than 45%: solution and absorption would therefore be so rapid as to deprive the drug of any persistent action unless measures were taken to retard them. This difficulty was overcome by incorporating a solution in a tragacanth jelly; but an alternative worthy of trial would be the employment of 4,4′-diaminodiphenylsulphone itself, or of some other compound with a degree of solubility more suited to local use. This type of preparation seems nevertheless to have been satisfactory, and its injection into tuberculous abscess cavities was followed in some cases by remarkably rapid healing. As the authors point out, there is a large field for such treatment in tuberculous cervical adenitis. Abscesses in connexion with tuberculosis of bone were among their successful cases, and there is presumably no serious contraindication to injection into an affected joint. Although this treatment has a limited scope, it is evidently worthy of further trial, and may prove capable of improvement and extension.

NEW SOURCES OF QUININE

The question of extending cinchona cultivation in the Colonial Dependencies, and the possibility of making the Colonial Empire largely independent of outside sources of supply of quinine, both for its immediate needs and for post-war years, is under consideration by a special sub-committee of the Colonial Advisory Council on agriculture and animal health. The planting of cinchona is already being carried out on some scale in Uganda, Tanganyika, Kenya, and Ceylon. Practically the whole of the world's supplies of quinine were, before the war, derived from Java. Thence, before the Japanese occupation, the total annual exports were in the region of 1,700,000 lb. a year. The only other sources of production were India, which produced about 70,000 lb. a year, and South America, which is the original home of cinchona, and from which small amounts of bark continue to be exported. Action was taken at an early stage of the war to ensure that reserves of quinine should be available in the Colonies. Concentration of troops and labour forces in the malarial areas, however, makes increased demands likely, and steps are being taken to meet this possibility.

WANTED: BRITISH MEDICAL FILMS

As most readers know, the function of the British Council is to make people in other countries acquainted with the various aspects of British cultural life. It does this through the medium of the written and spoken word, and also through films. The British Council is now engaged in producing medical films, and is at the same time anxious to have a complete record of any medical films in this country which might be suitable for showing overseas, which are not already included in the catalogues of the British Film Institute or of Messrs. Kodak, of 16 mm. or 35 mm. gauge. Will any medical man who has such films communicate with the Film Department of the British Council at 3, Hanover Street, London, W.1?

The *Journal of the American Medical Association* announces that the A.M.A. will not hold its 94th annual session in San Francisco next June. This is the third time in the history of the Association that an annual session has been cancelled, the earlier occasions being in 1861 and 1862 during the Civil War. The House of Delegates, the Board of Trustees, and scientific councils and the officials will meet in Chicago to deal with the affairs of the Association, particularly the many wartime responsibilities being borne by the medical profession of the United States.

For some years past efforts have been made to obtain for the members of the Royal Naval sick-berth staff recognition of their qualifications, by examination and experience, to be accepted as male nurses in civil life. These attempts have hitherto failed, and neither of the two recent committees (presided over by Lord Athlone and by Lord Horder) which have dealt with nursing generally have touched on the matter, though it was specially brought to their notice. The effort continues, as may be judged from the letter by Surgeon Rear-Admiral Falconer Hall printed in the *Journal* of Nov. 21 (p. 621). It is hoped that the position of these competent and deserving men will be fully considered before any new legislation is proposed.

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[1] *Johns Hopk. Hosp. Bull.*, 1938, 62, 77.
[2] *British Medical Journal*, Dec. 13, 1941, p. 856.
[3] *Proc. Mayo Clin.*, 1942, 17, 24.
[4] *British Medical Journal*, 1941, 1, 263.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

SKIN DISEASES IN WAR

BY

R. T. BRAIN, M.D., F.R.C.P.

The various infections of the skin account for the great majority of skin diseases in war, and these infections may be considered conveniently in their aetiological groups. Thus we have the common pyogenic infections, seborrhoeic dermatitis, mycotic infections, virus infections, and those due to animal parasites. In many of these conditions the diagnosis is simple and calls for little comment, while treatment is of supreme importance not only to the individual but to the community, for the speedy cure of an infection is the most certain method of preventing its spread.

The Pyogenic Infections

The common infections to be considered under this heading are of streptococcal or staphylococcal origin, but it should be remembered that mycotic and virus lesions, and also the less familiar lesions of cutaneous diphtheria and leishmaniasis, may be pustular too.

Impetigo Contagiosa

Several clinical varieties can be recognized, the discrete scabbed sore being the most common. Bullous lesions suggest greater virulence, and the spread is usually rapid. As the bullae resolve after rupture by drying centrally, the edges remain red and may extend as a circinate lesion closely resembling tinea but more rapid in its course. Rarely, ulcerative lesions termed " ecthyma " occur, and this variety leaves scars. Occasionally pale scaly lesions—impetigo pityroides—are present with or without the other varieties, and such lesions are apt to be confused with the scaly seborrhoids, to which they are probably related. Impetigo often involves the angles of the mouth, producing septic fissures ; it also attacks the skin folds, setting up a septic intertrigo, the post-auricular variety being the most common. Septic fissures and pus-coccal intertrigo are likely to persist as chronic lesions long after the primary condition of impetigo has cleared up. Sometimes in the course of impetigo, either because the infection is very acute or the skin is irritated by treatment, a rapidly spreading pus-coccal dermatitis results. This appears as a bright erythematous area—hot, slightly oedematous, often weeping or crusted, but not indurated or so well defined as erysipelas, and the constitutional disturbance is lacking. A weeping pus-coccal dermatitis is often loosely called "eczema," but it is advantageous to retain the latter term for the response of a hypersensitive skin in which grouped minute papulo-vesicles erupt in non-inflamed areas. Naturally a skin may be sensitized by an infection or by an irritating application, and then upon the dermatitis so produced the grouped eczematous lesions will appear ; but if the eczematous nature of the new eruption is not at once apparent by its morphology it soon will be when further eczematous lesions arise outside the inflamed area and perhaps symmetrically upon the limbs. The distinction between dermatitis and eczema is of practical importance because in acute pus-coccal dermatitis the infection must be fought, whereas eczema calls for sedatives and emollients to soothe and desensitize the skin.

Before discussing treatment it is necessary to add that few dermatologists claim to be able to distinguish between staphylococcal and streptococcal lesions of impetigo contagiosa. Streptococci have often been found in pure culture in early bullous lesions, which cannot therefore be regarded as peculiar to impetigo of staphylococcal origin. The dramatic response of many cases of bullous impetigo to a sulphonamide adds support to this view.

Treatment of Impetigo

One might say provocatively that general treatment is unimportant, for most of the cases clear up quickly on local treatment alone. Even so, it is bad practice to treat any lesion and neglect the individual, and in the exceptional case general treatment is vital: this happens when a virulent organism or lack of resistance on the part of the patient produces a rapidly spreading infection, the lesions of which are deeply coloured with an erythematous flare spreading around them like a developing erysipelas. Sulphanilamide is usually quickly effective in such cases, doses of 1 g. three or four times a day for a week being adequate as a rule. Although such relatively small doses rarely produce toxic symptoms, ascorbic acid is a safeguard, and as wartime diets are low in vitamin C content, doses of 50 mg. two or three times a day are useful. Personal experience and reported cases suggest that vitamin C is very helpful in many infections, so that it is worth while giving it alone in obstinate cases of impetigo. Chronic pus-coccal lesions such as septic fissures and intertrigo may resist local treatment for years unless every effort is made to improve the general health. The good effects of ultra-violet light upon immunity and metabolism should be considered. Phenobarbitone has cured many an obstinate case of impetigo in a nervous subject whose picking at the sores, even during sleep, has frustrated local treatment.

Local treatment is determined by local conditions. The most important fact to remember is that the normal dry intact horny layer is invulnerable to bacterial infection. A moist skin is a vulnerable skin, so that the indiscriminate use of water or grease is to be avoided. The exudate from moist pus-coccal lesions can permeate the stratum corneum, thus bringing the organisms in a suitable culture medium to the moist layers, where they may actively infect ; and no doubt this explains the spread of bullous impetigo on the face by a pillow at night. This can be prevented by soaking a clean handkerchief in liq. hydrarg. perchlor., pinning it when dry to the pillow, and lightly powdering it with talc. Auto-infection by scratching can be diminished by cutting the nails short, scrubbing the free edges, and disinfecting them with antiseptic—an important fragment of technique in nervous patients and in children. Obviously it is equally important to dry up the early lesions as soon as possible. When these lesions tend to dry and heal spontaneously it is sufficient to apply calamine lotion or a dusting powder, and cure may be expected in a few days. Flat scabs on dry lesions may be left undisturbed and in due course they will flake off the healed skin, but the scabs on purulent sores need removing so that the antiseptics may inhibit or destroy the infection. A simple and satisfactory method of removing scabs and crusts is to apply hot compresses of 2% sodium sulphate for one hour and then to cleanse with a similar lotion or with 1% solution of sodium bicarbonate or normal saline. Dettol, hydrogen peroxide, or hypochlorite solution may usefully be added to the cleansing lotions. The need for isotonic or slightly hypertonic solutions is stressed, because skin denuded of its protective stratum corneum is instantly damaged by water, and the H-substance released by the disrupted cells increases the erythema and exudation. The starch poultice brings heat and moisture into more intimate contact with the skin, but it is less cleanly than the saline compress. Kaolin made into a paste with 2% sodium sulphate solution is a simple substitute for the starch compress.

Having cleaned away scabs and exudate, the next object of treatment is to dry the moist surface. Local ultra-violet light is an excellent method if available, since this has a superficial bactericidal effect and also stimulates healing and increases the resistance of the skin. Failing ultra-violet, infra-red or the near light of an electric bulb, or the warm air of an electric dryer, can be used. In actual practice one often has to depend upon powders and drying lotions. As a powder basis, zinc oxide, talc, and kaolin should be used instead of starch, and 2% of ammoniated mercury or calomel or 5% of sulphanilamide may be incorporated. Sulphanilamide powder alone is effective in the treatment of virulent lesions but more active as a 5% solution in glycerin.

In mild infections calamine lotion alone or with 2% liquor picis carbonis or 0.1% mercury perchloride is to be preferred as a cosmetic application. A suitably tinted 20% suspension of kaolin with 0.1% mercury perchloride or 2% ammoniated mercury is a useful alternative. If these lotions do not control the exudate—and occasionally metallic substances increase it—the dyes should be used. A 2% watery solution of gentian violet is excellent, although it obscures the lesion more than 0.1% acriflavine, to which 4% of tannic acid may be added to coagulate the serous discharge. Certain metallic salts also have a coagulating effect; useful formulae being silver nitrate 2 to 5% in distilled water; or eau d'Alibour, zinc sulphate gr. 6, copper sulphate gr. 4, in 1 oz. of water. Alcoholic solutions irritate the broken skin, and even spirit soap is best avoided.

If the skin becomes too dry or if eczematous lesions indicate intolerance of watery applications, creams or pastes should be tried. The former consist of 6 to 10% of calamine or of zinc oxide in a mixture of a vegetable oil and an equal volume of lime-water. Up to 10% of lanolin may be added to make a smoother cream, and the further addition of 2% of ichthammol, phenol, or liquor picis carbonis serves to relieve irritation and to add an antiseptic quality to the cream.

Zinc paste consists of one part of starch, one of zinc oxide, and two of soft paraffin. No doubt it would be just as effective if made with equal parts of kaolin and vaseline. These pastes may be improved for certain conditions by adding 2 to 3% of crude coal tar or of yellow oxide of mercury. Either may suit a dry impetigo, an obstinate intertrigo, or an eczematous lesion intolerant of lotions. Since pastes contain 50% of powder they can absorb moisture from the skin, and their degree of permeability prevents maceration and overheating. Compared with ointments, pastes represent a saving of nearly 50% of the fatty base—an important economy in war.

Ointments have a limited sphere of usefulness, and their irrational employment on moist lesions accounts for a lot of unnecessary dermatological practice. The skin is kept moist and vulnerable to infection under greasy films, and the formation of a healthy stratum corneum is retarded because desiccation is part of its natural stimulus. It is true that, according to many textbooks, ointments have a prominent place in the treatment of impetigo, ung. hydrarg. ammon. being popular in this country and the U.S.A. and diachylon ointment in some European countries. It may fairly be said that many cases of impetigo get well in spite of the use of ointments, and that with careful cleansing of the lesions before applying ointment successful results can usually be obtained, although it may entail daily visits to a clinic. The advantages of substituting lotions for ointments can readily be demonstrated. A weak mercurial ointment is useful when hard scabs form at night, especially in the scalp, and ung. hydrarg. nitratis dil. often heals septic fissures which are apt to persist at the angles of the mouth and just inside the alae nasi. Quinolor ointment and the sulphanilamide ointments are sometimes more effective than the mercurials, but they are rarely necessary in the treatment of impetigo.

Some patients are very susceptible to staphylococcal infection of the hair and sebaceous follicles, and since grease increases this susceptibility sycosis barbae may be a sequel to treating impetigo of the beard area with an irritating ointment.

Sycosis Barbae

This is essentially a chronic staphylococcal infection of the hair follicles, and the diagnosis is rarely established clinically before 3 or 4 weeks have elapsed. In sycosis barbae the infected follicles are a deep brownish-red colour and many of them have small pustules at their orifices through which the hair protrudes. Although commonly localized to the shaven area or even to the upper lip or chin, sycosis may involve the eyebrows, scalp, neck, and every hairy part of the body. If in addition to sycosis there is marginal blepharitis, and septic follicles in the nares, the prognosis is bad. This resistance to local treatment supports the view that the skin lesions are in the nature of pustular bacterides, and in consequence secondary to a focus of staphylococcal infection elsewhere. The focus should be sought in the nasal sinuses, tonsils, and teeth, for if focal sepsis is found and eradicated the prognosis is greatly improved.

The treatment of early sycosis barbae is that outlined for impetigo. Hairs should be manually epilated from purulent follicles, the superficial pustules expressed gently, the lesions cleansed with isotonic solutions and mild antiseptics, the skin dried, and a lotion or paint applied. The watery solutions of the dyes or the zinc and copper sulphate lotion should be tried first, and if the skin becomes too dry ichthyol cream is applied at night. Quinolor ointment has given excellent results in many cases of sycosis; it should be well rubbed into the affected areas night and morning or, better, alternated with a lotion by day. Watch must be kept against intolerance to a local application, or all the hair follicles will become inflamed and quickly pustular. *X*-ray therapy, in fractional or epilation doses and skilfully combined with the other local treatment, often produces a favourable turn in an obstinate case, but not infrequently all the present art of the dermatologist fails to cure the chronic case, which remains terribly vulnerable to the staphylococcus. Finally, a course of toxoid, vaccine, or preferably a mixture of both may do good; but often, although specific antibodies in circulation may be increased many-fold, the skin susceptibility to infection persists, and so does the sycosis.

Seborrhoeic Dermatitis

Seborrhoeic lesions are common and troublesome in war for reasons not difficult to understand. Whatever is the true nature of these conditions—and that remains controversial—the importance of constitutional factors is generally accepted. The subjects may be plump and placid or thin and nervous, but both types have moist greasy skins, have generally a liking for carbohydrates, and are always very prone to infections of their skins and mucous membranes. Nervous and anxiety states, limitation of protein and of protective foods, and restricted facilities for personal hygiene are the aggravating factors of war. The indications for general treatment therefore are clear, and it remains to consider the local conditions.

The indisputable seborrhoeic lesion is the pale pink macule which occurs on a scurfy scalp and tends to spread behind the ears and to the margins of the scalp, the midlines of the back and chest, and the folds and flexural surfaces. These lesions of seborrhoeic dermatitis are large confluent patches or discrete macules, circular, oval, or circinate in pattern, the latter suggestive of tinea circinata. The colour is a very pale pink as a rule; the lesions are irregularly covered with a soft, greasy, flaky scale, and irritation is slight or absent. Follicular papules topped by a small scale may be present on the greasy skin too, and acne vulgaris is common in the young seborrhoeic patient and rosacea in the middle-aged. This tendency to follicular lesions is further marked by a frequency of boils, indicating a characteristic susceptibility to staphylococci which probably accounts for many seborrhoeic lesions. The importance of the pityrosporon of Malassez, the organism predominant in scurf, remains doubtful, therefore, in spite of the fact that treatment of the scurfy scalp is the keystone of local therapy. For this purpose ointments of sulphur, salicylic acid, or resorcin are used to soften and remove the scales, the process being completed by a shampoo, using a 2% solution of sodium bicarbonate and a tablet of sulphur or carbolic soap. Spirit soap is very effective, but is more likely to irritate an inflamed scalp. A liniment of 5% salicylic acid in 1 part of spirit and 7 parts of castor oil, a cream of 2% ichthammol in lotio calaminae oleosa, and a lotion of 2% precipitated sulphur in calamine lotion are very useful for seborrhoeic lesions of the scalp and skin, while many of the remedies and methods used in the treatment of impetigo can be advantageously employed.

Mycotic Infections

The epidermophyton infections are by far the most common variety in war, and, since the feet are the usual sites involved, early diagnosis and effective treatment are essential. The former is usually simple, for an erosive dermatitis spreads from the toe clefts to the sole of the foot, with a circinate advancing edge of itching pustules or vesicles. The horny layer, separated by exudation, breaks and peels off, leaving moist red tender areas. Distant groups of tense vesicles may arise in the middle of the sole, and sometimes the infection begins here. A scraping of the under surface of a vesicle mounted in 10% sodium hydroxide may reveal the fungus and confirm the diagnosis of tinea pedis.

Unfortunately, epidermophytoxin readily sensitizes the skin so that deep vesicles erupt on the soles and also on the palms, and in these vesicles no fungus can be demonstrated; nor do the lesions respond to fungicides, but usually they do resolve when the primary mycotic infection is cured. These allergic eruptions, called "epidermophytids," are clinically indistinguishable from the eczematous conditions of podo- and cheiro-pompholyx, which, like other types of eczema, clear up and tend to recur without any obvious external cause. Tinea relapses because of residual infection, often apparent in the fourth toe cleft as thick white cuticle, speckled at the sites of small vesicles. Eczematous lesions must not be treated with strong antiseptics or fungicides; hence the importance of recognizing them so that general and local sedative measures may be employed.

Pyogenic intertrigo of the toe clefts is often confused with tinea, but the septic process is more acute, the surface moist at the sites of ruptured bullae, and as a rule the infection spreads to the more delicate dorsal surfaces of the toes. Scabies may be the cause of vesicles and pustules on the feet, and from the infected lesions an extending pyogenic dermatitis sometimes resembles tinea. More rarely, pustular psoriasis or acrodermatitis perstans has to be distinguished from tinea, for in these conditions, clinically identical, groups of pustules erupt in the middle of the soles. These pustules are generally set in dry shiny red plaques suggestive of psoriasis; the contents are usually sterile, and treatment with fungicides is ineffective.

Epidermophyton infection of the groin—tinea cruris—is either secondary to tinea pedis or is acquired from infected lavatory seats or clothing and towels. As in the case of scabies and pediculosis pubis, tinea cruris may be a venereal contagion. The disease begins as small scaly pink macules, resolving in the centre and spreading centrifugally with a scaly edge so that by the time advice is sought the lesions are already circinate and the diagnosis rarely in doubt. Monilia infections are so similar that they are diagnosed as tinea; but this does not matter, because they respond to the same treatment. On the other hand, intertrigo when mistaken for ringworm is likely to be irritated by treatment with fungicides, and indeed this common lesion of the groin may be a sequel to the treatment of tinea cruris.

Intertrigo begins in the depth of a fold, as a bright erythematous patch, fading towards the edges—in contrast with the ringworm lesion. The friction of coarse woollen clothing on a moist skin often produces intertrigo of the inner sides of the thighs near or adjacent to the scrotum, and because of this location a diagnosis of tinea is apt to be made. Either of these lesions may be found in the axillae too.

Treatment of Epidermophyton Infections

The crural and axillary lesions will clear up in a week or two if treated efficiently, and a simple method is to use Whitfield's ointment—ung. acid. benzoic. co., *B.P.C.*—a little well rubbed in at night, and, after cleansing with soap and water in the morning, to apply a mild antiseptic lotion. The dilute mercurial ointments will also cure early infections, and when necessary the fungicidal effect can be enhanced by adding 4% of chrysarobin or 0.5% of derobin or cignolin. The sole use of such ointments will cure many cases of tinea cruris; but there is less chance of producing a dermatitis and the skin is more comfortable if kept dry with a lotion by day. Underclothing must be disinfected. Tinea pedis should be treated on similar lines. The strong ointments are well tolerated, and 4% of tannic acid in acriflavine lotion is useful to control hyperidrosis. Relapses are common because the fungus is protected from therapeutic agents by the thick horny layer of the sole, which is often greatly hypertrophied at the sites of infection. The trichophyton is even more inaccessible, if it reaches the nail folds or under the nail-plate, where it may give rise to onychomycosis. So after an apparent cure it is important to prescribe a spirit paint for use after washing the feet. A suitable one is 0.2% of mercury perchloride and 2% of salicylic acid in surgical spirit; this should be painted around the nails and in the toe clefts for at least six months. Its use on the soles of the feet would be a good prophylactic measure. Socks must be disinfected and the insides of boots treated with formalin.

Trichophyton infections, and occasionally microsporon infections, account for tinea circinata, the common ringworm of the glabrous skin. Diagnosis is easy as a rule, and the treatment is that given for tinea cruris. The pustular ringworms give more trouble, and tinea barbae is not infrequently confused with sycosis barbae. Ringworm of the beard area presents an indurated granulomatous swelling studded with pustules. These may show a circinate pattern and thus give a clue to the diagnosis, which may be confirmed with some difficulty by pulling a hair out of a pustule and mounting it, and the pus with it, in 10% sodium hydroxide. Fungus or spores may be seen with the 1/6-in. objective under restricted illumination. The usual treatment of tinea can be applied to tinea barbae, but the hairs should be epilated from the pustular follicles. Hot compresses of 5% sodium thiosulphate or of 10% lotio calcii sulphurati are often helpful. Large doses of sodium iodide should be tried in deep and obstinate mycotic infection.

Virus Infections

Herpes simplex most commonly occurs on the face, where it is often mistaken for impetigo. The sudden eruption of grouped vesicles on an inflamed base with preceding irritation is the clue to the diagnosis. Penile herpes is not uncommon, and must be distinguished from scabies and primary syphilis.

Zoster presents similar herpetic lesions, and when seen late in a confluent pustular stage the resemblance to impetigo is close. The sharply unilateral distribution and the rapid evolution of the full eruption establish the diagnosis, and a history of preceding pain or hyperaesthesia completes the clinical picture. If pain is severe hypodermic injections of 1 c.cm. of pituitrin, or sodium iodide in doses of 15 to 20 gr. t.i.d., may give relief. Herpetic lesions of both types are best treated with 1% phenol in calamine lotion.

Warts may be just unsightly or, owing to their situation, may be the cause of disability. In either case they are a virus infection, and so are likely to spread on the individual or to infect others. Treatment, especially of the solitary wart, is a much-neglected but important fragment of preventive medicine. When warts are few in number their complete removal or destruction should be attempted. Curettage with a sharp spoon and subsequent sterilization of the crater with pure phenol is often satisfactory. Cauterization by heat or with CO_2 snow has the advantage of leaving a dry surface, and after diathermy or galvano-cautery no dressing is required. These methods appear to be radical and certain, but they are not, for the virus may be distributed more widely than the lesion indicates, and under the stimulus of the virus the interpapillary processes of the epidermis thrust deeply into the corium. The epidermal cells carry the virus with them, so that a single surviving cell presumably can account for a recurrence of the wart. Fortunately many warts disappear if they become involved in an inflammatory reaction, however slight, and this probably accounts for the successful use of *x*-ray therapy and of ionization, although considerable evidence exists of a favourable response to suggestion, which is inseparable from impressive techniques. When warts are numerous caustic paints should be used; but it is essential to pare away the thick horny cap continually, because it is resistant to most of the preparations that may safely be entrusted to the patient. Salicylic acid is a safe and effective keratolytic, and a 10% solution in collodion or spirit forms the basis of many paints for warts.

Painting is more effective if the wart is kept covered by adhesive plaster, and a resistant plantar wart may respond to this method if painted every other day with liquid phenol or 80% trichloracetic acid in water. After several paintings the thick horny cap often comes away adhering to the plaster, leaving a deep crater, which should be again painted with phenol and dressed with ung. acid. salicyl. A pencil of CO_2 snow firmly pressed on a plantar wart for several minutes until a narrow zone of normal skin around the wart is frozen will be followed by a bullous reaction which permits the wart to be dissected away with ease in a day or two. The crater should be dressed as above. Large plantar warts may be treated with x rays, and success can be expected in about 80% of cases. The treatment is painless, but an x-ray burn is not, and must be avoided by careful dosage. A previously untreated wart may be given a single dose of 600 to 800 r units through 1 mm. of aluminium at a kilovoltage of 90 to 120. Pain is usually relieved quickly, and the plantar wart should disappear in a month; if it does not, the dose may be repeated, but once only. A more cautious method is to give four doses of 200 r at weekly intervals exactly to the wart. Should irradiation fail it is important to avoid the use of strong caustics and cauterization, but the irradiated wart can safely be pared and kept under plaster. Ung. acid. salicyl. *B.P.* may be applied within a protective ring of felt.

Diseases due to Animal Parasites

Scabies.—The diagnosis of this common and troublesome disease may be easy and certain if typical burrows are present, or it may be so difficult as to baffle the most experienced dermatologist. Burrows should be sought in the creases of the wrist, of the ulnar side of the hand, and of the palm. It is not generally known how easily the acarus or ova can be demonstrated by wetting the burrow with 5% solution of caustic soda or potash and then scraping out with a scalpel and examining the scraping under the low power of a microscope. Even if burrows are not found, an itching eruption of fine papules on the wrists, the inner sides of the arms, the axillary folds, the umbilical region, the pubic area, the inner sides of the thighs, and the ankles is almost certainly scabies, and a history of familial cases increases the probability. It should be remembered that a patient with factitious urticaria will produce urticarial lesions by scratching scabies, and in children papular urticaria is often vesicular or bullous; so is scabies, and both may show the same distribution. Lesions in the finger clefts are misleading, since cheiropompholyx, eczema, and intertrigo imitate scabies there.

Treatment of Scabies.—When many treatments are advocated to cure a disease it usually means that none of them is satisfactory, but surely the exception to this aphorism is in the case of scabies. The present spate of new methods merely emphasizes the probability that any insecticide brought into intimate contact with every bit of infected skin will cure the infection. There are three essentials to success in the treatment of scabies. First, an attack upon the stratum corneum, which shields the parasite from the insecticide and indeed provides a veritable Anderson shelter for the acari on the palms and soles. Thorough scrubbing with a nail-brush and lots of soap on several occasions is usually necessary, although the use of strongly alkaline or soapy solutions, which themselves soften and penetrate the horny layer, gives a fair measure of success without the scrubbing. But the easy way is not the best. Secondly, every part of the body must be treated with the insecticide, and it is obvious that the chance of missing small areas decreases with repeated applications. To prevent dermatitis venenata arising from treatment, a limit, determined by experience with each remedy, must be set to the number of these applications. The third essential is the disinfection of the underclothing and night apparel. Recent experiments have made doubtful the necessity for sterilizing the outer garments and bedding, but where facilities exist the extra precaution can do nothing but good. Contacts must be treated or reinfection is likely to occur.

The choice of an insecticide is dependent upon what is available, and due consideration should be given to economy. The derris root treatment described by Captain Saunders (*British Medical Journal,* 1941, **1,** 624) is clean, simple, and economical; briefly, it consists of six applications in two days of the following lotion. One teaspoonful of soap flakes to 10 oz. of a mixture of 4 oz. of derris root powder in one gallon of cold water. The lotion of equal parts of benzyl benzoate, industrial methylated spirit, and soft soap has become very popular, and the official cream is less irritating and more acceptable to the patient. After soaping, scrubbing, and bathing the benzyl benzoate lotion is painted on the wet skin and again when dry, and any residual lotion should be used up next day on the areas most involved and on the thick skin of the palms and soles. Sulphur is an excellent insecticide and is more potent in an alkaline medium. The effective but messy ointment need not be used. There are many new emulsifying bases which make non-greasy ointments and creams to which 10% precipitated sulphur may be added. For example, 7% of lanette wax added to a simple ointment enables the product to be creamed with water. Good results have been obtained with lotio calcii sulphurati diluted 1 in 10; with 10% sodium thiosulphate followed by the application of dilute hydrochloric acid; and also with precipitated sulphur rubbed into soap lather and then into the skin. When sulphur is not tolerated 10% balsam of Peru in zinc ointment will be found useful.

The reaction of the skin to these remedies is mainly follicular, and the appearance of a rash of irritating red dots marking the irritated follicles is often regarded by the patient as an extension of the scabies, so that treatment is continued and extensive dermatitis results. This should be treated with calamine lotion, to which 2% of tar solution may be added. Luminal, gr. 1/2 b.d., helps to allay the irritation of the dermatitis or the psychic itch which lingers with imaginative folk long after the infection is cured.

Pediculosis

Pediculi are often the cause of irritation of the scalp, body, and pubic area, and it is surprising how often their presence is overlooked.

Nits or pediculi in the scalp are a simple explanation of local irritation and of scratch marks across the shoulders. A lotion of phenol 3% in liq. hydrarg. perchlor. should be applied liberally to the scalp, where it will kill the lice and prevent or cure septic infection. The same lotion will allay the irritation of the scratched skin.

Pediculi corporis should be looked for when a patient has soiled underwear, especially if by habit or necessity the clothing is worn night and day. Infested patients complain of irritation of the body, and excoriations and pigmented macules are often seen. The lice are to be found concealed in the seams of the underclothing, although in severe infestation they are present on the skin too. Various insecticide powders for dusting on the clothing provide a second-best method for the control of body lice, but the obvious solution is the improvement of personal hygiene and efficient disinfection of clothing and bedding.

The crab louse, *Phthirius pubis,* gives rise to an intense pruritus of the pubic area. The infection is often a venereal one, but it may readily be acquired from infected lavatory seats. Inspection of the pubic hairs, preferably with the aid of a magnifying glass, reveals the presence of the small dark nits close to the skin. It is not so well known that *Phthirius pubis* also attacks the axillae and eyelid margins. Treatment is simple, and the phenol lotion mentioned for the treatment of pediculosis capitis will do for the pubic and axillary areas. The weak sulphur and mercurial ointments are also effective, but strong applications must be avoided. For example, ung. hydrarg. has been responsible for much dermatitis and discomfort. So has the unnecessary habit of shaving the pubic area. The liberal use of soap lather is very helpful, and no doubt a paste of it with precipitated sulphur would be an excellent remedy. The ova are less readily destroyed, but if treatments are repeated at intervals of a few days the infection is soon ended. Disinfection of the underclothing is necessary.

A plan for the abolition of coal smoke from our towns and cities within ten years from the end of the war is outlined in the autumn number of *Smokeless Air,* the journal of the National Smoke Abatement Society (temporary address: 94, Manor Green Road, Epsom, Surrey). The proposed scheme (published for discussion and not yet officially adopted by the society) is based on proposals already made for the creation of smokeless central and other special zones as a part of post-war town planning, and suggests that in each town there should be a planned stage-by-stage extension of these zones until the whole town is smokeless. The rate of progress, especially when residential areas are reached, would depend primarily upon the rate at which increased supplies of smokeless fuels and appliances become available.

HOSPITAL SERVICES AND CONTRIBUTORY SCHEMES

At the distribution meeting of King Edward's Hospital Fund for London, held on Dec. 15, the DUKE OF GLOUCESTER took the chair for the first time as President in succession to the late Duke of Kent. In his address to the Council he said that to-day there was very general agreement that whatever arrangements were made for the future of the hospital service there were features of the voluntary system which were precious and must be preserved. On the recommendation of the Distribution Committee it was proposed to distribute £280,000. The general financial position of the hospitals was better than might have been expected; the grants made by the Ministry of Health for the costs of the casualty service had helped in many cases; but a number of hospitals were finding some difficulty in meeting their expenditure. Sir EDWARD PEACOCK, in making his financial statement, said that one of the most difficult new factors to be kept in mind was the demand for capital expenditure that would confront the hospitals after the war. The King's Fund had to do its best to adjust the delicate balance between the immediate needs of the hospitals and the post-war requirements. Sir ERNEST POOLEY presented the report of the Distribution Committee with the schedule of grants recommended to hospitals and convalescent homes.

Minister of Health's Statement

Mr. ERNEST BROWN, in proposing a vote of thanks to the President, expressed his keen interest in the work of the Fund, particularly in its function as a sort of centralized bureau for promoting high standards of service among the London voluntary hospitals, and in its will to collaborate with the great municipal hospital services in the same area. The practical field work of bodies like the Fund assumed enhanced importance now, at a moment when ideas on reconstruction in the hospital and health services were being quickened, and in a country where the conception of building out of, and on to, existing practical experience was inherent in reform. The moment was particularly notable from that point of view, because of the issue of that extremely interesting, constructive, and (in the right sense) provocative contribution to the reconstruction theme—the Beveridge Report. That report was receiving a thorough review in the light of the much wider problem of reorganizing the background of individual living, which all were determined to solve. With reference to "Assumption B" in the report—"Comprehensive health and rehabilitation services for prevention and cure of disease and restoration of capacity for work, available to all members of the community"—the Minister recalled that in Oct., 1941, he had announced in the House of Commons that it was the Government's intention to secure, by means of a comprehensive hospital service, that appropriate treatment was available for all who needed it; also that it was intended to maintain the principle that, in general, patients should be called upon to make a reasonable payment towards the cost, through contributory schemes or otherwise. The Minister continued:

> "On this last point the Beveridge Report recognizes that the question of patients' contributions and of contributory schemes is one which can be decided only in relation to the whole problem of the organization of hospital services, and one which will depend on the general policy found best for providing those services. While it is too early yet for me to determine the shape of that policy (I am now conducting all the preliminary spade-work and shall later be consulting the interests most concerned) no one can be more alive than I to the value of the practical work done in the past, and being done now, by the various contributory schemes; and also to their potentialities for the future—particularly if they are able to converge a little more on to more uniform paths—for example, in matters of their rates of payment to hospitals and in their readiness to extend those payments equally to any hospital, wherever situated, to which the medical needs of a patient make it desirable to send him. You have, I know, been putting a good deal of useful effort into the questions of contributory schemes in London and the better correlation of their activities. You would, I feel, be well advised to go ahead with this—perhaps particularly on the two aspects which I have just instanced—and your progress will certainly be of interest to us in considering the part which it may be found best to expect these schemes to play in any long-term hospital policy."

STATUS OF THE GENERAL SURGEON

A Manifesto from South Africa

A copy of a manifesto has been received from the Group of General Surgeons of the Johannesburg General Hospital. This body, which was set up on March 9, 1942, comprises the four honorary senior surgeons on the staff of the hospital and their first and second assistants, who are also on the honorary staff. The senior member of the surgical staff, Mr. I. W. Brebner, who is also Professor of Surgery in the University of the Witwatersrand, was unanimously elected chairman. The reasons for the formation of the group are set out as follows, and the honorary secretary states that suggestions and criticisms from readers who are interested or concerned will be welcomed.

The Johannesburg Hospital Manifesto

In centres of medical activity throughout the world, the position of the general surgeon has for long been a source of perturbation. The impression has been allowed to become prevalent that general surgery as a specialty is rapidly becoming defunct. This is not the feeling of general surgeons themselves.

The Group of General Surgeons of the Johannesburg General Hospital feels that it is expressing the views of general surgeons everywhere when it states that whatever may be the advantages of narrow fields of specialism, there are also disadvantages. There is apt to be a somewhat confined outlook and lack of broad perspective in small specialties. The one system concerned in any particular specialty is, after all, but a small part of the body as a whole, and its diseases are often considered without due regard to the whole organism. The present-day tendency to embark on specialism soon after qualifying never permits such specialists to appreciate the immense importance of the condition of the rest of the body in relation to their own small sections of it In the teaching of students particularly the preceptor must be able to consider the whole body in relation to disease and injury and not merely a part of it.

The aims of the Group of General Surgeons are:

1. To maintain the status of the specialty of general surgery.
2. To promote the exchange of ideas between the members of the Group by the reading of papers and the showing of cases.
3. To encourage the individual general surgeon to develop a particular bent within the range of general surgery.
4. To promote closer relationships between the various specialist groups.

Finally the scope of the general surgeon is defined by the Group thus: "A general surgeon is entitled to perform that work that he and his general surgical colleagues consider he is competent to undertake."

MEDICAL DEFENCE UNION

The annual meeting of the Medical Defence Union was held under the chairmanship of Dr. James Fenton, who, during the proceedings, was elected President for 1942-3. Mr. E. D. D. Davis was re-elected Treasurer, and Dr. G. Roche Lynch was elected Chairman of the Council Committee.

Dr. Fenton referred with regret to the death of Dr. G. de Bec Turtle, which took place only a few weeks after his election as President 12 months ago. The Union, he said, had now a membership of 25,000, the highest figure, he believed, obtained by any organization of medical practitioners which restricted its activities to the British Isles. The war had not diminished litigation, and the Union was to-day spending a much larger proportion of its annual income on the defence of members than it had done in years gone by. It was well to remind doctors in general that the State and military authorities did not, except in special cases, accept responsibility for real or alleged acts or omissions of their medical officers when engaged in medical practice as members of H.M. Forces. As a rule a medical officer was required to defend the results of his own work when charged by a litigant; moreover, he might require legal protection even against the authority by whom he was employed, and might even need legal representation before a court martial. The President drew attention to the need for special care in certification; the Union had been called to defend before the courts and professional tribunals medical practitioners who had been charged with wrongful certification. It was difficult to find any justification in some of these cases, but the Union had done what it could to save members from penalties.

Correspondence

Shortage of Beds in Fever Hospitals

Sir,—Many fever hospitals have a proportion of their beds diverted for general hospital purposes; most of them are experiencing acute difficulty in recruiting and retaining an adequate nursing staff; many, particularly in "danger areas," are unable to use their all-glass isolation units. It is becoming increasingly difficult to cope with demands for beds, and it is in the hope that practitioners will co-operate by refraining from recommending hospitalization, except where this is really necessary, that I send you this note. I fully appreciate that war conditions make home nursing difficult, but I hope that practitioners and the public will realize in their turn the peculiar difficulties of the hospitals. If parents, officers in charge of camps and billets, and others involved can be assured that infectivity diminishes rapidly in most diseases after the typical rash has appeared, that susceptible contacts have therefore already been infected, that late hospitalization will do little to prevent local spread, that the risk of the conveyance of infection by healthy third parties is negligible, they will be more willing to keep the clinically mild case at home or in billet. German measles, chicken-pox, and other minor infections can only be admitted at the expense of pertussis, enteritis, and other illnesses of actual and potential seriousness. It is particularly in London, where the hospital authority has been in normal times perhaps over-altruistic in agreeing to admit non-notifiable infections, that the pressure is severe. Any help that family doctors and others can give will be much appreciated by those responsible for fever hospitals.—I am, etc.,

Andrew Topping,
President, Fever Group,
Society of Medical Officers of Health

Treatment in Psychiatry

Sir,—Recent correspondence on the subject of shock treatment in psychiatry appears to have done something to resurrect insulin therapy from the partial eclipse it has recently undergone by the advent of electric convulsion therapy. This eclipse must be partly accounted for by the quick and dramatic results that have been obtained in many cases by the latter method. Before being carried away by the virtues of either method we must admit that there are sound reasons for believing that there is a place for both in treatment, and that the ideal mental hospital should have both at its disposal. What is needed is a more careful choosing of cases for one or the other treatment. It is becoming generally recognized that certain of the melancholias, particularly of the involutional type, yield good and sometimes dramatic results with convulsion therapy. Convulsion therapy has proved disappointing in the treatment of dementia praecox, on the whole, and it may be claimed that the majority of these cases do best on insulin therapy. In those in whom depression or stupor are marked, good results are obtained by combined insulin and convulsion therapy, a point which has not been stressed by your correspondents. Time is precious in the treatment of schizophrenia, and many valuable weeks are often lost by the use of prolonged convulsions. In this connexion it is true in general that if some improvement does not occur after the first two or three convulsions it is best to proceed straight to insulin therapy.

Yet, despite the acknowledged value of insulin, its use has diminished since the war began. This may be attributed to the difficulties of obtaining sufficient sugar, and to the reduction of mental hospital staff. We have recently shown (Sandison and McGregor, *J. ment. Sci.*, July, 1942, p. 387) that the use of the intravenous insulin treatment avoids the wartime problem of sugar. By shortening the time of daily treatment and its freedom from complications it enables the nursing and medical staffs to do more work in other departments. In more than one mental hospital this technique is now being used with success.

Dr. William Sargant (Nov. 28, p. 648) brings statistics to his aid in support of insulin. However true his deductions may be, statistics must be treated with caution in psychiatry. The diagnosis of early schizophrenia is notoriously difficult, and many so-called remissions occur in patients who were probably depressives or even psychoneurotics.

In conclusion, convulsion therapy fails to give such good results in many centres because of the lack of prolonged personal supervision which is inherent in insulin therapy and so valuable to the schizophrenic. I should like to sum up with a plea for the introduction of both forms of treatment in every centre, the wider use of combined therapy, and for greater nursing supervision of those undergoing convulsion therapy. Insulin should be given by the intravenous technique.—I am, etc.,

R. A. Sandison,
Flying Officer, R.A.F.

Child Health

Sir,—With reference to the letters of Dr. J. Burnet (Nov. 21, p. 616) and Dr. Eva McCall (Dec. 12, p. 708) I desire to state that we doctors in the health services have an outlook toward disease that may be somewhat different from that of our colleagues who are specialists in treatment. It appears to us that there is a great waste of talent and ability on repairing bodies damaged by disease due to causes which, figuratively speaking, issue from conduits the taps of which might be turned off, and on treating established maladies rather than finding and checking them in their beginnings as slight disorders of function.

We would therefore ask our colleagues in high places to join with us and with research workers through some suitable organization (like that of the health centres proposed in a State Medical Service) to attack disease in a resolute and rational manner, provided, of course, it isn't the seeking for profits but human welfare—a more worthy object for a great profession. (Fuller details of what is meant will be found in a résumé of an address given by me to the Derbyshire Branch of the B.M.A. in June, 1938, and published in the *Journal*, Jan. 8, 1939, p. 45.) Those who are disposed to adopt this view might be interested in the Child Health Planning Group Movement, for details of which I refer readers to the general secretary, Dr. Kershaw, Medical Officer of Health, Accrington, Lancashire.—I am, etc.,

Glossop. E. H. M. Milligan.

The Dysentery Carrier

Sir,—In his letter (Nov. 21) Dr. Ian Taylor refers to dysentery: its notification in peacetime and wartime, and the marked upward tendency during the last years. For good reasons Dr. Taylor explains the greater frequency partly by the improved means of bacteriological investigation; it is indeed a remarkable advance which has been achieved by the research work of the last years. Again, the discoveries of Leifson, Hynes, and the workers in the E.P.H.L. Service have resulted in the use of new and very effective culture media for growing the causative agents of bacillary dysentery. But in spite of these remarkable advances there remains still a disproportion between clinical evidence and laboratory confirmation. Before and at the outbreak of the last war, when the difficulties in obtaining exact results from faecal cultures were so pronounced, we had in the early diagnosis of bacillary dysentery to look for other means of help. In my studies on procto-sigmoidoscopy I (1906) emphasized the value of ocular inspection in this respect, and advocated (*Med. Klin.*, 1914, **44**) that this method should be made obligatory. In obtaining material for bacteriological examination directly from the affected parts through the endoscope positive results rose to as much as 60 and 100%.

The insidious and tenacious character of dysentery may be recognized by the fact that often in apparently healthy patients with normal motions the speculum discloses still active ulcers in the lower intestine; this proves that the endoscopic examination is not only a great help to diagnose the beginning of the disease but also to ascertain that the patient is really cured. By omitting this control we risk missing carriers who without any knowledge of their condition become a permanent danger to the community. This is but one aspect of the matter of detecting and controlling carriers. There are other sides to this problem, such as the controversial question where the germs are lodged in chronic infections—in the liver, in the intestinal wall, or in both. The prophylaxis of chronic and endemic forms of bacillary dysentery includes still the question under which symptoms insinuating or attenuated infections become manifest.

In my view some of the cases of so-called "idiopathic" ulcerative colitis are originally caused by germs of bacillary dysentery.

I completely agree with Dr. Taylor that scrupulous hygiene is a strict necessity, but in conformity with this there are still some unsolved questions or matters under discussion which we hope will be fully explained with the help of recent researches.—I am, etc.,

Sanderstead, Surrey
GUSTAV SINGER, M.D.,
Emeritus Professor of Vienna University

Sulphonamides for Gonorrhoea

SIR,—Apropos the correspondence on sulphonamides for gonorrhoea, it is worth while drawing attention to an investigation made by Towsky *et al.* (*J. Lab. clin. Med.*, 1942, **27**, 1001) in which sulphapyridine, sulphathiazole, and sulphadiazine are compared. The cure rates were (excluding defaulters) 92%, 96%, and 93% respectively, between which there is no significant difference. The rates for defaulters, however, are: for sulphapyridine 28.8%, for sulphathiazole 9%, and for sulphadiazine 3.5%; if the defaulters are counted as failures the cure rates then become 65.5%, 87%, and 89.5% respectively. Toxic reactions were: sulphapyridine 75%, sulphathiazole 11.5%, and sulphadiazine 8.8%. To effect a cure the average dose required was for sulphapyridine 23.5 g. in 8 days, for sulphathiazole 28 g. in 8 days, and for sulphadiazine 17.5 g. in 8 days. The authors conclude that sulphapyridine "would better not be used in the treatment of gonorrhoea in the ambulatory patient," and that "it would seem that sulphadiazine is a valuable drug in the treatment of gonorrhoeal urethritis."

Recent experience in this hospital emphasizes the value of sulphadiazine in various acute infections, such as a severe staphylococcal septicaemia uninfluenced by a week's treatment with sulphathiazole but responding immediately to sulphadiazine. It is unfortunate that there is difficulty at times in obtaining this drug. There appear to be good reasons why sulphanilamide and sulphapyridine should no longer be used when the newer drugs are available.—I am, etc.,

Pathological Department,
Royal Infirmary, Bradford
C. J. YOUNG.

SIR,—Col. L. W. Harrison (Dec. 5, p. 677) has interpreted my remarks wrongly. I did not question his statement that in the great majority of men who present themselves for treatment within 4 days after coitus sulphathiazole eradicates the disease within a few days—the length of treatment required apparently depending on the virulence of the causative organism. I am convinced of this from my own very limited experience. But what I am querying is the necessity for using expensive, and to some extent dangerous, drugs in very early cases, when the same result can be achieved by simple irrigation.

Gonorrhoea is caused by the deposition of gonococci in the mouth of the urethra. The diplococci lie deposited on the surface for 2 or 3 days before causing any visible signs of inflammation or discharge. If immediately after intercourse a man micturates and bathes the penis and particularly the mouth of the urethra with hot water and soap, he washes off all gonococci and escapes infection. (The above is especially true if he inuncts himself before and after intercourse with 33% ung. hydrarg. subchlor.) After the lapse of a few hours syringing the anterior part of the urethra with weak permanganate solution is enough. Later on, up to the 4th day, injection (t.i.d.) of 20% argyrol, which is retained in the urethra with forcipressure for 10 to 15 minutes, is enough. When this period is over and gonococci have penetrated into the deeper layers of the mucous membrane, when the desquamation of that membrane—as indicated by the flow of thick pus—is going apace, and the inflammation is rapidly advancing along the whole length of the urethra (taking about 7 days to spread to the prostate), no antiseptic that we know of can penetrate the necrotic mucous membrane, and we have to rely either on the establishment of natural immunity (as in olden days), which takes on an average 10 weeks, or on the administration of sulphathiazole, which effects a cure in these advanced cases in 2 or 3 weeks—not 2 or 3 days.

Sulphathiazole and sulphapyridine are wonderful remedies, but why employ them in very early cases when simpler methods are equally useful, less expensive, and less dangerous?

Since writing my note (*Journal*, Nov. 21, p. 617) I have consulted the latest edition (1941) of the *Extra Pharmacopoeia*, and there in vol. i on p. 946 I find Col. Harrison's earlier advice (not to use sulphonamides for 3 weeks) given in full as a warning to intending users of this group of drugs in early cases. Certainly it is advisable for authorities like Col. Harrison—to whom humbler practitioners like myself look for advice and guidance—to issue a public recantation of their earlier views whenever such views undergo a revolutionary change.—I am, etc.,

Manchester
M. R. SONI.

Service Cases of Venereal Disease on Demobilization

SIR,—With reference to the letter from Drs. David Erskine and V. E. Lloyd (Nov. 21, p. 617) on the need for the prevention of temporary or permanent default from treatment in Service patients discharged from the Army after the armistice, may I make additional suggestions.

I suggest that *all* members of the Services and the Civil Defence organizations should undergo a Wassermann and a Kahn test before discharge to civil life. There are three main reasons for this suggestion. First, there are bound to be syphilitic infections that have escaped the notice of both the medical officer and the patient. Secondly, it will save a great deal of annoyance and expense when wound pensions come to be granted, both in the immediate post-war period and later; and, finally, it gives us the golden opportunity of doing mass blood tests on the great majority of that portion of the population on whom the country will depend in the difficult years to come. This could prevent some of them becoming those patients with tertiary syphilis who are never even aware that they are diseased, and who will eventually become a liability rather than an asset to the community. Those found to be infected could then be warned of their condition, and told of the need for treatment. Obviously, only a small proportion of these cases would go to a treatment centre, public opinion and ignorance of V.D. being what it is. It is up to us to start a widespread fearless and informative publicity campaign immediately, so that public opinion will not prevent these people from seeking treatment when they are demobilized.

Only if we make the most of this opportunity shall we be able to prevent the increased incidence of congenital and tertiary cases later on, as well as the epidemic of early syphilis which Drs. Erskine and Lloyd have warned us will follow demobilization of specific cases who do not continue treatment.—I am, etc.,

Grimsby
PHILIP SILVER.

Stilboestrol and Deep X Rays for Sarcomatous Metastases

SIR,—Prompted by your annotation in this week's issue (Nov. 28, p. 641) on the use of stilboestrol in the treatment of cancer of the prostate, I am sending you the following account of a case which is, I think, noteworthy, inasmuch as a large metastatic deposit from an osteogenic sarcoma of pleomorphic cell type has almost entirely disappeared following a course of deep *x*-ray therapy combined with the injection of stilboestrol in comparatively large doses.

The patient was 18 years old when first seen at this centre on March 4, 1941. She had a tumour of the upper end of the tibia, showing irregular absorption and sclerosis of bone. An intensive course of deep *x*-ray treatment was given to the tumour but no response occurred, apart from relief of pain, and radiographs showed that bone destruction was continuing. Consequently the leg was amputated at the junction of the middle and lower thirds of the femur on Oct. 21, 1941. Healing occurred without incident and all looked well until June, 1942, when she was found to have a lump in the groin, 6 cm. in diameter. Deep *x*-ray treatment was given to this metastasis in July, and, as in the case of the primary growth, no response took place and the mass began to ulcerate in August. As a last resort it was decided to try the insertion of radium needles, but before this could be done serious haemorrhage began from involvement of the femoral vessels or their branches. Consequently the external iliac artery was ligated on Sept. 14.

From consideration of the known properties of stilboestrol, its actions and molecular structure, I decided to try the effect of administering it in conjunction with deep *x*-ray treatment.

The result has been striking. The huge fungating tumour has gradually disappeared, leaving a remarkably clean cavity, in parts of the walls of which a small amount of tumour tissue is still present, and the process of healing is continuing. The ulcer, which was at one time 8.5 cm. in diameter, has decreased to 3.5 cm. × 5 cm. Another extraordinary feature of the case is the sharp definition of a metastatic deposit in the lungs. A curious pyrexia has been observed. After an initial fall, the temperature rose gradually to a maximum of 101° F. and then fell again, equally gradually, the whole cycle of pyrexia extending over a fortnight.

The initial dose of stilboestrol was 5 mg. intramuscularly daily for one week, increased to 7½ mg. daily for twelve days, when, owing to the development of the pyrexia, it was discontinued. After a fortnight the stilboestrol was recommenced, 10 mg. being given intramuscularly daily for 22 doses. The *x*-ray treatment given to the metastatic deposit was 200% S.E.D. in 17 days at the surface of the tumour, the depth dose at the deeper parts being 85%. The patient's general condition has improved recently; the temperature has fallen to normal and she is putting on weight.

The points of special interest are: (1) The primary growth is an osteogenic sarcoma and the pathological examination shows it to be a spindle-celled growth but with marked pleomorphism of the cells. (2) The primary growth did not respond to irradiation, as shown by repeated *x*-ray films. (3) The metastatic deposit also did not respond to *x*-ray treatment until this was combined with stilboestrol injections.

I am treating another patient, who has an osteochondrosarcoma of the femur with recurrence in the stump, in a similar way, and although the effect is not so striking I think some slowing down of the rate of growth of the tumour has taken place. I am loath to publish reports of cases which may be premature and where sufficient time has not elapsed nor a sufficient number of cases treated to establish the value of any treatment with certainty, but deep *x*-ray work has come to a complete standstill at this centre on account of lack of supplies, and there may be no possibility of my resuming the investigation for some considerable time. As will be seen, the amount of *x*-ray treatment is below the maximum tolerance dose, and it may be that the metastatic growth in the lungs might be equally responsive to treatment.

In view of the fact that the workers mentioned in your annotation have used stilboestrol alone I may be permitted to add that I think the regression in my case was due to the combined effect of irradiation and stilboestrol, and the effect may not be specific, and may well apply to other radio-resistant tumours.—I am, etc.,

Regional Radium Centre, North Staffordshire Royal Infirmary. GEORGE G. BINNIE.

Phosphorus Poisoning from Bullet

SIR,—It was with great interest that I read of the case of Mr. A. J. Blaxland (Dec. 5, p. 664), as I had a similar case a short time ago.

This was an engine driver, aged 55, who was machine-gunned and wounded by a 'plane returning from the Canterbury raid. He had a perforating wound of the abdomen, the point of entry being just above the left anterior superior spine. *X*-ray examination showed a part of the bullet casing high up in the abdominal cavity. On exploring the wound it was immediately noticed that the whole track was smoking profusely when exposed to the air. A white vapour, which was extremely irritating to the nose and eyes, issued from all the damaged tissue. The bullet casing was found in the cavity of the stomach, having penetrated the transverse colon and the greater curvature. All the smoking tissue was excised and the wounds of the intestine and stomach were closed. The abdominal cavity was swabbed out; sulphonamide powder was applied and the wound in the abdominal wall was closed, drainage being effected by a suprapubic tube. The post-operative condition was satisfactory. He was given intravenous plasma followed by glucose and saline. He made good progress at first, but soon began to develop a severe toxaemia with anuria. Coma supervened, and he died on the fifth day after operation. At no time during this period was there any suggestion of peritonitis. He had no vomiting and his bowel action was normal.

At the time I felt the patient had succumbed to some toxic process which in all probability was phosphorus poisoning. Unfortunately a post-mortem examination was not possible.—I am, etc.,

Folkestone. J. W. D. BUTTERY.

Saline Laxatives in Dysentery, etc.

SIR,—I hope Col. Hamilton Fairley, who will recall making much use of my pathological slides after the last war, may be interested in the comment that his remark (Dec. 5, p. 673) "magnesium sulphate treatment should not be continued over too long a period, as it sometimes tended to keep up the diarrhoea" suggests that the dosage of magnesium sulphate has been too small. It always seems a paradox that sodium and magnesium sulphates should be used in the treatment of dysentery, and the paradox is increased by the fact that formed stools are frequently passed even while large doses are being given. I have frequently had to order other laxatives when patients were taking 1 oz. or more of magnesium and sodium sulphate in the 24 hours, and have even seen crystals—presumably of magnesium sulphate—sparkling in the motion.

The fact seems to be that the intestinal canal can quickly accommodate itself to high concentrations of cathartic salines—witness the man who for years took 2 oz. of solid magnesium sulphate every morning—and the curative effect of salines in dysentery is probably to be attributed to this power. This property, if judiciously used, enables us to apply what is, in effect, continuous hypertonic saline treatment to the ulcerated areas, which presumably, like other ulcers, do not have this power of adaptation. At the start of treatment there is the usual cathartic flush of fluid, which sweeps away the tenacious mucus that is largely responsible for the pain and tenesmus, and it will do this for both types of dysentery. The amoebic ulcers, however, will not heal because of the amoebae deep in the mucosa, but continuing with a sufficient dosage of salines will usually lead to healing of the bacillary type, just as hypertonic saline leads to healing of other infective ulcers.

While this view is largely theoretical, though supported by reading and experience, it has a bearing on two clinical problems of first-class importance. If it is correct a similar saline treatment should be effectve in typhoid fever. If applied early enough it should lead to healing of the ulcers before formation of the sloughs, it should certainly check the profound toxaemia, and, incidentally, allow food to be taken without harm. Unfortunately, I had left the Near East before this idea occurred to me, so I could not make any clinical observations on the matter, but I feel sure it is well worth trying. The other clinical application I would suggest is that it ought to be possible to apply hypertonic treatment to gastric and duodenal ulcers also. Here, however, there is no real need to have a hypertonic solution of an unabsorbable substance, as we must if we wish to treat the lower bowel. Frequent doses of fairly concentrated glucose would seem to be an attractive method of treatment. Sugar is an old and also effective treatment for ulcers, and probably acts largely on the hypertonic principle. Glucose would afford the gastric ulcer case much-needed nourishment, and the thirst which would probably ensue could be relieved by ice and rectal salines. Probably other foodstuffs could soon be taken along with the glucose without much, if any, danger.—I am, etc.,

Winsford, Cheshire W. N. LEAK.

Teaching First Aid

SIR,—May I be allowed heartily to endorse Dr. E. W. Adams's plea (Dec. 12, p. 707) for a common textbook for the teaching of first aid. The very fact that the differences in the two books of the St. John Ambulance Brigade and the Red Cross are nearly all in matters of detail makes it all the more difficult to remember them, and that same fact should make it easy for the societies, with a little mutual good will, to evolve a common textbook. They might at the same time take their courage in their hands, cut out some of the elaborate methods, and teach real emergency practical first aid: such quick and efficient ways have come to light under recent stress. For example, when the 8-bandage method for fractured femur was evolved the importance of treating the patient rather than concentrating only on the lesion, with the consequent increase in shock, had not been realized. It is also rather typical that three methods of treating fractured clavicle are given in the Red Cross manual with a rather apologetic note that the third method is the best; why not put the best method first and cut out or at least refer shortly to the other two? The treatment of fractured jaw, again, is, in most surgeons' opinion, not only out of date but dangerous. I refer to the bandage pulling the jaw backwards. It is worse than silly that we should be expected to teach such things for examination purposes.

I speak as a teacher of first aid from both manuals of over 25 years' experience.—I am, etc.,

Chippenham GEO. LAURENCE.

Blood Pressures after Injection of K Salts

SIR,—In the course of some work on stimulants of the autonomic nervous system we have repeated as faithfully as possible Dr. Lena Stern's treatment for shock as described in the *Journal* of Nov. 7 (p. 538). We chose three psychotic patients who were not shocked and had no marked disturbance of the vegetative nervous system; thus the results may not be comparable but are still of interest. Eleven cisternal punctures were performed on the three patients—five on one, four on a second, and two on the third. We obtained a definite primary rise in blood pressure on one occasion only, from 160/85 to a maximum of 240/105 in four minutes by the injection of the potassium phosphate made up to the strength and pH described and kept in neutral glass. The pulse rate fell from 92 to 50 in the same time, though the beat was stronger than beforehand. Our complete results on the blood pressures and pulse rates were as follows:

Case 1

	Time(min)	0	3	8	11	13	15	18	20	26
A	B.P. ..	165/90	95/50	120/60	135/70	145/70	145/70	140/70	135/65	120/60
	Pulse .	100	55	60	80	78	80	82	64	60

	Time:	0	2	4	6	11	16	19	28
B	B.P. ..	180/90	180/80	140/75	140/75	185/80	210/95	205/95	190/90
	Pulse.	78	56	56	56	60	—	78	76

	Time:	0	3	4	10	13	25
C	B.P. ..	170/80	75/35	90/40	85/40	105/55	155/75
	Pulse ..	74	—	52	—	56	84

	Time:	0	4	8	15	25
D	B.P. ..	160/85	240/105	185/65	170/90	180/80
	Pulse ..	92	50	54	58	68

	Time:	0	1	2	4	6	9	14
E	B.P. .	160/85	125/55	80/35	85/35	110/50	145/70	170/80
	Pulse ..	98	78	60	60	58	64	68

Case 2

	Time·	0	2	5	9	17	24	35
A	B.P. ..	150/95	155/95	140/90	150/95	125/85	130/90	125/85
	Pulse ..	72	120	128	116	108	100	100

	Time:	0	4	15	25	38
B	B.P. ..	125/75	135/90	115/75	125/80	120/75
	Pulse ..	78	92	79	80	82

	Time:	0	3	7	22	29
C	B.P. ..	140/85	150/90	130/75	135/85	130/85
	Pulse ..	88	100	88	84	76

	Time·	0	2	10	15	20	28	33	37	50
D	B.P. ..	145/90	125/80	115/75	115/75	125/80	145/90	120/80	125/80	110/75
	Pulse ..	76	95	92	80	76	64	64	62	66

Case 3

	Time:	0	4	7	13	18
A	B.P. ..	135/75	115/80	140/80	120/70	125/70
	Pulse ..	72	68	80	76	74

	Time:	0	3	6	18
B	B.P. ..	125/70	135/75	140/85	120/80
	Pulse ..	76	88	76	—

Among the other changes observed when the solution was injected under "definite pressure" were sweating, nystagmus, headache, vomiting, and on one occasion hiccup. It appears that the treatment must be undertaken with considerable caution in view of the fact that there may be indications of medullary shock. It is of note that the respirations altered very little, even when the other symptoms were pronounced.—We are, etc.,

JOHN A. AINSLIE.
Netherne Hospital, Coulsdon E. CUNNINGHAM DAX.

Scientific Journals for Enemy Prisoners of War

SIR,—In response to letters in the *New Statesman and Nation* (July 18, 1942), *Nature* (Oct. 3, 1942), and the *British Medical Journal* (Oct. 17, 1942), 58 people have so far sent 2,170 reprints and journals and 34 books on academic and technical subjects for the use of scientists and medical men who are enemy prisoners of war in British hands. Nearly all the papers have been classified according to subject. The special interests of prisoners at the various camps are known, and parcels containing 956 papers and journals have already been sent to 32 camps. So far only a small part of the demand has been met.

Those who are willing to contribute reprints, journals, or books on scientific, technological, medical, or mathematical subjects are asked: (1) to address parcels to me at the address given below; (2) to write their own names and addresses on the *outside* of their parcels with the letters "S.P.P." (which stands for "scientific papers for prisoners"); (3) to use plenty of packing paper if it is available (a lot is needed in repacking parcels according to the needs of the various camps, and all will eventually be salvaged); and (4) to be patient in waiting for acknowledgments of parcels sent (as the classification, packing, and correspondence are done by my wife and myself in such time as is not occupied with work and civil defence).

The S.P.P. organization, which has the approval of all the authorities concerned with the welfare of enemy prisoners of war, works through Mr. J. W. Barwick of the War Prisoners' Aid section of the Y.M.C.A.—I am, etc.,

Burnt Oak, Kidlington, JOHN R. BAKER.
Nr. Oxford

Obituary

The death took place at York on Nov. 10 of Dr. ELISABETH SARAH MARPLES SYKES, for some years assistant medical officer and radiologist at the West Riding Mental Hospital, Wadsley, near Sheffield, and afterwards at Storthes Hall, near Huddersfield. She was the youngest daughter of the late Rev. W. Sykes of Sheffield, and Dr. Annie Dodgson Rayner of Bournemouth is her sister. Dr. Elisabeth Sykes studied medicine at Sheffield and graduated M.B., Ch.B. of the University in 1925; before entering the mental hospital service she held the post of extra-mural assistant honorary physician to the Royal Hospital, Sheffield. She joined the British Medical Association in 1927 and was a member of the Royal Medico-Psychological Association and the Medical Women's Federation.

Dr. IVOR LLOYD TUCKETT of Cowes, Isle of Wight, died on Nov. 28. He was born in London on Feb. 1, 1873, the son of Philip D. Tuckett, and after eight years at Marlborough College went up to Trinity College, Cambridge, and then to University College Hospital. He qualified M.R.C.S., L.R.C.P. in 1898 and returned to Cambridge to become senior demonstrator of physiology and assistant to the Downing Professor of Medicine. He was elected a Fellow of Trinity, and proceeded M.D. in 1910. Before leaving London he had been house-physician at U.C.H., and his interest in ophthalmology began while house-surgeon at Moorfields. He joined the B.M.A. in 1912, was chairman of the Isle of Wight Division, and president of the Southern Branch in 1937-8. F. C. E. writes: By the death of Ivor Lloyd Tuckett we are bereaved of an outstanding personality and intellect. His researches on the functions of the pancreas in diabetes—starting on the trail which afterwards led Banting to insulin—made us all expect for him a career of brilliant fruitfulness. But, alas! he had driven himself too hard, and a nervous breakdown compelled him to limit himself to ophthalmic practice in the Isle of Wight. He was greatly interested in psychology and submitted himself to analysis. Always a fearless crusader after truth, he published in 1911 a book, *Evidences for the Supernatural,* in which his skilful pen and critical insight usefully exposed a great deal of nonsense and humbug. This reappeared later in a cheap edition. An inheritor of modest wealth, his chief pleasure was in sharing its amenities with others and in generously helping the less fortunate. Cruising and racing in small yachts was his principal hobby, and he won several of the coveted trophies at Cowes. There will be many, like myself, who mourn the irreplaceable loss of a wonderful friend with a delightful sense of humour all his own.

Dr. JOHN PERCIVAL BROWN of Bacup, Lancs., died on Nov. 30. Born at Bacup in 1878, he was educated at Manchester Grammar School and Victoria University, Manchester, graduating M.B., Ch.B.Vict. in 1900. After holding resident posts in Manchester and Macclesfield, he joined his father, the late Dr. John Brown, in general practice. The remainder of his life was devoted exclusively to service in his native town, until failing health compelled him to cease work twelve months ago. In 1913 he succeeded his father as M.O.H. for Bacup, a position which, between them, they held for fifty-four years. He was a member of the B.M.A. for over forty years. Dr. Brown was a corps surgeon in the St. John Ambulance Brigade, and was actively interested in the movement since the formation of the local divisions about fifty years ago. In 1926 he was appointed an Officer of the Order of St. John. During the last war he did valuable Red Cross work. Throughout his life Dr. Brown was keenly interested in historical medicine and legal medicine, and he rarely missed a meeting of the Manchester Medico-Legal Society, of which he was a member. He is survived by his wife, two daughters, and a son, Surg. Lieut. Douglas J. A. Brown, R.N.

We regret to announce the death at the age of 51 of Dr. MELVILLE ST. CLAIR HAMILTON of Tiverton. He was the youngest of three brothers, all of whom followed their father in the medical profession, and at the outbreak of the last war he was studying at St. Thomas's Hospital. After qualifying M.R.C.S., L.R.C.P. in 1916 he was accepted for a regular commission in the R.A.M.C., serving in France, and later in Italy and Turkey, also with the Army of Occupation and with the Expeditionary Force at Archangel. In 1923 he resigned his commission through ill-health, but after long treatment was able to resume work and practised in North Wales until he joined his brother, Dr. A. Keith Hamilton, at Tiverton, where he showed keen and practical interest in many local organizations. During the present war he acted as M.O. to the 20th Devon Battalion of the Home Guard, and undertook the task of organization and instruction with characteristic thoroughness.

We regret to record the death of Dr. JOHN ORLANDO SUMMERHAYES of Newhaven after an operation in London. Born at Ealing on Feb. 7, 1869, the son of William Summerhayes, M.D., he was educated at Yarmouth Grammar School and St. Mary's Hospital, qualifying as M.R.C.S., L.R.C.P. in 1891. In 1898, after holding several appointments, he went out to India as surgeon-in-charge of the C.M.S. Hospital at Quetta, returning eight years later to practise at Thame. Summerhayes had a distinguished record in the Territorial Force: he had been medical officer to the 1/4 Oxford and Bucks Light Infantry and went out to France as lieut.-col. R.A.M.C.(T.F.) commanding a field ambulance and won the D.S.O. for gallantry and devotion to duty. Soon after the war he was in charge of a special military mission to prisoners of war in Austria, Hungary, Czechoslovakia, and Silesia. After returning to civil life at Thame he served as chairman of the Oxford Division of the B.M.A. in 1923-4, and president of the Oxford and Reading Branch in the following year. He then moved to Newhaven, where he built up a large practice and became police surgeon and medical officer to the local infirmary. He was elected to the East Sussex Insurance and Panel Committees and had served as chairman of the former since 1934. His colleagues of the Brighton Division of the B.M.A. elected him their chairman in 1932. At headquarters in Tavistock Square he had been a member of the General Medical Services Scheme Committee and of the Naval and Military Committee.

The death is announced from Moscow of Prof. MAXIM KONCHALOVSKY, president of the All-Union and Moscow Therapeutic Association and of the All-Union Association for the Study of Rheumatism, and also vice-president of the International League for Combating Rheumatism. Prof. Konchalovsky took part in international congresses in Paris, Brussels, Budapest, and Moscow, and was a leading member of the Scientific Medical Council of the People's Commissariat for Health Protection of the U.S.S.R. He published some 200 works, including textbooks, monographs, and scientific articles.

The following well-known medical men have died abroad: Prof HEINRICH FINKELSTEIN, at Santiago, Chile, the eminent Berlin paediatrist, author of a work on diseases of infants, and honorary Fellow of the Royal Society of Medicine, aged 76; Dr. MANUEL CORACHAN, professor and director of the Institute of Experimental Surgery at the University of Caracas and author of works on gastric surgery, arthropathy, and arteriography, aged 62; Dr. GEORGE W. HALL, clinical professor of neurology at Rush Medical College, Chicago, from 1925 till his death, aged 72; and Dr. ALFRED S. TAYLOR, professor in operative surgery at the College of Physicians and Surgeons, New York, aged 73.

The Services

DEATHS IN THE SERVICES

We much regret to announce the death at the ripe age of 85 of Lieut.-Col. DIROM GREY CRAWFORD, the historian of the Indian Medical Service. He was born in 1857, during the Indian Mutiny, at Chinsura in Bengal, took his medical degree at Edinburgh University in 1881, and gained a high place in the entry for the Indian Medical Service the same year. After the necessary short and uneventful period in military employ, he joined the Bengal Medical Department in 1884 and remained in that Province for the rest of his service, mostly as civil surgeon of the Hugli District, a little north of Calcutta and near his birthplace. In 1903 he published *A Brief History of the Hugli District* and the *Hugli Medical Gazetteer.* He was a sound civil surgeon with a special aptitude for administrative work, and it was unfortunate that he had to retire under the age rules without attaining to administrative rank. During the war of 1914-18 he served at home in hospital ships, was mentioned in dispatches, and was awarded a star and two medals—the only recognition he appears to have received during his long service. Crawford's great occupation in life was historical medical research. His interest in the subject was aroused as early as 1884, when he was resident surgeon at the Calcutta Medical College Hospital, by an article on "Surgeons in India, Past and Present," by Norman Chevers, who was himself the author of the classical *Commentary on Diseases of India.* Crawford began to collect further names, and in time added some 250 to the old list, which covered seventy-four years. He never ceased work at it until the publication in 1930 of his monumental *Roll of the Indian Medical Service 1615–1930.* In 1901 he began another great task by undertaking, at the request of the then editor of the *Indian Medical Gazette,* Major W. J. Buchanan, I.M.S., to write a yearly article entitled "Notes on the History of the I.M.S." In 1914 these chapters, with considerable additions, were published in two handsome volumes as a *History of the Indian Medical Service.* This comprehensive work goes back to the surgeons of the sixteenth century who visited India, and it was only rendered possible by Crawford devoting much of his leave home to studies of the dusty records at the India Office with an assiduity given to few to emulate. All this work eminently qualified him to write accurate and terse obituary articles on his brother officers for the *British Medical Journal* for over twenty-five years, a labour of love in which he can never be equalled. Crawford was a man of the most modest and retiring nature and, although his erudition was universally admired, he had few intimate friends. Those who knew him best had the highest opinion of his good qualities, and some thought that his classical education, wide knowledge, and remarkable powers of application would have found greater scope in the Indian Civil Service; but his brother officers of the I.M.S. are proud to regard him as one of their most erudite members. Although extremely modest as regards his own achievements he was quick to notice and encourage scientific and other work by younger members of his Service. Another of his interests was the collection of all books, medical and non-medical, published by I.M.S. officers. A few years ago he gave this unique and valuable collection to the Royal

Society of Tropical Medicine and Hygiene, in whose library they are preserved together in a separate bookcase for future reference. Crawford never fully recovered from the shock of the loss of his wife only a few years ago, and although he continued to attend the annual I.M.S. dinners up to the time of their cessation during the present war, his health and his sight were observed to be failing. It can truly be said that we shall never see his equal again in the field he made for himself, but he so completely fulfilled his self-allotted medico-historical task that he has left nothing for a successor to do, except it be to write the obituary notice of the Indian Medical Service with the approaching abrogation of British rule in India, not the least of the benefits of which rule has been the work of the I.M.S., of which Crawford was an ornament.

Surg. Cmdr. Elystan Glodrydd Evelyn O'Leary, R.N. (ret.), died at Newtonmore, Inverness-shire, on Nov. 8. He took the M.R.C.S., L.R.C.P. in 1894 and the F.R.C.S.Ed. in 1907. Entering the Royal Navy soon afterwards, he attained the rank of surg. cmdr. in 1912, and retired nearly 20 years ago. He served throughout the war of 1914–18, receiving the medals.

Col. Robert Reginald Heber Moore, C.B.E., late R.A.M.C., died at Cheltenham on Sept. 27, aged 84. He was born at Liverpool on April 8, 1858, son of the Rev. Canon Thomas Moore of Midleton College, Co. Cork, and was educated at Trinity College, Dublin, where he graduated M.D., B.Ch. in 1890, having qualified L.M., L.Ch. in 1881. Entering the Army in 1883, he became lieut.-col. after twenty years' service, and retired in 1912. He rejoined for service during the war of 1914-18, when he was employed as D.A.D.M.S., Eastern Command, and was given a brevet colonelcy in 1917. He was appointed a C.B.E. in 1919.

Lieut.-Col. Frederick George Faichnie, R.A.M.C. (ret.), died in London on Oct. 30. He was born in India on May 30, 1870, was educated at University College, London, and took the M R.C.S., L.R.C.P. in 1890. He entered the Army in 1892, became major in 1903, and retired in 1912. He served on the North-West Frontier of India in 1897-8 (medal with clasp) and throughout the South African War of 1899-1902, when he took part in the relief of Ladysmith, including the actions of Spion Kop, Tugela Heights, Vaalkranz, also in operations in the Orange River Colony, Transvaal, Cape Colony, and Natal, including Laing's Nek. He was twice mentioned in dispatches and received the Queen's medal with five clasps and the King's medal with two clasps During the war of 1914-18 he was recalled for duty and served as assistant officer in charge of R.A.M.C. records, with the rank of lieut.-col. He was a brother of the late Col. N. Faichnie, R A.M.C., and leaves a widow.

Major-General Alexander William Montgomery, C.B., I.M.S. (ret.), died suddenly on Dec. 2. He was born on April 4, 1881, and studied medicine at the University of Edinburgh, graduating M.B., Ch.B. in 1902. In the following year he entered the I.M.S. as lieutenant, was promoted captain in 1906, major in 1915, lieut.-colonel in 1923, brevet colonel in 1926, substantive colonel in 1932, and major-general in 1935. General Montgomery was Honorary Surgeon to the King 1933-7, and was awarded the Companionship of the Bath (Military Division) at the time of his retirement from the I.M.S. His last appointment in India was that of D.D.M.S.

Col. Cecil Charles Murison, I.M.S. (ret.), died at Wrington, Somerset, on Sept. 20, aged 68. He was born on Jan. 2, 1874, and was educated at the Edinburgh extramural school, taking the Scottish triple qualification in 1898. Later he took the certificate of the Royal Medico-Psychological Association, the D.P.H. of the Edinburgh Colleges in 1909, and the D.T.M. Liverpool and the F.R.C.S.Ed. in 1910. Entering the I.M.S. in 1900, he became lieut.-col. in 1910, col. in 1917, and retired in 1931. He served in East Africa, in Somaliland, in 1903-4 (medal with clasp); in the war of 1914-18, in France and Belgium, 1914-15, in Egypt, 1916, and in Iraq, 1916; on the North-West Frontier of India in 1917-21, in the Maksud campaign, 1917, and the Marri expedition, 1918; and was mentioned in dispatches in 1918. Later he served in India as A.D.M.S. and for a time as D.D.M.S. in the Eastern Command, India. He had been a member of the B M.A. for 42 years.

Col. James Fuller-Good, I.M.S.(ret.), died at Fleet, Hants, on Oct. 27, aged 68. He was born on Oct 14, 1874, was educated at Queen's College, Cork, and graduated M.B., B.Ch., B.A.O. of the Royal University of Ireland in 1899. He entered the I.M.S. in 1900, became col. in 1928, and retired in 1931. He served in the war of 1914-18 and was mentioned in dispatches in 1916. For some years he was superintendent of the medical school at Rangoon and, as A.D.M.S., served in Waziristan. He had been a member of the B.M.A. since 1901.

Lieut.-Col. Albert Coleman, I.M.S. (ret.), died at Grenoble on Oct. 2. He was born on Dec. 20, 1862, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1887. Entering the I.M.S. in 1887, he became lieut.-col. after twenty years' service, and retired in 1921. He served in Burma in 1887 (medal and clasp); in the Chin Lushai campaign of 1890 (clasp); and in the Manipur campaign of 1891 (clasp). He was appointed to civil employ in the Punjab in 1893 and spent the rest of his service in that Province, except that he reverted to military duty from Feb., 1916, to April, 1917.

Lieut.-Col. Charles Ross Pearce, I.M.S. (ret.), died at Bath on Nov. 19. He was born on June 24, 1868, the son of Stephen Pearce, artist, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1892. He entered the I.M.S. in 1894, became lieut.-col. after 20 years' service, and retired in 1922. He was a member of the B.M.A. for 20 years.

Universities and Colleges

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

Final M.B, Ch.B.—Shirley G Barrett (Mrs Ashton), S Falk, A. I Goodman, S. Grace, R. Greenwood, H. Lempert, J Whewell. *Part I*: J R Archibald, H L. Brisk, J Hinchliffe, S B. Rampling

UNIVERSITY OF DUBLIN

The Board of Trinity College, Dublin, has invited Prof. J. M O'Connor, M D., professor of physiology in University College, Dublin, to deliver the John Mallet Purser Lecture in 1943

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council held on December 10, with Sir Alfred Webb-Johnson, President, in the chair, it was decided that the voting papers for the 1943 Council election be sent by air mail to Fellows over-seas whose address is recorded at the College

The Hallett Prize was not awarded on this occasion.

Diplomas of Fellowship were granted to the following candidates: R. A. Piachaud, N. F. Kirkman, S. C. Mehta, R. Roaf, J. P Bentley, B. N. Brooke, W. Thompson, D. K. Sambrook, J. P. Childs, H A Haxton, D. K. Lennox. A diploma of Membership was granted to G. H. V. Clarke.

Diplomas in Anaesthetics were granted jointly with the Royal College of Physicians of London to the following candidates:

E. H. Ainslie, Evelyn J Attkins, L B. Bourne, A Christie, P. J De Vescovi, J. Elliott, G A Hart, J A. G. Horton, Brenda G Hutchinson, I. R Jones, H G Kahlenberg, Isabelle G. Little, Florence M McClelland, Margaret McClelland, T F Miles, Dorothy S Price, E. N Price, Shila G Ransom, Alice C. Rose, J B. Scarr, T Sim, A D H. Simpson, Dorothy Spence-Sales, R J. Stout, C G Townsend, J T Worsfold, Jean R Young

Medical Notes in Parliament

Venereal Disease and Regulation 33B

In the House of Lords on December 8 Lord Winster asked the Government what was their policy in relation to venereal disease. He said he understood that there had been already complaints from the American and Canadian Service chiefs, especially about London, and the matter was therefore of particular urgency to-day. We had a duty to those countries in this respect, and Regulation 33B showed that we were trying to do something.

Viscount Dawson of Penn said that in the 10 years before the war there was a satisfactory decrease in venereal disease, but since the war began there had been a reversal in the trend, and we were now in about the same position as in 1932. There had been an increase of 70% in the number of cases. The increases were chiefly in the ports. In 7 ports, comparing 1939 and 1941, there had been a rise in the figures from 942 to 1,909. There had been a steady increase in the treatments given to civilian women—45.9% in the case of syphilis and 29.3% in the case of gonorrhoea. That led to the reflection that we were not dealing with the same problem as our forefathers were, even in the last war. The women open to contract these diseases belonged to more classes than they used to do. The professional class, who gained their livelihood and must of necessity be promiscuous, were relatively decreasing. There was a second class, the so-called amateur, who got her own living, but who was irresponsible in temperament, and set out to get pleasure from the men who attracted her, and profited by the amusements they gave her. In some respects this was the most dangerous class of all. A third class, which must not be altogether ignored, was that of girls of good repute who, no doubt, would in future become mothers, and who set up friendly relations which embraced sex relations. There was, he thought, an increasing number of venereal infections arising in these circumstances.

Treatment as an Infectious Disease

Lord Dawson said he could not see how this illness could logically or sensibly be treated except under the Public Health Acts, in the same way as other infectious diseases. If that system could be applied to such diseases as typhoid why should it not be applied in the case of venereal disease? There were two sets of difficulties to be met. The first was in regard to notifications. Up to now, venereal diseases had not been notifiable, but that was purely a matter of tactics and expediency. He thought that people would be more frightened and more anxious lest they should be discovered. That was the opinion of most health authorities. The question of treatment was different. Apart from those who were afflicted and went to the clinic and carried out treatment, there was an irresponsible residue of persons—they were not vicious, they were feckless and lived for the day; in other words, they had the faults that brought them to grief—who would be responsible for multiple infections. That hard core of irresponsibles must be dealt with.

In his judgment Regulation 33B had been most carefully thought out and was the best in the circumstances. It was no longer an offence, as in the last war, to have intercourse with the opposite sex if one were infected, but it was an offence not to go for treatment, which was a purely personal question. There was this protection, that if the doctor as the head of the clinic got to know of the woman concerned from his men, and if suspicion fell on one or two women from more than one source, then the doctor would report this woman secretly to the medical officer of health, and it would be for the medical officer of health to take steps, with the permission of a justice or a court of summary jurisdiction, to secure compulsory treatment. He could not think that anything serious was likely to occur in such cases, and at any rate what might occur would be better than letting people spread disease in an irresponsible way.

Preserving Secrecy

Dealing with the matter of preserving secrecy, and preserving the belief of people in secrecy, Lord Dawson said that that was one of his reasons for hesitating before compelling notification. He was afraid the effect on the ordinary layman's mind would be to make him think that notification would mean publicity. Since secrecy was promised some years ago in connexion with venereal disease, he believed there had been three occasions on which it had been thrust aside in a court of justice. It was worth while to consider soberly the general question of medical privilege which was here involved.

He thought Regulation 33B was a good advance, and was right and wise. It was a step from which they could go still further if necessary. He agreed that we required more centres, but the House should remember that the country was suffering from a very grave depletion of the medical profession at present—a far greater depletion than was ever anticipated when the war began. Efforts had been directed to increasing the numbers of these centres, but it was obvious that in wartime that could not be done so expeditiously as in time of peace. He was, however, quite confident that the best that could be done was being done.

Lord **Atkin** said he sympathized with the criticism of Lord Dawson about the compulsion on doctors in courts of law to disclose the treatment of a patient for venereal disease. To his mind, medical privilege, in circumstances of this kind, was a national necessity because people would avoid going to doctors if they knew that a doctor could be compelled in a court of law to disclose the information in his possession. He saw every reason for protecting the doctor in regard to communications in that respect.

Objections to the Regulation

Lord **Snell** said the Government's policy was based on the principles laid down by the Royal Commission of 1913-16. That policy had reduced the incidence of the disease, but it had risen again during the war. The problem was increasing in gravity—but the measures to meet it were also growing. At present there were 249 clinics in Great Britain where free and confidential treatment was given. Eighteen of these had been opened since the war began; 5 were now being prepared and would shortly be opened; and there had been started a new scheme for rural areas providing for free treatment under special practitioners in the latter's own surgeries. There were 109 of these special practitioners serving 74 areas in 11 counties. Special attention was also being given to the Merchant Service at ports, because these men represented a very special need.

Regulation 33B had given rise to some controversy. There were two separate views in this matter. There were those who said the provisions of the Regulation were too weak and that it was bound to be ineffective because it did not go far enough. They pointed to the experience of Sweden, which had had compulsory notification for the last 25 years and which had a lower rate of incidence than we had. The view of the Ministry of Health was that this lower rate of incidence might not be the result of compulsion. Sweden had a population of 6,500,000—less than that of Greater London. Its population was scattered mostly over rural areas, and the country had a very highly developed sense of communal responsibility. Then there were those who opposed compulsion in any form. The argument was that women would be mainly subject to its operation and not men; that they would be deterred from undergoing early treatment since they would wait for compulsion to be applied; that a false sense of security would be created among those who indulged in promiscuous sexual intercourse because fear of infection acted as a deterrent; that the Regulation relied on an "informer" for its operation; and that an innocent person had no redress if thoughtlessly accused.

Compulsion under the Regulation extended only to a group of persons, small in number but responsible for much harm, who were impervious to methods of education and persuasion, and refused to attend voluntarily. He thought that the anxiety as to a false sense of security rested on a false idea about the clearance certificate itself. A doctor would be unlikely to issue this certificate until he was medically satisfied that it was safe to the community to do so. Then the certificate was not kept by the contact but was sent at once to the medical officer of health. There were heavy penalties for false information. The special practitioners must be satisfied that the information was medically likely to be accurate, and the medical officer of health must also be satisfied before he took action.

Referring to the suggested need for clinics to attract women for treatment, Lord Snell said the Ministry believed that this suggestion was based largely on an exaggeration of the unwillingness of women to attend existing centres. Of the 199 treatment centres in England and Wales, about 75% were part of the out-patient departments of hospitals, where all kinds of conditions as well as venereal disease were treated, and were not labelled as venereal disease centres. Experience also suggested that it was the adequacy of the premises and of the treatment given rather than the labels attached to them that had most influence on attendance by women.

Reservation of Medical Students

During the third reading of the National Service Bill Mr. **Maxton** asked what would be the machinery for deciding which young men were to be admitted into the medical profession. Previously they themselves had decided. Mr. **McCorquodale** said students of medicine would be provisionally accepted by the medical schools. Then it would depend on the result of the Higher Certificate Examination the First M.B., or the appropriate examination, whether the reservation would be finally confirmed. Therefore the medical schools would have the choosing of the students. Scientific students would be recommended for deferment by the Universities Joint Recruiting Boards. Arts courses at the universities would close down at the end of the summer of 1943 except for those boys who were medically unfit for service.

Medical Supplies and Services for Europe

Lord **Cranborne**, in the House of Lords on Dec. 9, replying to a debate on relief measures for Europe as soon as subjugated States were freed from Nazi control, said provisional estimates had been received from all the Allied Governments of their requirements of food during the first 18 months after the war. Most Allied countries had also submitted lists of their medical requirements. An advisory committee in regard to medical supplies had been set up under the chairmanship of Dr. Melville MacKenzie of the Ministry of Health. This medical subcommittee was working on the preparation of a minimum list of the most essential medical supplies and was considering the organization of medical services generally. A further expert subcommittee under Dr. Penrose of the United States Embassy was to advise on the nutritional aspects of food requirements. Steps must be taken beforehand to avert the risk of famine and the greater risk of pestilences bred of malnutrition. It was essential that there should be full co-operation with the Russian Government on these questions. Plans were being made on the assumption that some rationing control must continue for a period after the war. Preparations were being made.

No. 48

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec, 5.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county) (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	73	9	19	2	9	140	9	35	1	3
Deaths		1	—				4	4		
Diphtheria	1,011	42	234	84	33	1,047	48	355	45	32
Deaths	22	2	3	6	—	31	3	5	1	1
Dysentery	191	14	52	—	—	197	6	54	—	—
Deaths		—	—	—	—		—	—	—	—
Encephalitis lethargica, acute	3	—	2	—	—	3	—	—	—	—
Deaths		1	—				—	—		
Erysipelas		—	60	10	3		—	78	8	5
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				51						
Deaths	58	8	10	13	3	41	1	8	10	2
Measles	11,205	415	523	31	27	850	73	26	27	1
Deaths	15	1	2	1	—	—	—	—	2	—
Ophthalmia neonatorum	73	2	20	1	—	83	5	22	1	—
Deaths										
Paratyphoid fever	5	—	2	—		16	1	2	—	
Deaths	—	—	—	—	—	1	—		—	
Pneumonia, influenzal*	890	77	6	2	3	1,101	40	16	1	3
Deaths (from influenza) . ..	33	6	1	—	—	37	4	4	—	2
Pneumonia, primary ..			185	30				243	18	
Deaths ..		—		11	11		34		11	8
Polio-encephalitis, acute	—	—				1	1			
Deaths		—					—			
Poliomyelitis, acute ..	11	1	—	18	—	15	—	1	3	—
Deaths .. .		—	—				—	—		
Puerperal fever .	—	1	18	—	—	—	—	18	—	—
Deaths .. .		—					—			
Puerperal pyrexia ..	145	7	14	1	—	124	4	19	2	—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths .. .										
Scarlet fever	2,900	146	378	75	69	1,415	48	266	73	32
Deaths . ..	3	—	1	—	—	1	—	—	—	—
Small-pox	—	—	2		—	—	—	—		—
Deaths			—	—	—	—	—	—	—	—
Typhoid fever†	4	1	2	6	—	7	—	1	8	2
Deaths	2	—	—	—	—		—		1	
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—		—	—	—	—
Whooping-cough ..	1,195	60	38	79	9	1,959	207	58	38	5
Deaths ..	8	—	—	2	1	12	2	—	—	1
Deaths (0–1 year) ..	353	48	70	41	18	341	25	80	32	28
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,816	742	662	226	116	4,407	599	651	189	113
Annual death rate (per 1,000 persons living)			14 9	15·1	‡			14·2	12·5	‡
Live births ..	5,767	691	822	365	246	§5,010	450	822	286	202
Annual rate per 1,000 persons living ..			17 0	24·4	‡			16·7	19·0	‡
Stillbirths	221	21	28			167	16	39		
Rate per 1,000 total births (including stillborn)			33					45		

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* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

§ Figures incomplete for England and Wales.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the notifications of scarlet fever and whooping-cough dropped by 70 and 68 respectively; the incidence of these diseases had been mounting steadily in the preceding weeks. Further large rises were reported in the incidence of measles, 556 cases, and acute pneumonia, 124 cases. The notifications of diphtheria, down by 140 in the preceding week, have now risen by 150.

Notifications of both scarlet fever and whooping-cough in Lancashire were, respectively, 105 and 43 fewer than in the previous week. There were 36 more cases of scarlet fever in Staffordshire and 76 more in Yorks West Riding.

The only substantial increases in diphtheria notifications occurred in Lancashire, 49, and in Wales, 36.

In contrast to the general trend the incidence of measles fell in Wales and Lancashire by 130 and 90 cases respectively. The largest increases were recorded in Durham 147, Yorks West Riding 118, London 108, Derbyshire 84, Warwickshire 71, Staffordshire 59, Gloucestershire 57, Surrey 56.

The cases of dysentery numbered 191, or 28 more than in the preceding week. There was a fresh outbreak of 13 cases in Herefordshire, Leominster and Wigmore R.D. There were increases in Kent from 2 to 18, in Essex from 6 to 15; and in Suffolk a new outbreak of 15 occurred. In the first two counties the cases were spread over several administrative areas; in the last county all the cases were reported from Clare U.D. There were 7 more cases in the outbreak in Derbyshire which began last week with 26 cases. In Yorks North Riding 10 further cases were notified (Middlesbrough C.B. 8). The same totals as in the preceding week were reported from London 14, Surrey 18, and Lancashire 32. The principal centres of infection during the week in these counties were Surrey, Banstead U.D. 15, and Lancashire, Liverpool C.B. 23.

In *Scotland* the large rise of 67 in the notifications of measles was the outstanding feature of the week's returns. The total for the two burghs in Fife rose from 95 to 143, and the three burghs of Renfrew from 69 to 121. In the Dundee outbreak there were 106 notifications, or 33 fewer. A case of small-pox has been reported from Lochaber, Inverness-shire.

In *Eire* poliomyelitis is back to the high level of the past three months; 18 cases were reported, or 13 more than in the preceding week: they were scattered over fourteen districts.

Quarterly Returns of the Registrar-General for Scotland

For the September quarter the birth rate was 17.9 per 1,000, and, with one exception, was the highest recorded for any third quarter during the past ten years. The infant mortality was 59 per 1,000 live births, or 4 below that for the corresponding quarter of 1941 and the same as the average of the five preceding years. Stillbirths were 36 per 1,000, and the lowest rate recorded since registration of stillbirths was instituted in 1939. The general death rate of 10.9 per 1,000 was the lowest for any quarter since the outbreak of war and 0.2 below the five-years average. The death rate from the principal epidemic diseases was 14 per 100,000, and the lowest on record for Scotland with the single exception of the third quarter of 1939, which was 13. The average death rate from epidemic diseases for the third quarter is 21. Six deaths from small-pox, the first since 1930, when there were 2, were registered during this quarter. The death rate from all forms of tuberculosis was 70 per 100,000 and that from respiratory tuberculosis 52. The former rate was 2 below that of the corresponding quarter of 1941 and the latter was the same; they were respectively 5 and 4 above the average of the third quarters of 1937-41.

Quarterly Returns for Eire

The birth rate during the third quarter was 23.9 per 1,000, or 3.8 above that for the corresponding quarter of 1941; with the exception of the second quarter of 1942, when it was 24.5, it was the highest of recent years. Infant mortality was 57 per 1,000 registered births, 7 below the rate of the September quarter of 1941 but 1 above the average of the third quarters of the preceding five years. The general death rate was 11.5 per 1,000; this rate has been fairly constant in the recent September quarters and has only varied between 11.4 and 11.7 during 1937-42. The death rate from pulmonary tuberculosis was 1.1 per 1,000, an increase of 0.2 in the rate for the corresponding quarter of 1941 and equalling the highest rate for this quarter during 1937-42. An increase in pulmonary tuberculosis was also recorded in the first and second quarters of this year. Other forms of tuberculosis yielded a rate of 0.2 per 1,000, which was the rate in the September quarter of 1941.

Returns for the Week Ending December 12

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,769, whooping-cough 1,326, diphtheria 1,079, measles 13,287, pneumonia 989, cerebrospinal fever 75, acute poliomyelitis 7, dysentery 133, paratyphoid 7, typhoid 10, small-pox 1.

Medical News

Sir John C. G. Ledingham, F.R.S., is to retire on March 31, 1943, from the post of Director of the Lister Institute of Preventive Medicine, which he has held since 1930. The Governing Body of the Institute have appointed as Sir John Ledingham's successor Dr A. N. Drury, F.R.S., Huddersfield Lecturer in Special Pathology, University of Cambridge, and a member of the scientific staff of the Medical Research Council.

Electromedical apparatus cannot be supplied to institutions or individuals without licence from the Board of Trade on the surrender of a medical certificate. The latest Order on this subject, the Machinery, Plant, and Appliances (Control) (No 3) Order, 1942, which replaces and amends all previous ones, can be obtained from the Stationery Office or through any bookseller.

With the issue of November, 1942, the publication of the *Annals of Medical History* was suspended.

The late Mr. J. A. Fielden, who during his lifetime made large gifts to the London Hospital, has bequeathed to it the sum of £105,000 free of duty.

A company to be known as the Anglo-Iranian Pharmaceutical Company, Ltd. (the A.I.P.), has been formed in this country by a group of five leading manufacturers of medicinal products in order to facilitate the supply to Iran of pharmaceutical products made in the United Kingdom. A private limited liability company with an authorized capital of £50,000 has been registered, the constituent members being: Boots Pure Drug Company Ltd., British Drug Houses Ltd., Evans Sons Lescher and Webb Ltd., Glaxo Laboratories Ltd., the Wellcome Foundation Ltd. The registered office of the A.I.P. is at Tavistock House South, Tavistock Square, London, W.C.1. All communications should be addressed to the secretary, Mr. W. J. Williams.

VENEREAL DISEASES AS A CAUSE OF DEATH

According to Gottschalk (*Dtsch. med. Wschr.*, 1942, **68**, 845) the official statistics of causes of death so far as syphilis is concerned cannot be complete, for in many cases the true cause of death can be ascertained only by necropsy. As to the degree of reliability, a valuable indication is offered by the "Combined Statistics of Causes of Death in Magdeburg" for the years 1928–36, as follows:

Syphilitic Causes of Death	Deaths according to Clinical Findings (a)	Results of Necropsy			
		Incorrect Clinical Diagnosis (b)	Diagnosis Confirmed (c)	Additional Cases Discovered (d)	Total Cases (c + d)
Syphilis	194	59 (30%)	135 (70%)	117	252
Progressive paralysis ..	93	34 (37%)	59 (63%)	23	82
Tabes dorsalis ..	27	10 (37%)	17 (63%)	27	44
Aneurysm ..	8	5 (63%)	3 (37%)	25	28
Total ..	322	108 (34%)	214 (66%)	192	406

The investigation covers 8,182 cases, in which both the clinical diagnosis of cause of death and the post-mortem finding were available. The classification adopted was that introduced in 1932, and syphilitic aneurysm was reckoned as an independent cause of death in the group of venereal diseases. Of the 8,182 cases 322, or 3.9%, were recorded as due to syphilis. Necropsy showed that 108 of these (34%) should have been classified under another number in the list. In 214 of the 322 cases (66%) the clinical diagnosis was confirmed. However, an additional 192 cases were found post mortem to have a syphilitic cause of death, so that the total number was increased to 406, or 5% of the total. Although these statistics concern almost exclusively diagnosis made in clinics, necropsy revealed 26% more cases of syphilitic causes of death than was shown by clinical findings Paralysis as a cause of death was found more rarely post mortem than by clinical diagnosis. Necropsy showed 23% more cases of syphilis, 63% more cases of tabes dorsalis, and as much as 250% more cases of aneurysm.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Treatment for Scalp Eruption

E. M. T. writes: In reply to J. A. M. (Nov. 28, p. 654): For years I have been a sufferer from psoriasis of the scalp, and often develop thick hard crusts. I recommend the following treatment, which I learnt from the *B.M.J.* years ago, and find astonishingly effective. Wash the whole scalp thoroughly with simple soap and water; rinse; then wash it with a good lather of soap spirit in warm water. The crusts are softened and can be easily and carefully removed with the comb. Then while the scalp is still damp apply sphagnol ointment. This treatment should be repeated every few days if necessary. The ointment stains.

W. H. writes: Has J. A. M. tried sulph. praecip. gr. 13; ac. salicyl gr. 13; ol. coc. nucif. ʒiv; paraffin. moll. ad ℥j?

Dressing for Cancer of Breast

Dr. G. BAYNTON FORGE writes: In reply to "Deodar" (Nov. 28, p. 654) I have found hydrogen peroxide a certain and quick remedy for this troublesome symptom. I have used it on 3 cases where operation was refused and always with most gratifying results.

Income Tax

Allowance for Domestic Staff

W. K. keeps two maids, of whom one lives in and the other attends from 8 a.m. to 7 p.m. Of the six living-rooms four are used for patients and a fifth is so used occasionally. The maids receive £140 per annum. W. K. is allowed a deduction of one-third of his rent and rates, which presumably covers the use of a garage, and £104 in respect of the cost of domestic service of the professional part of the premises.

*** In view of the large proportion of the ground floor which is used for professional purposes the ratio of one-third seems low, when it is remembered that the ground floor is the most valuable part of the whole premises. As regards the cost of service the inspector of taxes will no doubt contend that the effect of food rationing has to be taken into account as well as the higher cost of the food which is obtainable. But this is a question which must be decided on the actual facts of each case. We suggest that a reasonable basis would be one-half of the total domestic cost, and perhaps W. K. can calculate that figure approximately and compare it with the £104 hitherto allowed.

Deduction for Use of Residence

E. R. has hitherto been allowed to deduct one-half of the cost of rates, insurance, maid, gardener, lighting, heating, and repairs. The inspector of taxes now wishes to reduce the deduction to one-third of the costs. The house contains waiting-room, consulting-room, dispensary, lounge, and lavatory used wholly or partly for the practice, and one room downstairs, three bedrooms and a box-room used privately.

*** There is no fixed rule with regard to these deductions; the proper ratio clearly depends on the facts of each individual case. Sometimes a useful light is thrown on the question by looking at the other side of it—i e., what is the practitioner getting for private use and what would be a fair measure of its cost. On the individual items, one-half seems *prima facie* excessive as applied to gardener's wages and the cost of heating and lighting. So far as our experience goes one-half of the general expenses is not usually allowed except where there is some special element—e g., high rates on account of central position in a large town. Possibly E. R. can negotiate some intermediate ratio—e.g., 40%. We should not advise prosecuting a claim to 50% to the point of a personal appeal

House Let to Government—Liability

T. H. has let his house for £175—some of his furniture is still stored in it. The Schedule A assessment is £76, and he has now received a demand for tax on £66 10s. "excess rent." Is this correct? Can he deduct fire insurance on the house and £1 11s. 6d. on the furniture?

. The £66 10s. is correct. The liability arises under the Finance Act, 1940, and is calculated as under:

	£	s.	d.
Amount of rent	175	0	0
Deduct allowance for maintenance, etc.	32	10	0
	142	10	0
Less already assessed under Schedule A	76	0	0
"Excess rent"	£66	10	0

The fire insurance on the house is regarded as included in the scale allowance of £32 10s.; the £1 11s. 6d. in respect of the furniture is a private expense and cannot be treated as a deduction for income tax.

Income from Malaya

"APA MAU" came to this country a few years ago. Most of his capital is invested in Malaya. The income tax authorities ask for a statement of income credited to him there in the year 1941–2. What is the legal basis of liability for assessment in respect of this source of income for 1942–3?

. In law the income is assessable for 1942–3 on the basis of the amount of income arising in the year 1941–2, but inspectors of taxes have been authorized to arrange, in such cases as this, for tax to be accepted on the amount (if any) of income actually received in the year 1942–3; the balance of the tax assessed will remain in abeyance until it becomes clear as to what amount of the unremitted income will be receivable in this country.

Temporary Cessation of Work

C. J. S. was employed in the E.M.S. since the beginning of August, 1941. He became a hospital patient in August, 1942, but was paid by the E.M.S. for the three following months. During the year ended April 5, 1942, he earned £325 and his wife £85. After deducting the allowances due to him he has been charged tax amounting to £35 14s. 6d. He is now doing part-time work and will earn about £120 for the current year. He inquires: (i) Can he average the two years for purposes of assessment? (ii) When can he "be forced to pay last year's tax"? and (iii) What is he advised to do?

. (i) No; he ceased his employment and is in any case liable on the current year's basis for 1941-2 and 1942-3. (ii) and (iii) Legally the revenue authorities can take action against him at any time. It is, however, certain that they would regard his case sympathetically, and we advise him to write to the collector, explaining the circumstances fully, and, if possible, making an offer to pay something on account.

Honorary Surgeon to Hospital under E.M.S. Scheme

"Gamma" has been honorary surgeon to a hospital for many years. The hospital is now under the E.M.S. scheme and the staff is paid 1s. 6d. per bed per night for the military cases. He does not wish to receive this money and inquires as to his income-tax liability.

. If "Gamma" receives a share of the War Office payment he is liable to assessment on it, even if he hands it back to the hospital—he is merely disposing voluntarily of taxable income—and the same result would probably follow if he were to ask the hospital authorities to retain his share for their general purposes. His best course is to notify them that he desires to continue to act in a voluntary capacity and to be regarded as not entitled to any share in the payment in question.

LETTERS, NOTES, ETC.

Codeine in Vaccinia

Dr. S. WARSZAWSKI writes: With reference to Lieut. H. A. Oatley's letter on codeine in vaccinia (Sept. 26, p. 384) I would offer my confirmation of the facts advanced by him. After the collapse of France in 1940–1, when I was an inmate of a prison camp in Spain and acting as M.O. of the camp and later on as M.O. of the Polish Red Cross in Spain, I vaccinated or supervised the vaccination of many thousands of people, and I noted also the remarkable effects of the association of the drugs combined in the tab. cod. co. of the *National War Formulary*, 1941. Our formula was: acetylsalicylic acid, phenacetin āā 0.25 g., codeine phosphate 1/100 g. I used also other formulae, replacing the cod. phosph. by caffeine or codeine. There is no doubt that the results were not so good as with cod. phosph. I think, therefore, that it is not the codeine but the phosphate of codeine which matters. I think, too, that this is a point which is worth investigation, and also the determination of the optimum dose of cod. phosph. I have been using the Continental formula given above now for many years, and I have always found that it is a very useful antithermic, analgesic, and anticatarrhal compound.

Treatment of Anxiety States in Panel Practice

Dr. MARGUERITE STEWART (London, S.W.4) writes: From time to time communications in the *Journal* draw attention to the invalidism from the Army due to chronic and acute anxiety states. It is the early stages of anxiety before physical symptoms are firmly rooted that general practitioners should recognize and adequately deal with. This at present it is increasingly difficult to do owing to pressure of work. But in planning for the future let this side of practitioner treatment be made possible. Our panel system was formed before 1914 at a time when illness was treated on a physical level. Since then, increasingly, it has become apparent that much illness is psychological in origin, and that most illness has in it a psychological factor. To treat such illness requires more time and outgiving per patient than is possible under the present panel system. Recently, with a panel less than one-tenth the permissible number, I saw 17 panel patients on one day. The preventive treatment of anxiety states is one of the most interesting privileges of general practice. It can only be tackled adequately in a practice where numbers are limited, and practitioners have had the opportunity for training in the detection and treatment of this kind of work.

MEDICINE 100 YEARS AGO

Extract from a leader on rumours in the "political press" that "the poor law commissioners have recently dismissed all those who held Scotch or Irish diplomas from their offices under them as unqualified," from the *Provincial Medical Journal* of Dec. 31, 1842:

"The qualifications for union medical officers admitted by the poor-law commissioners are of four kinds. We shall recite them here, as several of our friends in the country seem to have forgotten that we published them many months since. (1) A diploma from the Royal College of Surgeons, together with a degree in medicine from an English university, or the London College of Physicians. (2) A diploma from the London College of Surgeons, with a certificate from the London Apothecaries' Hall. (3) A diploma from the London College of Surgeons, and a right to practise as an apothecary acquired by the person having been in practice as an apothecary before August 1, 1816. (4) A commission as surgeon, or assistant-surgeon, in Her Majesty's navy, or as surgeon, assistant-surgeon, or apothecary, in the army; or as surgeon, or assistant-surgeon, in the East India Company's Service, dated previous to August 1, 1826.

"To those who are not familiar with the numerous questions agitated during the discussion of poor-law medical relief, or the actual state of the laws which affect the medical profession generally, the above cited regulations of the poor-law commissioners may appear complex and unsatisfactory; but a few remarks will serve to explain the motives which led to their adoption. In the first place, the necessity of a double qualification for union officers—of a license to practise both surgery and medicine—had long been urged on the commissioners; and to this they at length acceded. In the second place, the 109th section of the Poor-law Acts requires that the medical officer should be 'a person duly licensed to practise as a medical man.' The question then at once occurs, who is duly licensed to practise as a medical man within the precincts of England and Wales? Upon this point great ignorance prevails amongst the members of the profession; for the exclusive privileges of the corporate bodies extend further than even they themselves seem to be aware. The College of Surgeons in London have the exclusive right of licensing persons to practise surgery throughout England and Wales. The right to practise medicine may be conferred by the College of Physicians, the Universities of Oxford and Cambridge, and the Apothecaries' Hall. In addition to the privilege of conferring licences to practise medicine, these corporations enjoy the power of prohibiting all who are not of their body, from practising medicine within their territorial jurisdictions. The statutes of 3 Hen. VIII., c. 11, and 14 Hen. VIII., c. 5, exclude every person from practising physic anywhere in England or Wales, unless he be a graduate of Oxford or Cambridge, or admitted to practise by the London College of Physicians. The charter of Car. I., confirmed by the 18th Geo. II., c. 15, prohibits every one from acting as an apothecary in England and Wales, who has not a certificate from the Apothecaries' Company, with the exception of those in practice as apothecaries previous to 1815, and the army and navy surgeons of 1826, who are privileged by a particular act which expired on the 1st of August, 1826."

BRITISH MEDICAL JOURNAL

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SUPPLEMENT

containing

War Notices

Notes on the Work of the Association

National Health Insurance Proceedings

General Medical Council

Postgraduate News

Meetings of Branches and Divisions

Service Appointments

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SUPPLEMENT TO THE
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LONDON SATURDAY JULY 4 1942

WAR BONUS FOR INSURANCE PRACTITIONERS

The following is the text of the application which the Insurance Acts Committee of the B.M.A. has made to the Ministry of Health for a war bonus for insurance practitioners.

June 24, 1942.

DEAR SIR,

The Insurance Acts Committee desires to make application on behalf of insurance practitioners for a war bonus on the grounds set out in this communication.

1. As the Ministry is aware, when the war broke out the Insurance Acts Committee was about to submit an application for an increase in the insurance capitation fee of 9s. based *inter alia* on a statistical investigation of the work done by insurance practitioners for insured persons conducted under the auspices of an eminent statistician. While it is recognized that such an application for an increase in the basic capitation fee could not then be proceeded with as if the country were still at peace, it is relevant to refer to this proposed application because it was the outcome of widespread dissatisfaction with the pre-war capitation fee.

2. Although the Insurance Acts Committee loyally accepted the award of the Court of Inquiry in 1937, it cannot disguise the fact that it was unexpected, perhaps to the Ministry as well as to the Insurance Acts Committee, and that it was resented by insurance practitioners. This feeling of dissatisfaction with the pre-war capitation fee is the background against which any application for a wartime bonus must be examined.

3. For the first fifteen months of the war the Insurance Acts Committee refrained from applying for an increased capitation fee, despite the rapidly increasing cost of living and cost of conducting practice. The events which have followed the Committee's application in the early part of 1941 are not regarded as satisfactory by the Committee. The claim put forward on the grounds of practice expenses was based on a most conservative estimate, prepared for the Committee by an independent expert. In spite of this the first reply by the Ministry was to reject it out of hand. The subsequent decision did in fact meet the claim for increased practice expenses as they stood in early 1941. But the Ministry's offer of 9s. 9d. taken as a whole, and related not only to practice expenses but to the new class brought into insurance by legislation, was accepted under protest by the Conference of Local Medical and Panel Committees out of a sense of national duty and not as an expression of acquiescence in the proposed terms. A similar offer made in times of peace would undoubtedly have been rejected by the overwhelming majority of the profession. The experience of the last few months had done much to aggravate the already serious sense of frustration and resentment rife among insurance practitioners.

4. It was agreed by the Ministry that the additional 9d. did not include any element in respect of cost of living. It includes an amount in respect of the new group and an amount in respect of practice expenses as they stood earlier in the year, though this increase has commenced only on January 1, 1942, after two and a quarter years of war.

5. The war has laid upon the medical profession a specially heavy burden. It has meant the withdrawal from National Health Insurance of a vast number of healthy lives. Their places in industry have been taken by older men, many of whom have returned to industry after periods of retirement or prolonged unemployment; by middle-aged as well as young women with no previous experience of industry; and by other groups whose general standard of fitness is lower than those whom they have replaced. An inevitable result of the introduction into industry of persons of all ages without previous industrial experience is, as the result of new stresses and new hazards, a considerable rise in the amount of medical service which is, on average, required for insured persons. Those who are returning to insurance after service with the Forces—and the number is growing—are far less healthy than the average, and so need additional medical attention; indeed, many of them can be described as permanently damaged lives. This position was recognized in the last war when special additional remuneration was paid for discharged Service men. The average age of insured persons has risen. The spokesman for the Ministry (Dr. Paterson) at the last Court of Inquiry recognized the implication of this when he said: "It is evident that it must be the older people approaching the ages in which the death rate was highest who give the doctor more work." The proportion of women in National Health Insurance has risen, many of these women being employed in unaccustomed industrial work. Such has been the change in the make-up of the insured population as a result of the war that the burden upon insurance practitioners in respect of the same number of insured persons has risen, both as to visits and attendances and the work entailed by the keeping of proper medical records. The black-out has meant an increase in the average time spent in evening and night visits, and in many cases an additional risk. To sum up, war conditions, including the black-out, have meant a measure of human stress which has found expression in increased burden on the insurance practitioner in terms of time, strain, and responsibility.

6. Wartime conditions have made it impossible to collect reliable statistics relating to the work done by insurance practitioners. Opinions differ as to whether the number of prescriptions issued is a general guide. After the initial drop in the early months of the war, the figure for the beginning of 1940 increased to well above the pre-war figure. Since then it has fluctuated and is now rising steadily. It is not now far short of the pre-war figure, and an epidemic would send it well above the pre-war level. The experience of practitioners shows that after the first few months of war the number of prescriptions given has less reference than ever before to the service rendered. The truth is that there is no accurate measure of the work now undertaken by insurance practitioners. It is, however, a modest statement to make that the strain on the community as a result of the war has increased the burden of work on insurance practitioners.

7. There is one other general consideration which the Committee puts forward. In 1918 the Ministry of Health agreed to a wartime increase in the capitation fee for practitioners with net incomes below £1,000 a year, varying from 10% to 12½%. In 1918 the cost-of-living index figure varied between 185 to 225 in relation to 100 in August, 1914. To-day the official figure stands at 200 in relation to 100 in August, 1914. On the assumption that the official figures are applicable to practitioners, and that practice expenses have risen to a similar extent, the capitation fee of 9s. 9d. to-day is worth, in terms of money values in 1914, 4s. 10½d. On the assumption that practice expenses have risen by only 50%, the capitation fee of 9s. 9d. to-day is worth, in terms of money values in 1914, 5s. 4½d. This means that insurance practitioners have since 1914 suffered a reduction of *real* remuneration from 7s. 3d. to a figure between 4s. 10½d. and 5s. 4½d., depending on the extent of the increase in practice expenses since that year.

8. If the official cost-of-living figures be related to those in August, 1939, instead of to those in August, 1914, the present figure is 128 in comparison with 100 on August 1, 1939. This is the general cost-of-living figure, derived from working-class budgets. There is no up-to-date evidence of any validity that the proportionate rise in middle-class expenditure differs materially from that in working-class expenditure.

9. A previous application for an increase in the capitation fee in respect of cost of living has been met with the reply that it is contrary to Government financial policy to agree to such increases for other than the lowest income groups. The Government has already departed from this policy. At first the officially approved limit for cost-of-living increases was £250 a year. Later it rose to £350 a year. To-day it stands at £500 a year, which is a net figure for superannuated officers enjoying non-contributory pensions, or £560 in terms of total emoluments. But even this restriction is not of universal application. In the case of local government officers there is no

income limit at all, and not only have medical officers of health receiving higher salaries in some instances received cost-of-living bonuses but such bonuses have, where his approval was necessary, been approved by the Minister. Thus the Minister has admitted the principle of cost-of-living bonuses for higher salaried groups. It is noted that the Minister has also approved, with effect from October 1, 1941, an increase of more than 16% in the dispensing fees of chemists for medicines dispensed for insured persons.

10. There are insurance practitioners whose gross incomes, though apparently larger, actually fall, in so far as they are net incomes, within the range of the £560 limit. There are many practitioners whose gross incomes have fallen to an extent to which their expenses can never fall, owing to their obligations as insurance practitioners. In any event, the argument that inflation would be encouraged by increases in the higher earning groups is without substance. They constitute both in numbers and in aggregate income so small a proportion of the community and the community income that the effect in terms of inflation of a cost-of-living increase would be negligible. The groups which represent the largest volume of national income have in the main already received in one form or another wartime increases in remuneration.

11. There is one further argument which at first sight may seem irrelevant. Those insurance practitioners who remain in civil life are maintaining the practices of the absentee colleagues and assuming responsibility for the care of their insured persons at half the current capitation fee. The general effect of this for those remaining in practice is to reduce the average capitation fee, which is rapidly falling. This, it might be argued, is the profession's own affair. But, it should be pointed out, it is Government policy that the salaries of absentee employees of central and local government should be made up to their peacetime level, and as taxpayers and ratepayers the medical profession, in common with other sections of the community, is contributing to this expense. Again, moneys derived from National Health Insurance contributions are already being used for the purpose of making up the salaries of absentee employees of approved societies and insurance committees. The medical profession could not honourably have acted otherwise than to safeguard, so far as lay within its power, the practices and the emoluments of practitioners in the Services. In a number of areas this arrangement cannot but bring the capitation fee down to a level which, after expenses are paid by the remaining practitioner, leaves little margin for general living expenses. This is, it is submitted, a factor which should be taken into consideration.

12. The medical profession has no desire to profit by the war. It has no desire to escape the general increase in national responsibility. It is, however, determined to do its utmost to secure that the pre-war inadequacy of the basic capitation fee shall not be unfairly accentuated at a time when it is working under the most extreme difficulty.

13. These are the general arguments which lead the Insurance Acts Committee, after the most careful consideration and after consultation with every Panel Committee in the country, to press for a substantial increase in the capitation fee while present circumstances continue. That the time has come for such an increase the Insurance Acts Committee is convinced, and it desires to open negotiations with the Ministry in regard to the amount of that increase.

Yours faithfully,

G. C. ANDERSON,
Secretary.

To the Secretary,
Ministry of Health,
Whitehall, S.W.1.

Owing to pressure on space the conclusion of the G.M.C. report is held over to a later issue.

Correspondence

Salaried Appointments

SIR,—Fresh doctors are constantly being called for by the Forces, and this means that appointments to an increasing number of salaried jobs will have to be sanctioned by the various Local Medical War Committees. I should like to suggest that these committees should not sanction the appointment to a position carrying an emolument of any doctor who has refused to join the Protection of Practices scheme. This is not a question of professional jealousy or etiquette; it is merely recognition of the principle that a doctor who wishes to take advantage of the present emergency at the expense of brother practitioners who have been called up is not a fit person to be in charge of a job sufficiently responsible to carry with it a salary. In other words, "black marketeering" is as odious and reprehensible in medicine as in other walks of life, and should be recognized and treated as such.—I am, etc.,

Winsford. W. N. LEAK.

MEDICAL WAR RELIEF FUND

THIRTY-FOURTH LIST

Amount previously acknowledged, £43,790 8s 6d and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Individual Subscriptions

£10 10s.—Dr. H F L. Hugo, Crediton (2nd donation); Dr. L Thomas, Halifax, N.S (2nd donation).

£2 2s.—Capt. N. Bickford, R.A.M.C. (4th donation).

£1 1s.—Dr. F. S Airey, Leicester (3rd donation); Major W Happer, I.M.S., and Mrs Happer (9th donation)

7s. 2d.—Dr. J. T. Whitley, Chelmsford (3rd donation)

£260 13s. ($1,165.12).—Canadian Medical Association (amount already sent, £1,101 18s 7d): Caduceus Club, Toronto, $100.00; Peterborough Medical Society, $156 03; Toronto East Medical Association, Sports Committee, $27 00 (2nd donation); Victoria County Medical Society, $10 00 (3rd donation); Ontario Medical Association, District No 2, $750 00; Jewish General Hospital, Montreal, $51 00; London Convention Committee, Canadian Association of Radiologists, $71.09

£168 15s. 1d.—Per Col J S Dunne (amount already sent, £18 17s.) Sir Francis Fremantle, £26 5s. (2nd donation), Dr K S Richard, £5 5s; Dr. R. D Attwood, £3 3s (2nd donation); Dr R A R. Wallace, £3 3s; Dr B M. Cockerell, £3 3s, Dr D R. Riddell, £3 3s; Dr. R. E J Kerr, £3 3s; Dr G Campbell, £10; Dr P. Wood, £3 3s. (2nd donation); Dr C. Hilliard, £3 3s; Dr E Scurfield, £3 3s; Mr. R Harvey-Williams, £1 1s; Dr C Sherris, £3 3s (2nd donation); Dr D R. Pike, £3 3s; Dr C Bolton, £3 3s; Drs A and H. Wigfield and Stanley, £10 10s (2nd donation); Dr E M Dimock, £5 5s (4th donation); Drs. Barber, West, Fasson and Bedford, £5 5s; Dr. C. P Craggs, £3 3s, Dr. M Wigfield, £3 3s; Dr W Buckley, £3 3s; Dr B F Russell, £3 3s; Dr C S. Vivian, £1 1s (2nd donation); Dr R H Crowley, £5 5s.; Dr A. D Whitelaw, £3 3s.; (2nd donation); Dr. D. W. James, £3 3s; Dr. Eardley Holland, £3 3s; Dr E J. R Leiper, £3 3s. (2nd donation); Dr. A Barker, £2 2s (2nd donation); Dr A. F. Pengal, £1 11s. 6d. (2nd donation); Dr. W. P. Grellet, £5 5s; Dr. C. D. Cardinall, £1 1s.; Dr. A. P Ford, £2 2s; Dr H. R Grellet, £3 3s.; Dr. G W. May, £5 5s (2nd donation); Dr H Sharpe, £3 3s.; Dr. W. Symonds, £3 3s; Dr. M. Watson, £5 5s; Dr. C H C Ferguson, £3 3s; East Herts Division, £3 17s 7d.

£66 2s. 10d.—Practitioners in Trinidad and Tobago Branch—per Dr Grell. Dr K. Beaubrun, £3 2s. 6d; Dr J. Bellamy, £2 1s. 8d; Dr. E Boucaud, £2 1s 8d.; Dr M. Boucaud, £2 1s. 8d; Dr G. Campbell, £5 4s 2d; Dr J Camps-Campins, 10s. 5d; Dr. C. Chan, £1 0s 10d., Dr. V. Charles, £1 1s, Dr. G. Deane, £3 2s. 6d, Dr. E. de Verteuil, £2 1s. 8d.; Dr. G Fistein, £2 1s 8d.; Dr. J. Gibbon, £2 1s 8d.; Dr J. Grell, £2 1s. 8d.; Dr. S Hayes, £2 1s 8d, Dr. K Inniss, £2 1s. 8d, Dr. A Krogh, £2 1s. 8d; Dr. G. Lee, £1 0s. 10d; Dr. W. McKechnie, 8s 4d; Dr. A. McLean, 10s 5d.; Dr. H McShine, 8s. 4d; Dr. V. Metivier, £5; Dr. C. Morrah, £1 5s (2nd donation), Dr E. Muir, £1 0s 10d; Dr A. Reid, £3 2s 6d; Dr. M. Schwartz, £2 1s 8d; Dr. R Stanley, £5 4s. 2d; Dr. S. Stewart, £5; Dr. J. Waterman, £3 (2nd donation); Dr. R Wuppermann, £2 1s 8d.; Dr. C F Rostant, £1 1s

£42.—Harrow and Wealdstone Hospital Medical Staff (amount already sent, £2 and £40 3% Defence Bonds)

£14 12s. 6d.—Medical Consultative Committee of Hoylake Cottage Hospital—per Dr. Pinkerton

£2 2s.—Gloucestershire Branch—per Dr. Reavell (amount already sent, £419 15s): Dr. C. P. Donnison (3rd donation); Nottingham Branch—per Dr. Frazer and Dr Galloway (amount already sent, £304 8s); Derby Division—per Dr E C. Dawson (amount already sent, £205 18s 7d). Dr. G. L. Meachim (2nd donation); Exeter Division—per Drs. Murray and Paget (amount already sent, £231 13s. 6d): Lt-Col. T. G. N. Stokes, I.M.S. Ret (2nd donation).

Local Medical and Panel Committees

£1 1s.—Denbighshire.

Total—£44,377 12s. 1d., and £100 3½% Conversion Stock and £40 3% Defence Bonds

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G. C. Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C. 1.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily,* 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations *Daily,* 1.30 p.m., Post-mortems *Tues*, 10 a.m., Paediatric Clinic; 11 a.m., Gynaecological Clinic. *Wed*, 11 30 a.m., Clinico-pathological Conference (Medical), 2 p.m., Bacteriology and Diagnosis of Venereal Diseases, Dr Barber. *Thurs*, 2 p.m., Dermatological Clinic. *Fri*, 12.15 p.m. Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference Gynaecological); 2 p.m., Sterility Clinic.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*Chelsea Hospital for Women,* Dovehouse Street, S.W.—Daily, Mon to Fri., Course in Gynaecology *Royal Cancer Hospital,* Fulham Road, S.W.: Revision course in anaesthetics. Lectures 4 30 to 6 p.m. Practical work daily at various London hospitals *National Hospital for Diseases of the Heart,* Westmoreland Street, W.: Tues. and Wed., 10 a.m., Out-patient clinics.

ROYAL NATIONAL THROAT, NOSE, AND EAR HOSPITAL—*Fri*, 4 p.m. Mr. S A. Beards: Headache.

DIARY OF SOCIETIES & LECTURES

BIOCHEMICAL SOCIETY—At Department of Physiology, Manchester University, *Fri.,* 2.15 p.m. Tea and demonstrations at 4 15 p.m.

B.M.A.: Branch and Division Meetings to be held

BERMONDSEY AND CAMBERWELL DIVISION—At Bermondsey Public Health Centre, Grange Road, S.E., Tues., July 7, 8 30 p.m. Prof. J. A. Ryle. A National Medical Service.

KENSINGTON DIVISION.—At British Postgraduate Medical School, Ducane Road, W., Mon., July 6, 8 30 p.m. General meeting to continue discussion of Interim Report of Medical Planning Commission

NORTH OF ENGLAND BRANCH.—At 7, Windsor Terrace, Newcastle-upon-Tyne, Thurs., July 9, 3 15 p.m. Annual Meeting. Election of officers, etc

BIRTHS, MARRIAGES, & DEATHS

BIRTHS

STUART-HARRIS.—On June 22, 1942, to Marjorie, wife of Major C H. Stuart-Harris, R.A.M.C., Hamel House, Perham Down, Andover, a son.

SWANSTON—At Kilburn House, Thirsk, on June 18, 1942, to Mollie (*née* Hartley), the wife of Dr. Kelly Swanston, twin daughters

MARRIAGE

THOMAS—FRENCH—On June 17, 1942, at Hammersmith, Ronald Lionel Thomas to Kathleen Mary French, M.B., B.S.

DEATH

FERGUSON—On June 20, 1942, R. L Ferguson, M.D (Manch.), of Lynton, Upper Lloyd Street, Manchester.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY JULY 11 1942

GENERAL MEDICAL COUNCIL

DISCIPLINARY CASES (*concluded*)

Drug Addiction

The Council considered the case of Brendan O'Carroll, registered as of Castlereagh Road, Belfast, who was summoned on the charge that in March last he was convicted (after having pleaded guilty) of being in charge of a motor-car while under the influence of a drug, and was sentenced to 28 days' imprisonment. Evidence was given as to purchases of cocaine solution by Dr. O'Carroll at about the time of the offence in the district in which he was acting as locum-tenent. Dr. O'Carroll, who was not present, wrote stating that he considered it in his own interests that his name should be removed from the *Medical Register*. He said that he had been a drug addict, and it was now his intention to cure himself of that disease by following a non-medical occupation. The Council ordered the erasure of the name.

The case was heard of Alexander Gordon Bonnyman, registered as of Barking Road, Canning Town, who appeared on the charge that in February last he was convicted at the Central Criminal Court, of unlawfully killing Elizabeth Galloway Bonnyman, his wife, and sentenced to twelve months' imprisonment. The evidence as outlined by the Council's solicitor was that both Dr. Bonnyman and his wife were long-standing morphine addicts. When taken to hospital just before her death Mrs. Bonnyman's condition was found to be absolutely appalling: her arms and legs were distorted through disuse, and she weighed only 3 st. 10 lb. She was suffering from abscesses which appeared to be due to the use of dirty needles. A post-mortem examination showed death to be due to heart failure owing to poisoning from the abscesses, starvation, and bronchopneumonia brought on by her low powers of resistance.

Dr Bonnyman made a long statement to the Council. He said that his wife had been a confirmed morphine addict for seven or eight years continuously, during which time her physicial condition was undergoing gradual decay. He did all in his power to bring about her treatment in hospital, but his arguments were unavailing. He also did what he could tc maintain at the maximum his wife's diminished strength until such time as he could safely effect the withdrawal of the drug. It was her addiction to morphine which brought about her weakened condition.

"During most of my struggle and my anxiety for the well-being of my wife," he went on, "I myself was a victim of the drug. I could appreciate the suffering, both mental and physical, which even the dread of withdrawal would occasion, and this appreciation it was which led me into the error of a too kindly approach to my wife's problem. You cannot appreciate the problem of drug addiction from the addict's point of view. One loses one's strength of will, and, although one wants to beat one's enemy, when the effects of the previous dose have worn off this fine edifice of self-defence and strong will to survive crumbles. When that dreadful gnawing, that suffering, that feeling of sickness which assails one is at its most acute, then all good intentions are scattered to the winds. It is that black outlook which influences the addict. That was the feeling which I am sure was in my wife's breast when she was so adamant in her refusal to have hospital treatment and to have another doctor to see her."

He had erred towards leniency whereby the speed of withdrawal until the last five or six weeks of her life was checked. The drug would have been withdrawn more quickly but for his appreciation of the dreadful suffering which a rapid withdrawal entailed. His wife's daily consumption for a number of months until September, 1941, was 9 grains. He gradually reduced this to 1¼ to 2 grains just before her death. During the actual process of withdrawal he had on occasion for therapeutic reasons to increase the dose, and on this point he complained that the judge, in directing the jury, described what he had done as a wanton pandering to the whims and wishes of his wife. Medical men with experience in the treatment of morphinism would appreciate the likelihood of collapse owing to too rapid withdrawal of a patient already physically weakened and dependent on the stimulus which morphine alone could give. This collapse was very sudden and severe, with sudden fall in the pulse rate and blood pressure, deathly pallor, cold, clammy skin—a picture calculated to make the most experienced clinician quail. When he increased the drug it was because of "withdrawal collapse," the pulse rate falling as low as 43. Judge and jury could not rid themselves of the idea that the problem was a standard one, to be solved by standard means, like a sum in algebra. No such convenient method presented itself to the physician in his struggle with a drug addict. It was a battle of wits, and the nearer the relationship between the patient and himself the less was the physician's influence, until, in the case of the husband and wife, the scales were heavily weighted against him.

Dr. Bonnyman ended by saying that surely he was not to be held responsible for his wife being a morphine addict. In no way did he force her to become such: in fact she had been an addict for many years. He himself had previously been addicted to morphine, but was cured in 1934, with no relapse until August, 1941, but in the interval until his wife's death morphine took its toll upon his own physical and mental life so that he did not with a rational mind approach the problem which his wife's case presented. He also pointed out that if morphine was sold in solution, 0.2% or under, and was mixed with some other active constituent, it was exempt from the regulations of the Dangerous Drugs Act. "A man in the street, if he knew how to write a prescription, could take it to any chemist, and any chemist is quite within his legal rights in dispensing that prescription." His wife, by means of such prescriptions, which she could make out for herself, obtained such 0.2% solution and boiled and concentrated it.

The Council ordered the erasure of Dr. Bonnyman's name from the *Register*.

Conviction of Receiving Stolen Property

The Council considered the case of Erich Hohenberg, registered as of Beverley Court, W.4, who appeared on the charge that in April, 1942, he was convicted at Marlborough Street police court of receiving a book, value £1 15s., knowing the same to have been stolen, and sentenced to four months' imprisonment with hard labour. It was stated that Dr. Hohenberg was 32 years of age and an M.D. of Vienna. He was one of a family of 7 well-known Austrian medical men. In 1938 he left Austria for political reasons, and in 1940 he obtained the Scottish qualifications and was registered. He obtained work in the Cancer Research Department of Middlesex Hospital. His wife obtained a position in a library. Both she and her husband were interested in books and she used to bring books home. It had been brought out in the proceedings—a fact previously unknown to the husband—that as a young girl she had had a tendency to steal, and her parents, who were wealthy people in Vienna, decided that the best method of treatment was to place everything at her disposal so that she would have no wish to steal. The wife admitted the larceny, but the husband disputed that he knew the books had been stolen. The magistrate, however, having convicted both, decided, said defending counsel, that Dr. Hohenberg, being the elder person and the husband, should bear the major penalty.

Evidence as to character was given by Dr. Eugene Felix, Dr. F. Silverstein, and Prof. Ernest Freund, all formerly of Vienna, but the Council found the conviction proved and directed erasure of the name.

Convictions for Illegal Operation

The Council considered the case of William Spencer Lewis, registered as of Redcliffe Gardens, South Kensington, who was summoned on the charge that at Surrey Assizes in February, 1942, he was convicted of unlawfully using an instrument with intent to procure miscarriage in the case of four women and of conspiring with two other persons to procure the miscarriage of a fifth, and was sentenced to three years' penal servitude on the first four counts and eighteen months' imprisonment on the fifth (all concurrent) and ordered to pay the costs of the prosecution.

Dr. Lewis did not appear nor was he represented.

It was stated by the solicitor to the Council that Dr. Lewis had surgeries in South Kensington and Shaftesbury Avenue and a house at Staines. In the first case the woman, after seeing her own doctor, got the name of Dr. Lewis from some other source and went to see him at South Kensington. She told him she was pregnant and said that she thought he could help her. He told her to come and see him at his house at Staines and that his fee would be £35. This was fixed without any medical examination. She went to his house and from there to a bungalow, where she was treated for eighteen days. In the second case in similar circumstances £30 was paid, in the third case £45, in the fourth case 60 guineas, and in the fifth case £65. The defence which Dr. Lewis put in was that the women were inevitably going on to miscarriage and that he did not use any instrument, but treated them in an antiseptic way and allowed them to miscarry in his house.

The Council directed the Registrar to erase Dr. Lewis's name from the *Register.*

The case of SEWERYN KAMINSKI, registered as of Renfrew Street, Glasgow, was heard. He had been convicted at Glasgow in March, 1942, of procuring abortion and sentenced to eighteen months' imprisonment. Dr. Kaminski did not attend. It was stated that he was M.D. of the University of Warsaw and had been admitted temporarily to the Foreign List of the *Medical Register.* Dr. Kaminski had charged £2 for the examination of the woman, and £19 was paid him later; his total fee was £28, £7 remaining owing.

In this case also the name was erased.

Charge of Interfering with Persons in H.M. Service

The Council heard the case of JOHN KNOX THOMPSON, registered as of Princes Road, Liverpool, who was convicted at Liverpool Assizes in October, 1941, of interfering with persons in H.M. Service and attempted false pretences, and was sentenced to four years' penal servitude and to pay the costs of the prosecution.

Dr. Thompson was not present nor was he represented.

The Council's solicitor said that under King's Regulations soldiers on furlough who required medical aid should apply to the nearest Service hospital, or, if that was not possible, to a civilian medical practitioner. This case arose out of an application by soldiers on furlough to Dr. Thompson. He was charged on nine counts with issuing untrue medical certificates to soldiers purporting to show that they were unfit for duty and to travel, whilst in fact they were fit. The evidence was to the effect that soldiers on leave in Liverpool went to the doctor when their leave expired and on payment were, without any examination, issued with medical certificates that they were suffering from gastric influenza. In one instance a soldier on leave was ill and went to the doctor, but refused to pay the money asked and received a certificate that he was fit for duty and to travel, but when he left the surgery he collapsed in the street, and on examination by an Army doctor was ordered to bed and was detained for ten days with a highly infected and septic throat. The written defence was a denial of the allegations.

After deliberation *in camera* the Council directed the Registrar to erase the name.

Other Cases

JOHN NEIL LEITCH, registered as of Great Cumberland Place, London, appeared before the Council on a charge of having been convicted in March last of obtaining credit of over £10 while an undischarged bankrupt, and was sentenced to three months' imprisonment in respect of each of three charges, the sentences to run concurrently. Dr. Leitch attended and gave an explanation of the circumstances in which credit was obtained.

After deliberation *in camera* the Council did not see fit to direct the Registrar to erase Dr. Leitch's name.

Two or three other cases of charges against practitioners were postponed until the next session. In another case the entire hearing was *in camera* and lasted more than two days. At the conclusion, the facts alleged against the practitioner were found not to have been proved to the Council's satisfaction. The charge was not read in open Council.

BRITISH MEDICAL ASSOCIATION

ANNUAL REPRESENTATIVE MEETING, LONDON, 1942

The Annual Representative Meeting of the British Medical Association will, subject to war conditions, be held at B.M.A. House, Tavistock Square, London, W.C.1, on Tuesday, Wednesday, and Thursday, September 8, 9, and 10, 1942.

RESOLUTIONS ON MATTERS OF WHICH TWO MONTHS' NOTICE MUST BE GIVEN

Mode of Election of Council by Groups in Great Britain or Northern Ireland

MOTION by GRIMSBY: That By-law 55 (3) be amended to read as follows:

> The said voting papers shall be sent to the Association at the Head Office within such time as the Council may from time to time prescribe by notice given as aforesaid, and the particulars which shall be included in the voting papers shall be confined to the candidate's address.

Election of members of Council by (*a*) Isle of Man, Lancashire and Cheshire Branches (Group C); (*b*) Derbyshire, Leicester and Rutland, Lincolnshire, and Nottingham Branches (Group D); (*c*) Metropolitan Counties Branch (Group I); (*d*) Dorset and West Hants, South-Western, and Wiltshire Branches (Group K): the following is the result of the voting in these elections.

Group C		
F. M. Rose	254	*Elected*
E. I. Claxton	213	
Barbara M. L. Abercromby	167	
R. Baring Davidson	134	
R. L. Newell	429	*Elected*
D. R. Owen	97	
Group D		
F. Joselin Jauch	144	
E. Lewis Lilley	259	*Elected*
Group I		
H. H. D. Sutherland	312	
A. Phillips	407	
Dame Louise McIlroy	377	
P. Inwald	517	*Elected*
E. A. Gregg	319	
V. Zachary Cope	418	*Elected*
F. Gray	268	
H. Vickers	121	
W. W. Fox	432	*Elected*
M. F. Moloney	451	*Elected*
George de Swiet	281	
Group K		
O. C. Carter	167	
D. Stanley-Jones	17	
F. A. Roper	266	*Elected*

G. C. ANDERSON,
Secretary.

SCOTTISH LOCAL MEDICAL WAR COMMITTEES

CONFERENCE OF REPRESENTATIVES

A meeting of representatives of Local Medical War Committees and members of the Scottish Central Medical War Committee was held in the Scottish House of the B.M.A. on June 12, Mr. Thomas Johnston, Secretary of State for Scotland, presiding. After welcoming the representatives and thanking Local Medical War Committees for their work, Mr.

Johnston referred to the Clydesi
ment for the care of the
industrial workers, and said
Government was watching the
ment of this scheme with grea
He then introduced Lieut.-Ge
Director-General, Army Medica
who also thanked the Scottisl
Medical War Committee and
Committees in Scotland for the
with which they were dischargi
difficult task, and made a comp
statement on the organizatio
medical services for the fightin
Dr. G. C. Anderson, Secretar
Central Medical War Commi
some information to the conf
the future demands for med
sonnel.

An opportunity was then aff
questions, which were replie
Lieut.-Gen. Hood, Dr. G. C.
Dr. Davidson, Chief Medica
Department of Health, and D
Craig, Secretary of the Scottis
Medical War Committee.

H.M. Forces Appoint

ROYAL NAVY

Surg Lieut.-Cmdr. A Long to be S

ARMY

Major-Gen. C. M Finny, O.B.E., lat
(ret.), has reverted to the rank of Col.
request whilst employed during the p
gency.

Major C. E. W. S. Fawcett, retire
R.A.M.C., on ceasing to be re-em
resumed the rank of Lieut.-Col.

ROYAL ARMY MEDICAL CO

Lieut.-Col. P. J. Ryan, M.C., having
age for retirement, is retained on the
supernumerary to the establishment.

SUPPLEMENTARY RESERVE OF OFFICERS;

War Subs. Capt C. M. Isherwoo
quished his commission on account of i
retains his rank.

TERRITORIAL ARMY, R.A

War Subs. Capt. F. C. Durbin has
his commission on account of ill-he
granted the rank of Major.

WEEKLY POSTGRADUATE

FELLOWSHIP OF MEDICINE, 1, Wimpole
Royal Cancer Hospital: Revision
anaesthetics. Lectures 4.30 to 6 p
work daily at various London hospit
Hospital for Diseases of the Hear
Wed., 10 a.m., Out-patient clinics.

DIARY OF SOCIETIES & LE

MEDICAL SOCIETY OF LONDON, 11, Cha
W.—*Mon.*, 5 p.m. First Lettsomian
Epilepsy by Dr. Anthony Feiling

B.M.A.: Branch and Divisio to be held

CITY DIVISION.—At Metropolitan
Kingsland Road, E., Tues., July 14,
Meeting to consider the report of
Planning Committee

KENSINGTON DIVISION.—At British
Medical School, Ducane Road, W., M
8.30 p.m. General Meeting to continue
Interim Report of Medical Planning C

BIRTHS, MARRIAGES, &

*The charge for inserting announcement
head is 10s. 6d. This amount should
with the notice, authenticated with th
address of the sender, and should reac
tisement Manager not later than first
morning to ensure insertion in the cur*

BIRTH

RAE.—On June 23, 1942, at Birmingha
(*née* Walker), wife of W. K. Rae
L.R.C.P., a son (Bruce George Will

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY JULY 18 1942

THE G.P. AS THE BASIS OF THE MEDICAL SERVICE OF THE FUTURE

BY
A. STAVELEY GOUGH, M.B., F.R.C.S.
AND
A. A. DUFFUS, M.B., Ch.B., D.P.H.

In the concluding paragraph of an article on national health policy that appeared in the *Supplement* of March 7 the question whether a State Medical Service should be based on the practitioner or the hospital was considered. It was there stated that, according to some, "a scheme based on the hospital would give a false conception of medicine. . . . The hospital deals, generally, with the abnormal; the general practitioner, generally, with slight and temporary deviations from the normal. The hospital is a curative service, and the very need for it proclaims the failure of other services. . . . If the position of the general practitioner were strengthened it would prevent much unnecessary resort to hospitals. A service based on the hospital might even deter people seeking the preventive and advisory side of general practitioner service."

The inherent logic of this position becomes more apparent when the situation is carefully analysed. It will be generally agreed that over 75% of the usual ailments suffered by the population are of such a nature that specialist treatment is unnecessary; it may even be harmful, since the specialist outlook is inclined to miss treatment of the patient as a whole, and therefore fails to give full consideration to the environmental and economic surroundings.

Environmental circumstances are responsible for a high proportion of illness, and can be understood only by those working in direct contact with the patient or, more particularly, with the family. Many relatively minor illnesses will develop and form the basis of more serious disability if the patient is not constantly advised as to the planning of his future actions from both a therapeutic and a hygienic point of view. The advice thus given may well be the most effective form of preventive medicine, and it is undoubtedly best given by the family doctor, who usually understands the difficulties and limitations under which his patients may act and live.

The Early Recognition of Illness

In any form of medical service the majority of illnesses must be treated by the general practitioner, and it follows, therefore, that the better the service the less the incapacity and future mortality that are likely to result. It is also obvious that the G.P. must be the first to be able to discover the signs of serious illness, and few authorities will deny that the incapacity or mortality arising from such illnesses depends in the main on their early recognition and immediate handling: thus it is well known in the fields of medicine that the mortality rate in pneumonia largely rests on the recognition of the earliest signs and symptoms, with the immediate institution of the appropriate treatment. The application of such treatment by a specialist later may not improve the mortality rate; indeed, the delay will almost certainly increase it.

In surgery, too, it is becoming increasingly obvious that the general mortality rate of the usual acute emergencies is influenced much more by early diagnosis and hospitalization of the patient than by the individuality of the surgeon who may operate. Here again the time factor is all-important.

If the above statements be generally accepted it becomes obvious that any marked improvement in the prevention of incapacity and the lowering of mortality arising from illness must primarily depend upon the formation and maintenance of the highest type of G.P. service and the recognition that this service forms the key to the practical application of all further medical and surgical advance. It is, therefore, important that this service should form the basis of future policy.

For the furtherance of these ideas we propose that the G.P. service shall be given such a position that it will not fail to attract men of a calibre reasonably equal to that of the specialist. (To-day it would appear that a large proportion of our students are attempting to become very sectionalized specialists, often without any good basis of general training other than that obtained at the teaching hospital.)

The G.P. Hospital Unit

The maintenance of the efficiency of a G.P. service is of paramount importance, and we suggest that this could best be attained by the formation of G.P. hospital units. At present it can be said that, in general, the best G.P.s are those who have hospital appointments or have access to hospital work. In view of the opinions that have been expressed about the staffing of all hospitals by consultants and of health centres or communal surgeries by G.P.s, there seems to be a real danger that the latter may have to pass on to specialists all cases except those of minor illness; this will lead to deterioration in G.P. service, not improvement.

It is now very evident that domiciliary treatment is becoming more limited, not only through the desire of the doctor and patient for up-to-date treatment but also because of social and domestic difficulties. Domestic and home nursing "help," which has been such an aid in the past, is now more than ever difficult to obtain. The well-to-do can enter nursing homes or engage private nurses, but the poorer classes often have no choice but to go to hospital, mostly through domestic and not medical necessity. There they occupy a hospital bed which should properly be devoted to a case requiring investigation or real hospital-type treatment. It is suggested, therefore, that appropriate hospital accommodation could and should be provided by the formation of special hospital wards set aside for the treatment of such cases by G.P.s. Such accommodation might be of a standard somewhat below that necessary in the special-treatment wards of the hospital. It is important that these wards should be part of a general hospital unit and that they should be under the direction of the medical superintendent or other hospital authority. General practitioners would treat their own cases, and under any proposed extension of the National Health Insurance scheme it could become a statutory obligation for them to do so; they should also be able to call upon the services of the hospital specialist's department when they considered that the occasion arose, or on the advice of the medical superintendent, so that cases requiring specialist treatment could be immediately transferred to the appropriate ward. General practitioners thus closely bound up with the hospital would undoubtedly have a higher standing with the public, would have a far more intimate contact with other general practitioners and specialists, and would have an incentive to keep their work up to the average standard. They would be encouraged to act as clinical assistants by rota in special departments, unless they were hoping to proceed to some specialist degree, when they might prefer to remain attached to one department.

Objections may be raised that it will be impossible for the nursing staff to deal with the large numbers of doctors coming into the wards. Under present arrangements there may be some truth in this, but it must be realized that these wards will have to be specially organized and staffed, and we believe that the difficulty can be got over. The nursing homes have been dealing with the problem successfully for years.

Conclusion

We feel that attachment of the G.P. to hospital would be more likely to improve the standard of medical efficiency than would his attachment to an outside diagnostic health clinic alone. For convenience in scattered or rural districts, the health centre or communal surgery could be combined with these general-practitioner beds in the same building, and such beds would be under the administration of the parent district hospital.

In short, we are of the opinion that any practical advance in medicine must depend upon a higher grade of G.P. whose ability and interest are maintained by link with a hospital. The present-day tendency to sectional specialization and the gradual disappearance of the former consultant make it necessary that the G.P. should be well qualified with an all-round knowledge, so that he may best serve his patient and the specialist by intelligent reference to the right department. This cannot be achieved if, throughout his career, he is not in a position to obtain first-hand knowledge of the handling of the more serious cases.

Correspondence

Future of Medical Practice

SIR,—Those of us who have been studying the future of medicine with varying degrees of instruction and wit appear to have divided into two bodies of opinion. One body advocates an evolutionary change, meaning a slow progress to better conditions and wider service; the other believes that a radical upheaval of our whole health service is a matter of urgency.

It is always pleasanter and easier to take one's time, to plan one's route to the ultimate goal, and errors of judgment and topography can in this way be largely avoided. But this is not the way of the world. Evolution is not a gradual process unless recorded from a great distance and over a long period of time. It consists essentially of prolonged periods of little change punctuated by sudden steps forward. Consider the habits of birds, insect life, the world's diet, or what you will. The main factors in their evolutionary changes are such dramatic events as drought, famine, pestilence, the industrial revolution, the invention of steamships, wars, and so on. In the evolution of medicine we find similar events—anaesthetics, wars, sulphonamides, the National Health Insurance Act, and so on—bringing about evolutionary change by revolutions.

We seem to be on the brink of another medical revolution. The value of health to the community has appeared as an asset whose worth has not hitherto been appreciated, and the efforts of the community to promote and safeguard it are considered inadequate. Mr. Samuel Courtauld, the well-known artificial silk industrialist, recently said that "the haunting fear of illness and old age is the deepest-seated cause of industrial discontent." Such words from such a man are worth remembering. To-day, medicine is seen to be only a part of the great problem of health, and is found to be inseparable from its companion problems of nutrition, housing, clothing, education, employment, recreation, and so on.

Much attention has of late been paid to the organization of the hospital system. Important as this is, it is not one of the great events which will be regarded by future students of the history of medicine. The outstanding impending change in medicine is the adoption of the clinic system for the whole country, where doctors will work in groups instead of either alone or with one or two partners. For, once this change is effected, the results will be far-reaching and revolutionary. The general practitioner of the future will then have an expectation of life approaching that of the other professions, instead of one even below that of the miner. He will have time and opportunity to do much more thorough and efficient work than he could possibly do at present. The fact of having adequate room and access to immediate ancillary work, the help of nurses and clerks, the presence and co-operation of other practitioners of his group, suitable off-duty periods and regular holidays, that spirit of emulation ever present in the human species which will make one clinic endeavour to outshine its neighbour—will all promote a service far superior to anything ever before offered to the community.

Pensions for doctors and their widows, steady income capable of increase by deserved promotion, homes removed from surgeries and noisy street corners will appeal to all the younger and most of the older members of the profession, and certainly to the great majority of their wives. Although the gross income in some cases will be decreased, the net income will be greater for the younger men, and probably little lower for the older men. The expenses of large premises and the resultant extra domestic assistance will disappear; life in a smaller house or flat will lower the cost of rates and rent; the money set aside for life insurance and purchase of a practice will not be needed; bills for drugs and instruments and all those smaller items connected with the running of a practice will no longer arrive; freedom from financial worry or embarrassment will lighten our lives.

The cost of running this scheme will be no greater than the cost of the present medical services. The cost to set it in motion will be far outweighed by the benefits which will accrue to the community. The administration must be in the hands of those most capable of working it. Local, regional, and divisional councils will be needed. These must be staffed by active members of the profession, assisted by democratically elected representatives of the lay public and a representative of the Government.

To lead the community in a search for optimum health there must be developed a means of doing so. When doctors work singly such long hours as they do at present, it is too much to expect them to meet and discuss their work and the possibilities of improvement. They will only meet if things go seriously wrong. The clinic system, however, will get men together, and when men work together as a body they get things done. They can produce integrated work and can give the community the result of combined service. On the other hand, if we as a profession adopt a passive, waiting attitude we shall soon find ourselves the slaves of a bureaucracy more interested in statistics than personalities. Then the fundamental core of British medicine—the family and the family doctor—will die, smothered in formless forms, certificated to death.—I am, etc.,

Leeds R. A. MURRAY SCOTT.

Serving Officer Views State Medicine

SIR,—I have been perusing such copies of the *Journal* as I have with me—all, with the exception of 3 or 4 numbers, from June 28, 1941, to May 9, 1942—and I find there are approximately 75 articles, letters, etc., on the subject of State medicine, planning for the future, and so on. I have been able to find 3 only among all these which are signed as being from medical men at present with the armed Forces This is due, I am sure—in fact I know—not to lack of interest in the future but to a feeling of hopelessness, a feeling of being "tucked away" in the Services unable to do anything while one's future and all that one is fighting for are being debated and settled by others who are able to express their opinions more freely and more often.

I would like to draw attention to a letter in the *Supplement* of August 30, 1941, from a Squadron Leader, R.A.F.V.R., who states: "But when it is all over I hope to return to a life like that which I was called upon to leave for a while: trust, friendship, willingness, and an absence of rigid regulations and formality; and meantime, while I (as well as hundreds of others like myself) am absent, the future of medical practice is being discussed and planned and plotted." Later on he suggests that the return of absent practitioners be awaited before anything is decided upon: "If State medicine must come, then those already in a State service should be given the chance of assessing what their life will be like in an alternative service."

I give my whole-hearted support to the points expressed in that letter. Generally speaking, the majority of the letters and articles published during the last 10 months either support a State Medical Service or suggest various schemes for medical practice after the war, presumably taking for granted that State control will be in. For example, in the earliest number I have with me, June 28, 1941, there is an article headed "Medical Planning Research: Manifesto by the 'Younger Half'." It is, granted, a wide and comprehensive survey of the many problems to be tackled, but it assumes that the State will have a large measure of control, and apparently the 48 signatories to that letter are willing to have such control. I would like to know how many of them at the time of writing that letter were in the armed Forces, and how many of them had had experience of State control as it can be. In the *Supplement* of January 3, 1942, there is a letter from the Secretary of the B.M.A. which was sent to the honorary secretaries of Divisions throughout England, Scotland, Wales, and Northern Ireland, suggesting that Divisions organize themselves into groups for the consideration of the future of medicine. Here again the medical man who is at present with the Forces was sort of "missed out."

I have had many talks with medical officers about State control, and I know that among the "hostilities only" medical men even the possibility is regarded with some apprehension. An R.A.M.C. friend of mine writing from abroad said: "No financial security, no regular hours, nothing is worth the sacrifice of soul which would be entailed. We should all have to be 'Yes-men' to administrators, lay people, senior officers in the State service, and the most affirmative 'Yes-men' would get the jobs." I put forward a plea, which I am sure will be echoed by the great majority of doctors who, like me, are temporarily with the Forces, to put on the brake, strongly, and stop this precipitous rush towards State medicine.

The medical profession must think well and deeply, especially the younger members, before plunging into a State service. Could any financial security, regular hours of work, etc., compensate for being a "junior officer" in the State service, with its resultant loss of initiative, continual referring upwards for approval, perhaps not even to other medical men, having to account for every halfpenny spent on drugs, etc., being in such a position that the disapproval of an immediate superior could spoil one's chances of getting some particular appointment that one wants, having to take holidays after others have had the pick of the season, because one is the "junior officer," and not arranged by mutual good will as at present in the firms as we know them? Are the "pros." of State medicine worth the sacrifice of liberty, the freedom to resign from a job one does not like, the choice of where one works, the choice of under whom one works, and of the type of medical work one does? Are they worth having the knowledge hanging over one like a cloud that every so often a report on one's work is sent up to some central administrative body or other by an immediate superior, and on that report promotion may depend?

I am convinced that those upholders of State medicine will refuse to believe that such disadvantages could possibly arise, but arise they would as inevitably as the coming of the triplicate form, the "leave-chit" for holidays, the expenses and allowances forms, and endless other forms and amendments which any county M.O.H. can tell you about: all this culminating in the slow, steady, soul-destroying progress upwards if one was "a good boy."

I would like to finish by reminding the medical profession that for the duration of the war they hold the future of medical men in the Services in their hands. It would be grossly unfair if any radical changes came *in* before we were *out* and able to give all our attention to the very great problems confronting the profession, which will affect us for many more years to come than the majority of those at present in civilian life.—I am, etc.,

PETER WALTON,
Surg. Lieut., R.N.V.R.

National Eye Service

SIR,—The recent letter from the secretary of the National Ophthalmic Treatment Board announcing the postponement of the application of the new scale of charges which would have been operated on July 1 will, I am afraid, cause much heart-burning among all ophthalmic medical practitioners, including ophthalmic surgeons. However, they must not be discouraged, for the threat of lay organizations to withdraw their support from the National Eye Service could not have come at a more opportune moment, for the following reasons:

1. The ophthalmic medical profession is probably more united to-day than ever before, thanks to the recent generous action of the B.M.A. in granting to the Association of British Ophthalmologists the privilege of having two observers on the Ophthalmic Group Committee, and it is also significant that one A.B.O. member is on the National Ophthalmic Treatment Board.

2. The proposed new scale of charges was well supported by ophthalmologists and was so reasonable that it was approved by the B.M.A. Council.

3. The reasons for the postponement are so unconvincing that those who meet the representatives of the dissatisfied parties should have no difficulty in making them realize the justice of our claims, although the unwillingness of approved societies to part with their accumulated funds may result in our having to collect the extra 10s. 6d. from those in the new insured group ourselves, most of whom, it must be remembered, previously paid full fees or at least a guinea fee, and in any case will not qualify for ophthalmic benefit for some time.

4. It is inconceivable that the Government will permit approved societies to delete the National Eye Service from the methods whereby their members entitled to ophthalmic benefit obtain it.

5. The present prosperity of the workers and almost complete absence of unemployment will result in a greater demand for the service.

6. Thanks to the foresight of our leaders in introducing the National Eye Service at a time when few appreciated the necessity for meeting the needs of the less fortunate members of the community, we are now dealing with a greater proportion of the population than ever before, for school children, members of the Services, those called up under the Registration for Employment Order, and not a few members of the Civil Defence, are being referred to us.

Many will agree that the National Eye Service can be improved to meet the changes which are rapidly taking place, but its present popularity has more than proved that it can be made the basis of a truly national eye service. Indeed, a step has been taken recently which will meet an old-standing objection on the part of approved societies, which should encourage those with grievances to submit them for consideration.—I am, etc.,

Liverpool H. RICHARD BICKERTON.

Ophthalmic Medical Service

SIR,—May I draw the attention of our colleagues to the following points. It has been so often stated, both in public and in private talks, that there are not enough medical men trained to do eye work in the country to meet the needs even of the insured public that some of us have almost begun to believe it. I venture to submit that it is not so on the following grounds.

To save the effort of unnecessary calculations for anyone who is interested I use round figures and also make the maximum allowance for views other than our own. The total population of the country may be taken to be fifty millions, and we can exclude from our calculations all school children—say, ten millions—because they are cared for by the local authorities. It could also be accepted that most of the school medical officers are not on the B.M.A. list of approved ophthalmic medical practitioners. Thus we have to provide ophthalmic medical service for forty millions. Incidence of errors of refraction is about 10% at the most of the adult population. Hence four millions out of forty have to be catered for for defective sight. It is not unreasonable to suggest that on an average each one of these four millions will require change of lenses once every four years. Thus, at the maximum, even if the whole adult population of Great Britain were provided with specialist ophthalmic service every year, a million patients will have to be dealt with. Though there are about 1,000 ophthalmic medical practitioners on the B.M.A. list, taking into consideration wartime conditions and other objections I will count for my argument that only 500 are available to provide this service, and by a simple calculation we arrive at the figure of 2,000 to be seen by each in the course of a year. If we take 300 working days out of the 365, each ophthalmic medical practitioner will have to attend to about 7 to 8 patients per day. Hardly anyone would argue that this would be working him too hard, and he would be left with enough time to attend to patients suffering from diseases of the eye and to operative work.

Therefore, I request my colleagues not to allow the statement on the number of ophthalmic medical practitioners to pass unchallenged. The real problem is poor distribution of practitioners and dispensers, which can only be remedied by deliberate and systematic planning and not by *laissez faire*.—I am, etc.,

Doncaster. M. D. THAKORE.

Free Choice and Goodwill

SIR,—Many will agree with the views of Dr. Cockshut (*Supplement*, June 27, p. 98) that free choice is incompatible with a salaried State service and with his pessimism concerning compensation for loss of goodwill. A post-war general practitioner service will probably be an extension of the present system, as recommended by the majority of the Medical Planning Commission. There are many good reasons for having it so, but as health schemes will continue to be limited by financial considerations during the period of national poverty which lies ahead, cheapness is likely to be the deciding factor with politicians. The panel system, or some modification of it, will provide the greatest health of the greatest number combined with the greatest economy.

In the unlikely event of medicine as a business being completely replaced by medicine as a social service, one must be sceptical about compensation being granted for loss of capital. A claim for such would meet with the greatest resistance. Socialization in the form of free clinics of various kinds has progressed insidiously during the past 20 years without any compensation whatsoever.

The amount invested in goodwill is a capital sum which doctors for generations have calculated on realizing on retirement as they realize a capital sum on the maturity of a life policy. When goodwill is bought by instalments out of profits over a number of years, doctors have hitherto been right in believing that they are thus investing money. A practice built up *ab initio* also has a capital value, the sum realized on transfer compensating for the lean early years and the outlay on education. Pensions, if granted, might not suffice in many cases to compensate for loss of capital. They should rather be regarded as part of remuneration for work done. In no Government service does pension ever represent return of capital.

It would be grossly unfair if the business side of medicine were selected as being suitable for a process of even partial confiscation, while other capitalist enterprises were left *in statu quo*. The subject is of sufficient importance for the B.M.A. to have its views formulated well in advance.—I am, etc.,

Glasgow. J. N. JAMIESON.

War Damage Insurance

SIR,—It is easy to be wise after the "blitz," especially when one has learnt one's lesson at some cost. To my surprise I found that I and nearly all my colleagues in Bath had committed the same errors of either inaccurately or inadequately insuring our effects against war damage. Medical men are notoriously bad at business, but it seems to me that there must be some fundamental confusion as to what the War Damage Act, 1941, means for the medical profession. There was an editorial in the *Supplement* of Jan. 17, 1942 (p. 10), giving details of war damage insurance, but even that I submit was not sufficiently lucid. Moreover, and this is important, the insurance companies, usually so helpful in effecting other types of insurance, are not interested in war damage insurance.

Under the business scheme, which affects every medical man other than salaried officials, there are three groups. The first concerns those whose equipment, motor car, etc., do not exceed £100 in value. That group, which must be very few in number, may insure voluntarily under the private chattels scheme. The second group concerns those whose equipment, motor, etc., exceed £1,000 in value. Such a group will include radiologists and other similar consultants. They *must* insure under the business scheme, and to the full market-value: not to do so is an offence and penalties may be imposed for non-compliance. The third group, which concerns the majority of medical men, comprises those whose equipment, motor car, etc., are between £100 and £1,000 in value. The Act states that insurance for this group is voluntary. This is misleading because, in fact, unless insurance to the full value of *all* the above-mentioned articles is effected, and any one of them be damaged, the Board of Trade will apply "average." To illustrate this point I give two examples:

"X" insured his car for £100, its value, but not his surgery furniture or drugs, value £400. The car was a total loss, whereas the surgery furniture and drugs were undamaged. The Board of Trade applied "average," and instead of paying £100 for the loss of the car settled the claim for only

$$\frac{100}{100+400} \text{ of £100=£20}$$

"Y" insured his car for £100 when its value was £200, and his surgery furniture and drugs for £400, half their value. All were lost. The Board applied "average" and he will receive only £250, and not £500.

Thus, for insurance to be completely effective, the business equipment, including car, should be insured for their full market value less depreciation. It is important to note this "market value." A desk which cost £25 ten years ago may now have a market value of £50 owing to the increased cost of furniture. Therefore the desk should be insured for £50 less such amount as it has depreciated in ten years of use. Incidentally, waiting-room furniture must be included under the business scheme. Where the waiting-room, however, is used as a dining-room a piece of furniture such as a sideboard might be included among the private chattels, and a canteen of silver should certainly be so included.—I am, etc.,

G. R. P. ALDRED-BROWN.

Married Women Doctors

It has recently been reported to the Central Medical War Committee that there are a number of married women doctors who are at present fully occupied with household duties and who could, if the necessary domestic help were available, be freed for medical duties. The committee will be prepared to take up with the Ministry of Labour the case of any married woman practitioner so situated, and particulars should be sent to the Secretary, Central Medical War Committee, B.M.A. House, Tavistock Square, W.C.1.

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieuts. P. O'Brien, G. T Holroyd, W V. Owen, R W. Duncan, J. Robertson, P. J. O'Meara, K. J. O'Connor, and E. B. Martin have been transferred to the Permanent List

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lieut. E. Laidlaw-Thomson, S S.R.N V.R., has been transferred to R N V.R., in rank of Temp Surg. Lieut. (Substituted for the notification in the *London Gazette* dated May 15, 1942.)

Prob. Temp. Surg Lieuts. W. J. J. Breakey, W. J. Knowles, R. R. Dickson, W. B. Dawson, A. A W Beach, J. M. McAlpin, and W. G Rees to be Temp. Surg Lieuts.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

D S Stevenson, M.B.E., to be Lieut., and is granted the acting rank of Col.

War Subs. Capt. E. A. I. Phillips has resigned his commission and is granted the rank of Major

War Subs Capt. O. H. Mavor has relinquished his commission and is granted the rank of Major.

War Subs. Capts I. G. Briggs and J. D Benjafield have relinquished their commissions on account of ill-health and are granted the rank of Major.

War Subs Capts C. M. Wells, A. M. Coondoo, B. D. Merrin, and R E. G Smith have relinquished their commissions on account of ill-health and are granted the rank of Capt.

War Subs. Capts. J. Laughlin, J. R. Winter, F. H. McKenna, and J. D Philp have relinquished their commissions on account of ill-health and retain their rank.

War Subs Capt W. S. Ormiston has relinquished his commission on ceasing to be employed.

War Subs. Capt T. C. Sato has relinquished his commission on account of ill-health and is granted the rank of Capt (Substituted for the notification in a *Supplement* to the *London Gazette* dated June 12, 1942.)

Lieuts. C J. B Anderson, J Scott, J. Vine, S R Adlington, and J Tobin have relinquished their commissions on account of ill-health and retain their rank.

Lieut C. H. Smith has relinquished his commission.

The surnames of Lieuts. S. K Squires and W. Phillips are as now described and not as stated in *Supplements* to the *London Gazette* dated Jan. 27, and May 1, 1942, respectively.

To be Lieuts: F. Bernstein, J. T. D. Clark, J. Clark, W. B Clark, A. Bromley, J. Cowan, A. S. Craner, E. Cronin, G J. Cunningham, D. Davidson, J. Fine, S Gordon, C. H. Goldmann, C. L Greenbury, M W Grunstein, F. Gugenheim, F D. Hark, C R. Harris, R. V. Havard, W. Hobson, D. W. M. James, R. V. Jones, J. W. Litchfield, P. E. McKernan, I. McPherson, J T. Marr, W. Malone, D Menzies, L. G J. Pitt-Payne, R. K. Price, D Rooney, R. G. W Southern, H. E. Seingry, M R Thompson, A B Unwin, T. de L Walker, B. E. Welton, A. Wood, P. Wiles, E. D. Lindow, R. Collins, P. G. Roberts, M W Annear, W. G. Barrie, C. C. Beresford, A. K. Bingham, L. Brill, C H Brown, J. C Brownlee, W. P Clothier, J. H. Colhoun, D L. Davies, R. I. S Dunn, J. H. Haldane, J. A. V. Hamilton, E. Isaacson, J. S Jeffrey, G. Jelinek, G Johnstone, C. Jones, E. H. Jones, N. B. Jones, J. M Lees, H. Levin, W. B. Lipschitz, J. Littlewood, C. Mackenzie, A. G McLeod, N. F McLeod, R. McIlwraith, J. H Molloy, S. H. Martin, G H Waddington, I. T. F. Wiley, N. F Winder, W W. Yellowlees, T. E. Broadbent, T. A. Berry, J. F Birrell, C. A Borland, J. W. M. Christie, R. Coleman, M Diamond, M. E. Disney, R K. Dowson, G B. Gibson, T. E. Hall, J. M Hamilton, G. J Harrison, R. N Herson, W R. C. Lang, D. Macdonald, H. Mathers, J. McI. Megaw, A G. B. Miller, H H. Miller, J. E. Milne, C L. Owen, G. H Pimblett, L J. Prosser, E. G G. Rhind, T. R. A. Richmond, R. P. J Rutherford, M. Sarwar, J. P. Sharp, J. F. Sheehan, H. M. S. Stanley, J. S. Stevenson, F. J Swinton-Esher, D. O. Walker, H. Willcox.

ROYAL AIR FORCE

Air Vice-Mshl. (Temp Air Mshl) Sir H. E. Whittingham, K B E, K.H P, to be Air Mshl.

Group Capt H L. Burton, K H.P., to be Air Cdre.

The following Consultants have been promoted to the acting rank of Air Commodore. Group Capts. A. F. Rook, O.B E., J J Conybeare, M.C., C. P Symonds, G. L. Keynes, P. A. Hall, P. C Livingston, O B.E., A.F C., E. D. D. Dickson, R. R. Macintosh, and Wing Cmdr. S. Cade.

Group Capt. D'A. Power, M.C., to be Air Cdre. (Temp)

The following Group Capts (ret.) who have continued to be employed on the active list in their present rank now relinquish that rank at their own request and assume that of Wing Comdr.: R. A. G. Elliott, R. J Aherne, M.C., T. Montgomery.

Squad Ldr S. B S Smith to be Wing Cmdr. (Temp).

To be Medical Officers (Emergency) with the relative rank of Flying Officer for employment with the R.A.F: The Hon. Phyllis L. F Acland-Hood, Miss Alison B. Cruikshank, Mrs. Mary S T. Logan, Mrs. Phyllys P Pigott, Mrs. Eveline M. D. M. Scott, Miss Winifred J. Symington, and Miss Kathleen E. A. Smith (promoted to the relative rank of War Subs Fl. Lieut).

RESERVE OF AIR FORCE OFFICERS

Squad Ldr F. I G Tweedie to be Wing Cmdr. (Temp).

Fl. Lieuts E A. Mayston and J H. L Newnham to be Squad. Ldrs (Temp).

ROYAL AIR FORCE VOLUNTEER RESERVE

Squad Ldr. J Wingate to be Wing Cmdr. (Temp)

Fl. Lieuts K F Caird, W. A. S Falla, H. A. Tracey, R G. H Cunningham, W. Hargrave-Wilson, C R. Jenkins, E B Rayner, G. P Arden, J G. McC Browne, W. H. Gossip, L. S. Henry, J. C. McGregor, D. M. Wallace, C. R Mayou, I B K MacGregor, W. Simpson, R. E. Angel, D M. Brown, R H. Craig, C Hotson, T. S. B Kelly, J. B. Maurice, G. MacK Gibson, B. J E. Anson, H S Atkinson, P R. Kemp, H. S. H. O'Conor, R. W Stewart M L. Maley, H. E. Pooler, B S. Robertson, K. W Bruce, D. G. Evans, G B Grayling, F. G. Mundell, J. H. Hall, H. J. Davies, D M Hannah, R Hill, A. Wilson, H. J H Hendley, J. B Methven, F. R Neubert, J. D. Ramsay, D. Skinner, T C. Wilson, J Courtney, L. G Anderson to be Squad Ldrs. (Temp.)

A Bowen-Davies to be Squad. Ldr (Emergency)

Fl Lieut. A K Thomas has resigned his commission and retains the rank of Squad. Ldr.

To be Fl Lieuts (Emergency). P. M Kelly, R C Browne, H A. Mackenzie-Wintle, C F. Price, S Stanford.

Flying Officers I L. W. Clancey, P Citron, C W. Hutt, J K Swanston, I W. H R. Cran, D S Grant, S. Duff, G. O Rosenvinge, R. W. Grayburn, I D Macintyre, H A Rowley, D. W. R. Ashby, W Cookson, E W. Somerville, S M Rigg, W. S Pitt-Payne, D. E. Mitchell, E. F Burton, and R A Trevethick to be War Subs Fl Lieuts

To be Flying Officers (Emergency). S. G. A. Bartlett, I G. Meiklejohn, J Newton, W B Newton, H. Pattinson, B M D Rosten, R. Solley, A C Warnock, G J. Amiel, T C Dance, M Kaufman, G H. Anderson, F D. Birks, J. Cramond, R G. Dewhurst, I Donald, J. S. Frew, J. C. H. Maidment, R. G Salpe, H P. Scurlock, J C W Somerville, G H. Templeman, L. G MacLachlan, F F. Sligo.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a m. to 4 p m, Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations *Daily*, 1.30 p m., Post-mortems *Tues.*, 10 a.m., Paediatric Clinic; 11 a.m., Gynaecological Clinic. *Wed.*, 11 30 a m, Clinico-pathological Conference (Medical); Pathology of Diseases of the Breast, Prof. J. H Dible *Thurs*, 2 p.m, Dermatological Clinic. *Fri.*, 12.15 p m, Clinico-pathological Conference (Surgical); 2 p.m., Clinico-pathological Conference (Gynaecological); 2 p.m, Sterility Clinic.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL.—*Fri.*, 4 p m. Mr. F C Ormerod: Bronchoscopy for Neoplastic and Inflammatory Diseases of the Chest.

DIARY OF SOCIETIES & LECTURES

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.—*Thurs.*, 4 30 p m., Annual General Meeting; 4.45 p m, Paper by Col Sir Rickard Christophers: The Treatment of Malaria and Some Points about the Drugs in Use against this Disease. A discussion will follow.

B.M.A.: Branch and Division Meetings to be held

KENSINGTON DIVISION.—At British Postgraduate Medical School, Ducane Road, W, Mon, July 20, 8.30 p m General meeting to continue discussion of Interim Report of Medical Planning Commission.

SHROPSHIRE AND MID-WALES BRANCH.—At Royal Salop Infirmary, Tues, July 21, 3 30 p.m. General meeting. Agenda: Report of Branch Study Group and consideration of Medical Planning Commission's Report All practitioners in the area of the Branch are invited.

SOUTH-EASTERN COUNTIES DIVISION.—At Royal Hotel, Galashiels, Sun., July 19, 2.30 p m. Consideration of Report of Medical Planning Commission.

BIRTHS, MARRIAGES, & DEATHS

BIRTH

MAHER.—At Dingle Nursing Home, Birmingham, on July 9, 1942, to Veric (*née* Howie, M.B., Ch.B. Glas), wife of Dr. John P. Maher, a daughter (Elizabeth Ann).

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY JULY 25 1942

PLANNING FOR GENERAL PRACTICE

BY

F. W. GRANT, L.R.C.P.&S.Ed.

Planning the post-war world is the fashion of the moment. It is perhaps only natural that those of us whose duties leave us enough energy and leisure should devote some thought to the sort of world that ought to be the outcome of those ideas for which we are fighting. In doing so it is very necessary to remember certain important conditions.

The crusading spirit engendered by war gives the ideologist and the faddist an opportunity for persuading us to accept criticisms of ourselves and ideas for our reformation which in ordinary times we would view with suspicion if not with disfavour. (The prohibition laws of the United States are the classic example.) In addition those of us who are engaged in planning are doing so while the majority of the profession are too busy to do anything but live from day to day, and the time will come when that majority will claim the right to plan the world they have won. My only excuse for discussing the subject is that I am a general practitioner in a poor community and have a first-hand knowledge of the type of practice that has been most criticized.

The Standard of Practice

It is a fair assumption that the poor and the near-poor do not get the same quality or quantity of medical attention as those who are better off, and that the standard of practice tends to be less good in proportion to the poverty of the community. This generalization is equally true of feeding, housing, or of anything else that costs money. I would prefer to put it that, beyond a certain point, the quality of a doctor's work tends to vary inversely with the quantity of work he has to do to earn a reasonable livelihood. It is only fair to point out that the service given to nearly one-half of the working classes is provided under the National Health Insurance Act and that the standard of pay which, it is alleged, determines the standard of work is that deemed adequate not by the profession but by the State.

It has been asserted that a doctor ought not to have to compete with his colleagues for income, for patients, for advancement, or for appointments. Competition—which is, after all, the executive manifestation of ambition, with the prize, whether it be patients, money, a university chair, or a laurel wreath, as the outward and visible sign of achievement—cannot be altogether evil provided it be honest. To compete for patients by trying to do better work than one's neighbours is surely less undesirable than to compete for promotion by seeking the patronage of one's administrative superiors. It is interesting and relevant to note that the Soviet Union, in spite of its basic philosophy, has been compelled to foster the competitive spirit and reward merit and diligence.

At this point it is necessary to consider what we want to achieve in our ideal service. It would provide every citizen with that quantity and quality of medical service which is necessary for his welfare, quite irrespective of his ability to pay for it, and would provide that service in the form most acceptable to him. In discussing these matters we have lately been prone to think of our patients collectively as "the public" or "the nation," and have been apt to forget that clinical medicine is concerned with persons and not with communities.

The patient wants a doctor in whose personal skill he has faith, and who will not only treat him to the best of his ability but will be a sort of medical tutor or mentor who will give him unbiased advice, based on a first-hand knowledge of the patient himself and of his environment, on health matters and on all sorts of things that have only a remote bearing on health. Particularly in poorer districts, he wants to feel that he has access to someone who will interpret and, if necessary, censor the advice given by clinics, hospitals, and consultants or through propagandist channels. I think he also wants to be the doctor's employer, to have the right to criticize him and to give effect to that criticism by transferring his custom elsewhere. For all this he is willing to pay, so far as his means allow, by any method which does not entail large and unexpected calls on his purse.

General practice differs from the other branches of medicine. It is much less of an objective science, and more of an art that is in large part subjective in so far as it depends for its success in contributing to the welfare of the patient upon a proper doctor-patient relationship that is best promoted by continuity of service and by a close knowledge of all the environmental influences on the patient's life. The good general practitioner desires that nothing should be done to disturb that relationship.

Nobody ever takes up general practice either to have an easy life or to make a fortune. All the doctor wants is a competence that will include provision for his old age or will be sufficient to enable him to make that provision for himself. He, quite rightly, wants his remuneration to bear a definite relation to his industry, skill, and experience. He would much prefer to have the opportunity of working in a well-equipped clinic where he would have the benefit of constant association with his colleagues. Lastly, he would value any opportunity of post-graduate study, which at present must take the place of part of his scanty leisure.

The administrator, whose function it is to direct, co-ordinate, and supervise, requires that the service should be efficient and that he should have the machinery to maintain that efficiency.

There are, in general, two methods of conducting a reformation—the totalitarian and the democratic. The former sweeps away the past completely and starts afresh; the latter, the usual British method, retains what seems to be good as a foundation for the future. Both these schools of thought are represented in medical planning by two main schemes.

The Salaried State Service Scheme

The first scheme is to abolish private practice and to put in its place a salaried service conducted by the State. Such a scheme has much to commend it. To the administrator it offers an organization which by reason of its compactness would be easy to control provided it was possible to obtain and maintain an adequate staff: to the patient it offers an adequate service from the scientific point of view (not necessarily better than or even as good as he could get from the alternative scheme) while taking away, in large part, his present advantages of privacy and free choice: to the doctor it offers a safe job with a settled income and a pension for his old age. It is alleged by the sponsor of this method that the patient no longer values the privilege of free choice; but the evidence for this is mainly presumptive, while the evidence to the contrary is not only more abundant but is, moreover, factual. No system can reduce night work and other non-routine calls on the doctor's time, nor is it possible to avoid the necessity for arranging consulting hours to suit the working hours of the patient. The total amount of work cannot be reduced, and if the number of doctors remains the same the average amount of work per doctor will not diminish.

The terms of service suggested are not unreasonable, although they have the disadvantage that the maximum would not be reached until after the practitioner had passed the peak of his earning power and the period of maximum personal expenditure. There is no guarantee that these terms would be obtained or maintained. In arriving at a proper remuneration any Government must to a certain extent be guided by precedent, and the precedents should be examined.

At national health insurance rates a practitioner can earn a net income of £1,000 a year (by 1938 standards) by making an average of 50 attendances a day throughout the year, with a peak load of over a hundred in busy times Is this a reasonable amount of work? Would any Government pay a salaried service at any higher rate than this, or would this be the basis of the salary scale without any private and club practice to subsidize it?

The fighting Services offer a career almost on a parallel with a salaried general practitioner service, and yet they have difficulty in filling vacancies in peacetime. How many officers surrender their pension and other rights and enter private practice with all its drawbacks? The school medical service gives all the advantages of the proposed scheme; but still school doctors leave to buy a practice, often with borrowed money.

The position of the medical profession in a salaried service would be analogous to that of the teaching profession. Teachers should have the most liberal of educations and should be paid for their learning; but the State in order to get cheap labour catches them young, gives them a narrow education in mass-production colleges, and pays them, in default of any competition for their services, a wage that would be scorned by many a day labourer. As a result, after half a century of State control, teaching, which should be one of the highest of the arts, has become the scullion of the professions.

A Scheme Embodying N.H.I. Features

The second method of reform is to embody the better features of national health insurance practice, with 30 years of experience behind it, in a scheme to provide a good service either for the whole population or for that section of the community which cannot afford to pay for it in the present way. The advantages to the patient are that he may choose his own doctor, that he is assured of continuity of interest and of treatment by the same doctor, and that he is the doctor's employer. The weakness of the present system, from the patient's point of view, is that transfer from one doctor to another is unnecessarily complicated by regulations which spread out the process to a period of from one to four months and which were not made in the interest of the patient or of the doctor. To the doctor the scheme offers the advantages of being free to practise where he pleases, of choosing the patients he will attend, of being able to concentrate his attention on the patient without being distracted by the administration, and of having a definite incentive to foster a proper doctor–patient relationship.

The weakness of national health insurance practice lies in its financial provisions. The value put on our services is too low, and tends to force us to reduce our standards of practice to enable us to earn a livelihood. This weakness cannot be compensated by the provision of pensions, because it has to be remembered that pensions would have to be earned and paid for by a reduction in income during our earning years. There is no essential difference between subscribing to a superannuation scheme and paying premiums to an insurance company. The system has another defect in that it makes no provision for any financial recognition of skill and experience.

The administrative mind is inclined to jib at this solution because of that bugbear of democratic reform, administrative difficulties. This argument should carry very little weight, as it is time we learnt that administration, while its function is to direct and supervise, should always be the servant of the organization and never its master, and that to put up with the second-best because the best cannot be administered is not an evidence of wisdom but an admission of incompetence.

General Considerations

Before coming to a decision as to the best method of planning the profession there are several more general considerations to be remembered. In a letter in the *Supplement* of Nov. 1, 1941 (p. 87), Sir Henry Bashford called attention to the fact that where a perfectly good free service was provided a certain number of those concerned were always dissatisfied and, at their own expense, made their own arrangements. What would happen to these if there was a complete State service with no free doctors to whom they could go? Is it possible that they might be so misguided as to express their freedom by seeking advice from quacks and patent-medicine vendors, some of whom are considered now, even by well-educated people, to be more skilful in certain respects than orthodox practitioners? We can be sure that the charlatan would do his best to exploit such a revolutionary change in our status.

Can the average medical man be a good Civil Servant and at the same time a good practitioner? In an organization employing forty or fifty thousand people it is necessary that, so far as possible, every occasion should be governed by rule or by precedent and that a new precedent should be established only with the consent of higher authority. How can that be squared with the fundamental axioms of medicine—that the patient is the prime consideration and that the rule must be conditioned by the occasion? In this connexion it is interesting to note the leading article in the *Journal* of March 7, 1942 (p. 330), in which, in dealing with war neuroses treated by the E.M.S., it is stated: "If we cannot wholly exclude psychoneurotic and psychopathic individuals from the Services, we can at least avoid manufacturing neuroses or making them worse. . . . There is a habit . . . of delaying diagnosis unnecessarily long by the modern tendency to rely less and less on 'clinical sense and clinical science' and more and more on laboratory techniques. This seems to be a liability of the bureaucratic type of organization. From fear of committing himself to a diagnosis . . . the medical officer asks for more and more tests and tries to pass the responsibility on to someone else." Anyone who treated the neurotics of the last war will remember how treatment was hampered by the tenacious clinging of the patient to his Service label of "shell-shock," "neurasthenia," etc., and how he was obsessed by the ritual compilation of his dossier to the exclusion of his common sense. If this is an inherent defect of State medicine it ought to be a factor in arriving at the solution of our problem.

As our planning is to be for the future we should consider what would be the likely results of a complete change on the manning of the profession. It is quite certain that many of us, and these not by any means the least efficient, would never have chosen a career which promised nothing better than a safe job with a "wage-for-age eight-hour-day double-pay-on-Sundays" outlook. How many of the giants of the past or present would, or could, have worked as doctors in a State service; and, if they had, how many would have been dismissed for insubordination or for taking unjustifiable risks? The pioneer of medical progress must begin by being a sceptic and a heretic. Is there a place for the heretic in a State service? Will the prospect of a safe job, in which security is paid for by a definite limitation of opportunity, attract the type of mind that is necessary to the first-class doctor? Even if it does, will not a life governed by convention, rule, and precedent, with their stifling influence on initiative and intelligence, so alter the outlook as to turn a good doctor into a merely average one or an average one into a poor one?

It is not so very long, as time goes, since as barber-surgeons, leeches, and apothecaries we were mere lackeys. By our own exertions we have gained a place in society. Our opinions on medical and social matters are respected, largely because of our political independence. We take our full share in public affairs, both national and local. We provide more than our proportion of Members of Parliament, besides serving on local authorities, education committees, health committees, and other social bodies. If we accept or have imposed upon us a salaried service we will virtually be disfranchized. We shall only be able to express our opinions when they are not at variance with those of our Department, which in turn must take them from the party in power.

Self-criticism is a salutary exercise, but we must avoid adopting a self-deprecatory and pseudo-objective outlook which will lead us to understate our achievements, to underrate our value to the community, and to exaggerate local and individual weaknesses into general indictments of the whole system. We should refuse to accept without a struggle any plan by which our profession becomes a political instrument, our advances an item in election addresses, and our failures a whip wherewith statesmen may scourge one another, while we ourselves are relegated to the obscure mediocrity of anonymous cogs in a State machine.

POSTGRADUATE NEWS

A series of postgraduate lectures in ophthalmology has been arranged by the Department of Ophthalmology of the University of Glasgow and will be given on Wednesdays, Sept 9, 16, 23, and 30, and Thursday and Friday, Oct. 1 and 2 Details will be published in the postgraduate diary column of the *Supplement* week by week.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W—*Daily*, 10 a m to 4 p m, Medical Clinics, Surgical Clinics and Operations. Obstetrics and Gynaecological Clinics and Operations *Daily* 1 30 p m. Post-mortems *Mon*, Course on Special Problems in Wartime commences *Tues.*, 10 a m, Paediatric Clinic; 11 a m, Gynaecological Clinic. *Wed*, 11 30 a.m, Clinico-pathological Conference (Medical); 2 p m, Bacteriology of Pneumonia, Dr Mary Barber *Thurs*, 2 p m, Dermatological Clinic *Fri.*, 12 15 p m, Clinico-pathological Conference (Surgical); 2 p m, Clinico-pathological Conference (Gynaecological); 2 p m, Sterility Clinic.

EDINBURGH POSTGRADUATE LECTURES—At Edinburgh Royal Infirmary, *Thurs*, 4 30 p m Dr Andrew Davidson. The Contribution of the E M S to Medicine and Surgery in Scotland

DIARY OF SOCIETIES & LECTURES

BRITISH DENTAL ASSOCIATION, 13, Hill Street, W.—*Tues*, 3 p m Mr C. Bowdler Henry Complications and Treatment of Impacted Wisdom Teeth.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W—*Mon*, 5 p m Third Lettsomian Lecture by Dr Anthony Feiling: Epilepsy.

Branch and Division Meetings to be Held

KENSINGTON DIVISION—At British Postgraduate Medical School, Ducane Road, W, Mon., July 27, 8 30 p m General Meeting to continue discussion of Interim Report of Medical Planning Commission

ROCHDALE DIVISION—At Rochdale Infirmary, Sunday, July 26 Meeting of all practitioners in area of Division to consider Interim Report of Medical Planning Commission.

BIRTHS, MARRIAGES, & DEATHS

BIRTH

LEIGH—On July 10, 1942, at Sevenoaks, to Pamela (*née* Parish), wife of Capt. A D Leigh, R.A.M C, a son.

DEATH

FOSTER—Accidentally drowned on March 26, 1942, whilst serving with the R.A.M.C., Middle East Forces, Lieut. Eric Mace Foster, only son of Mr. and Mrs. S. M Foster, 9, Grange Road, West Bromwich

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY AUGUST 1 1942

THE B.M.A. AT WORK

EXECUTIVE DECISIONS

A meeting of the Executive Committee of the Association was held on July 15 under the chairmanship of Mr. H. S. Souttar. In addition to the members of the Executive, the chairmen of four standing committees whose business came forward were invited to attend. A satisfactory account of the finances of the Association for the first four months of this year was given by the Treasurer (Dr. J W. Bone). Subscription revenue shows a large increase over the corresponding period of last year.

A request was considered from several members of the Ophthalmic Group that a re-election of the Group Committee should be held. The Executive decided that re-elections of all Group Committees shall take place as soon as the Annual Representative Meeting is over. The Groups, of which there are nine, held their last elections mostly in 1938. Some fresh nominations were made to the committee recently set up to consider Association machinery, certain of those first nominated finding themselves unable to serve. On the request of a member of the Association, the Executive considered again the Council's decision that alien doctors who have been admitted to restricted registration are not entitled to membership of the Association, though they may obtain the *Journal* at a reduced subscription rate. After discussion, however, the Council's decision was reaffirmed.

The Medical Schools

A committee was recently appointed by the Minister of Health and the Secretary of State for Scotland to inquire into the organization of medical schools, particularly their facilities for clinical teaching and research. This committee has forwarded an invitation to the Association to give evidence, especially as to the desirability and method of linking voluntary and local authority hospitals for the purpose of medical education, the selection, appointment, and payment of the medical staff of hospitals so linked, the extent to which teachers in the clinical period should be appointed on a salaried basis, the assistance of general practitioners in the training of students, the facilities desirable for house appointments for recently qualified practitioners and for refresher courses for general practitioners and courses for postgraduate students specializing in a particular branch of medicine, and, finally, the number of practitioners who may be needed after the war. The Executive set up a representative committee to consider the evidence to be tendered, the committee including a number of members prominently identified with medical teaching outside as well as inside the councils of the Association.

A request was also received from medical students. Hitherto medical students have been represented by a subcommittee of the National Union of Students; this has not been very satisfactory in practice, and the British Medical Students' Association has now been set up to include all the students in the London and provincial medical schools. From this new body a letter was received expressing eagerness for close co-operation with the British Medical Association in matters of common interest and the hope that the latter would recognize the value of an independent representative organization which would present the students' point of view. It also appealed for a contribution to cover initial expenses, not exceeding £100 in the first year. The Executive welcomed the formation of the new body and cordially acceded to its request, also agreeing to the use of the House for its meetings and the part-time services of a clerk when necessary.

Prisoners of War

Through the hon. secretary of the Preston Division a letter was received from a captain R.A.M.C. who is a prisoner of war in Germany. Incidentally the letter stated that the writer had received the *Journal*, and as he was the only one of 12 medical men in his camp who did receive it there was a good deal of competition for its use, and the articles on State medicine in particular aroused great interest and discussion. The letter went on to suggest that the Association might do something to help prisoners of war, particularly by sending out to them necessary reference books and recent publications. The Executive on receipt of this request instructed the Secretary to endeavour to discover exactly what was wanted, and empowered him to take whatever steps were possible to meet the need. It made available a sum of money for the purchase of books for prisoners of war.

It was also agreed to take such further opportunity as offered for making the hospitality of the Association House available to medical officers of the American and other Allied forces in London.

The Executive adopted a recommendation from the Charities Committee to allocate contributions received by the Charities Trust Fund, unearmarked, during the first half of the present year, as to £1,000 to the Royal Medical Benevolent Fund and as to £1,000 to the Royal Medical Foundation of Epsom College, the balance, some £15, being passed to the Sir Charles Hastings Fund.

Diploma in Physical Medicine

Dr. C. B. Heald attended on behalf of the Physical Medicine Group of the Association to present a resolution passed by the Group Committee calling for the provision of postgraduate education in physical medicine, and pointing out the desirability of taking steps forthwith to establish a diploma in the subject. The D.M.R.E. will be discontinued as from next October, and the existing diplomas in radiology do not include anything in the nature of electrotherapeutics. Dr. Heald said that his Group Committee was anxious to eliminate any pseudo-scientific approach to this subject which might remain and to place it upon a genuine scientific basis. The Executive Committee endorsed the opinion of the Group on the desirability of the scientific basis, and it was decided to reconstitute an earlier committee which had sat on this subject, so that the matter of the diploma might be brought to such a stage that active steps could be taken immediately after the end of the war.

Other business, of a routine or private nature, was transacted.

MEDICAL WAR RELIEF FUND

THIRTY-FIFTH LIST

Amount previously acknowledged, £44,377 12s 1d., and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Individual Subscriptions

£10 10s.—Surg. Lieut. S M Musgrave, R N V R.

£5.—Dr H M Boston, Salisbury

£2 2s.—Capt R. L Lamming, R A.M C

£1 2s—Dr J. H Wright, Glasgow

£1 1s.—Major W. Happer, I M S, and Mrs Happer (10th donation)

£250.—Mufulira War Funds Committee, Northern Rhodesia

£138 0s. 9d.—Harrow Division Unaccompanied Evacuated Children Fund—per Dr Jewell.

£50.—Bournemouth Medical Society

£41 4s.—Newcastle-upon-Tyne Division—per Mr. Weldon Watts (amount already sent, £428 16s. 6d). Dr M. L. Anderson (2nd donation), Mr J S. Arkle (2nd donation); Dr R B W. Cole (2nd donation), Dr. T. Craig (2nd donation), Dr G Davison (2nd donation), Dr E. F Dawson-Walker (2nd donation); Dr J. Familton (2nd donation); Mr W A Hewitson (2nd donation). Dr. G. Hickling (2nd donation); Dr D. Hopkinson (2nd donation); Dr. J Hudson (2nd donation), Dr E L. Hughes (2nd donation); Dr. G Hurrell (2nd donation); Dr A E W. McLachlan, Mr A MacRae (2nd donation); Dr. J A Sacco, Mr J Kenneth Stanger (2nd donation).

£10 10s.—Plymouth Division—per Dr Mabel Ramsay (amount already sent, £312 17s 6d.) Mr. H F. Vellacott (4th donation).

£10.—Medical Staff, Newquay and District Hospital—per Dr. Hardwick.

£6 6s.—Lincoln Division—per Mr G A B. Walters (amount already sent, £206 15s 6d) · Mr J Lyons £4 4s.; Mr. A H Briggs £2 2s

£5 5s.—Association of Clinical Pathologists—per Dr E. N Davey.

£1 1s.—West Sussex Division—per Dr C W Elson (amount already sent, £55): Dr A R Adderley

S. Staffs L M W C—per Dr H. Campbell Orr (amount already sent, £73 5s). Dr E H Coleman (2nd donation)

10s. 6d.—Torquay Division—per Dr Lattey (amount already sent, £180 11s 6d) · Dr G H. Menzies (2nd donation)

Local Medical and Panel Committees

£44 9s. 1d.—County of Ayr (6th donation)

£32 7s. 10d.—Midlothian County (8th donation)

£41 2s. 6d.—Newcastle-upon-Tyne (4th donation).

£17 15s. 9d.—Dunbarton County (6th donation)

Total—£45.045 0s. 6d., and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G C Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1.

The Minister of Health, having considered the report of an inquiry committee and the recommendation of the Advisory Committee to which that report was referred, has decided to remove Dr Stanley Gasson's name from the medical list of the Portsmouth Insurance Committee as from July 20, 1942.

Correspondence

War Damage Insurance

SIR,—Dr. Aldred-Brown's courage in setting out his difficulties over war damage insurance is much to be admired, and may be of great service to his fellow practitioners. But he is a little less than just if he thinks that he was insufficiently informed and warned in the *Supplement* on the matter. Not only was there the note of Jan. 17, 1942, to which he refers as "insufficiently lucid"—though if he reads it carefully he may be inclined to withdraw that criticism—but long before that there were completely full expositions by myself on behalf of the Medical Insurance Agency on Jan. 25, 1941, and by Prof. R. J. A. Berry on Feb. 1, 1941. Dr. Aldred-Brown's plight, and that of his friends in Bath, is mainly due to his failure to heed the constant advice tendered to him and to the profession to do all their insurance of every kind solely through the M.I.A., the *raison d'être* of which is to protect their interests.

Only recently I was explaining this principle to an intelligent young physician, qualified 8 or 9 years; he said, when I had finished, "Why have I never been told all this before?" I had to point out that he had received a circular after his registration, another with every annual subscription notice from the B.M.A., a monthly whole-page advertisement (until the recent paper shortage) in the *B.M.J.*, and other forms of publicity as well; he simply had taken no notice, in which he followed the example of about two-thirds of the profession.

Incidentally, Dr. Aldred-Brown is not quite accurate in his illustration of the application of "average" in case "Y." The official ruling on this point reads as follows: "If the total value of the interest of the insured in the property insured at the time any loss is incurred shall exceed the sum hereby insured, the insured shall be considered to be his own insurer for the excess and shall bear a rateable share of the loss accordingly."—I am, etc.,

HENRY ROBINSON, M.D.,
Hon. Secretary, M.I.A.

SIR,—I regret to see from Dr. Aldred-Brown's letter in the *Supplement* of July 18 that he and some of his colleagues in Bath "have committed the error of either inaccurately or inadequately insuring our effects against war damage." Warning that, given war damage, such financial loss might be suffered in the way indicated by Dr. Aldred-Brown was published in the *Supplements* of Jan. 25 and Feb. 1, 1941, by Dr. Henry Robinson and myself, and the steps to be taken were indicated in my letter. I need hardly say that I do not write now in any spirit of "I told you so," but rather to support Dr. Aldred-Brown in his plea to all medical men to take, if they have not already done so, the appropriate steps now.—I am, etc.,

Bristol, 9. RICHARD J. A. BERRY.

The Home Secretary announces that Dr. Gerald Patrick McCarthy of Belfast is no longer authorized to be in possession of or to supply any dangerous drugs.

H.M. Forces Appointments

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surg. Lieut.-Cmdr. J. A. Shepherd to be Surg. Lieut.-Cmdr.

Surg. Lieut. G. A. Hart to be Surg. Lieut.-Cmdr.

Prob. Temp. Surg. Lieuts. J. H. Hazeldene, R. St J. R. Johnston, G. J. W. Ollerenshaw, and C. A. Cheatle to be Temp. Surg. Lieuts.

ARMY

Col. S. J. Barry, late R.A.M.C., has retired on retired pay.

ROYAL ARMY MEDICAL CORPS

Lieut.-Col. (temp. Col.) W. Foot, M.C., to be Col.

Major (acting Col.) G. D. Gripper to be Lieut.-Col.

Lieut.-Col. W. Bruce, O.B.E., having attained the age for retirement, is retained on the Active List, supernumerary to the establishment.

Major (temp. Lieut.-Col.) C. L. Emmerson to be Lieut.-Col.

Major (temp. Lieut.-Col.) F. A. R. Hacker to be Lieut.-Col.

Lieut.-Col. G. W. G. Hughes, D.S.O., R.A.M.C., ret., has reverted to the rank of Major at his own request, whilst employed during the present emergency.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Majors W. W. Pratt and J. R. S. Mackay, having attained the age limit of liability to recall, have ceased to belong to the Reserve of Officers.

War Subs. Capt. M. Edwards has ceased to belong to the Reserve of Officers on account of ill-health and is granted the rank of Major.

TERRITORIAL ARMY, R.A.M.C.

Lieut.-Col. R. C. Clarke, O.B.E., T.D., having attained the age limit, has relinquished his commission and retains his rank.

Supern. for Service with Aberdeen Univ. Senior Training Corps (Med. Unit).—L. Schwartz to be Lieut.

Supern. for Service with Birmingham Univ. Senior Training Corps (Med. Unit).—J. A. Barclay to be Lieut.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Capt. T. S. Eddy has relinquished his commission.

War Subs. Capts. J. Paxton and A. B. Hay have relinquished their commissions on account of ill-health and are granted the rank of Capt.

Lieuts. J. Gilmore and R. P. Young have relinquished their commissions on account of ill-health and retain their rank.

To be Lieuts.: L. I. Burrows, L. S. Davies, K. D. Keele, A. R. Adderley, H. G. E. Arthure, F. Barasi, C. Borg, W. I. Card, D. Y. Carter, M. C. Chapman, L. C. F. Chevens, H. P. Clark, A. B. Cooper, R. P. Coxon, J. D. Cronin, G. H. Ellis, J. A. P. Evans, A. D. Everett, R. J. Furlong, H. Gimpelson, B. W. Goldstone, C. J. Gordon, H. F. Griffiths, S. J. Hopkins, A. B. Kinnier-Wilson, S. E. Knowles, R. K. Levick, M. G. Langdon, R. A. Lattey, C. J. Longland, C. W. Marshall, W. R. Merrington, R. B. Morton, H. R. B. Norman, B. H. Page, J. W. Piper, N. L. Probert, H. S. K. Sainsbury, K. G. Seager, D. W. G. Smith, J. R. Squire, G. S. Steele-Perkins, D. L. McK. Stewart, E. M. Thorn, H. A. Thorner, J. Y. Walker, J. G. Warren, W. W. Wiggins-Davies.

WOMEN'S FORCES

EMPLOYED WITH THE R.A.M.C.

The following M.O.s have been granted commissions in the rank of Lieut.: Esme G. Shipp, Mary R. Paterson.

ROYAL AIR FORCE

Wing Cmdr. H. S. C. Starkey, O.B.E., retains the rank of Group Capt. on reverting to the retired list.

Mrs. M. I. Abelson, M.O. with the relative rank of Fl. Lieut., has resigned her commission.

Mrs. P. G. Stevenson, M.O. with the relative rank of Flying Officer, has resigned her commission.

To be M.O.s (Emergency) with the relative rank of Flying Officer for employment with the R.A.F.: Mrs. Caroline E. Nicholson, Miss Constance J. Pollard.

ROYAL AIR FORCE VOLUNTEER RESERVE

D. N. Parfitt to be Squad. Ldr. (Emergency).

Fl. Lieut. A. B. Sproule has resigned his commission and retains the rank of Squad. Ldr.

Fl. Lieut. H. J. Ross has relinquished his commission on account of ill-health and retains the rank of Squad. Ldr.

To be Fl. Lieuts. (Emergency): F. S. A. Doran, J. R. Byars.

Flying Officers F. J. S. Chapman, C. G. Fagg, T. A. H. Adkins, H. E. Walker, F. S. Shepherd, C. E. Thomas, J. Wilson, E. S. Frazer, M. T. Gallagher, R. G. P. Heard, T. Hepburn, K. Harrison, E. O. C. Parsons, P. B. Willan, T. F. Stewart to be War Subs. Fl. Lieuts.

To be Flying Officers (Emergency): C. L. Alderson, S. Y. MacKechnie, D. V. Martin, J. Perrin, R. A. Sandison, K. S. Southam, I. I. Thomas, J. I. Timothy, R. Varley, D. Jaboor, A. Jamieson, A. S. Johnston, G. F. Magurran, G. E. McFall, E. H. Moorhouse, P. S. Robinson, M. F. M. Ryan, J. W. Smith, R. W. Stevenson, M. Adams, C. H. D. Bartley, M. Donnelly, R. S. Henderson, P. R. Henson, R. C. Howard, W. E. Lishman, W. C. Moonie, G. B. S. Pimblett, F. S. Rickards, F. Stansfield.

R.A.F.V.R.: DENTAL BRANCH

G. M. Woolford, M.R.C.S., L.R.C.P., L.D.S., to be Flying Officer (Emergency).

INDIAN MEDICAL SERVICE

Lieut.-Col. K. S. Thakur has retired.

Majors M. Taylor, O.B.E., F. R. W. K. Allen, and W. Lawie to be Lieut.-Cols.

Capts. C. F. Gastit, F. W. Whiteman, W. Mackie, S. Ahmud, T. F. O'Donnell, H. B. Wright to be Majors.

EMERGENCY COMMISSIONS

To be Lieuts.: A. Gray, Isabel D. Patterson, D. A. K. Carnegie, Mary A. C. MacHugh.

ARMY IN INDIA RESERVE OF OFFICERS

Lieut. R. M. Hawes has ceased to belong to the Reserve on account of ill-health.

COLONIAL MEDICAL SERVICE

The following appointments are announced: J. Crabb, M.R.C.S., L.R.C.P., and K. E. A. U. Ground, M.R.C.S., L.R.C.P., Medical Officers, Nigeria, C. C. H. B. Sparrow, M.B., Ch.B., Medical Officer, British Honduras.

BRITISH MEDICAL ASSOCIATION

ELECTION OF 22 MEMBERS OF COUNCIL BY GROUPED BRANCHES IN THE BRITISH ISLES

As a result of the nominations received for Group H and Group O, the following have been elected Members of Council for the session 1942-3: H. R. Frederick (Port Talbot, Glam.); P. Martin Brodie (Edinburgh).

Branch and Division Meetings to be Held

KENSINGTON DIVISION.—At British Postgraduate Medical School, Ducane Road, W., Tues., August 4, 8.30 p.m. General meeting to conclude discussion on Interim Report of Medical Planning Commission.

POSTGRADUATE NEWS

A series of special postgraduate lectures, arranged under the auspices of the Honyman Gillespie Trust to take place in the West Medical Theatre of Edinburgh Royal Infirmary, began on July 23. Other lectures will be given on Thursdays, Aug. 27, and Sept. 10, 17, and 24, at 4.30 p.m. The lectures are open to all graduates and senior students. Details will be published in the postgraduate diary column of the *Supplement* week by week.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m., Post-mortems. *Tues.*, 10 a.m., Paediatric Clinic; 11 a.m., Gynaecological Clinic. *Wed.*, 11.30 a.m., Conference (Medical). *Thurs.*, 2 p.m., Dermatological Clinic. *Fri.*, 12.15 p.m., Conference (Surgical); 2 p.m., Conference (Gynaecological); 2 p.m., Sterility Clinic.

ROYAL NATIONAL THROAT, NOSE, AND EAR HOSPITAL.—*Fri.*, 4 p.m., Mr. J. C. Hogg: Nasal Obstruction.

APPOINTMENTS

HOPPER, MARY C., M.B., B.S., Deputy Medical Superintendent, South Middlesex Fever and Emergency Hospital.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

MARRIAGE

NELIGAN—BELL.—On July 18, 1942, at Oxford, Gerald Anthony Neligan, M.B., B.Ch.(Oxon), to Marley Constance Bell.

DEATH

HAMILTON.—Florence May, dearly beloved and courageous wife of Lieut.-Col. W. R. D. Hamilton, R.A.M.C., died as a result of enemy action in Malta on July 13.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY AUGUST 8 1942

INSURANCE ACTS COMMITTEE OF THE B.M.A.

PROCEDURE ON MINISTRY'S REFUSAL

A meeting of the Insurance Acts Committee, which was fully attended, was held under the chairmanship of Dr. E. A. Gregg on July 16, when the principal matter considered was the reply of the Minister of Health that he was unable to accede to the Committee's request for a further increase in the capitation fee to compensate insurance practitioners for the increase which has taken place in the cost of living. This was but one of the grounds put forward by the Committee in support of the case. It was mentioned that the memorandum putting forward the case for an increase had, following upon its consideration by the Committee, been submitted through the solicitors to eminent counsel, whose suggestions had been embodied before it was submitted to the Ministry. In a lengthy and candid discussion the Committee considered what should be the next step to be taken. The general feeling, as expressed by the chairman at the close, was that a request should be made to the Ministry—and later to the Minister—to receive a deputation in order that the case might be elaborated orally, the argument reinforced, and an effort made to elicit and answer the considerations which had moved the Minister to a partial reply and refusal. It was felt that the Minister should be made aware of the unrest and sense of frustration in the profession at this official unwillingness suitably to recompense the insurance practitioner for the work that he is doing. If the reply of the Minister showed him to be adamant, it would be necessary for the Committee to go to their constituents to place the situation before them with a view to a decision as to the future course of action.

It was agreed that the Executive of the Insurance Acts Committee should act as the deputation, with the addition of Dr. H. G. Dain and Dr. John Hallam.

Organization of Insurance Practitioners

A booklet entitled "The Capitation Fee—A Comprehensive Survey of the Present Position with Some Suggestions for a Remedy," emanating from Group G (Staffordshire and Shropshire), to which Dr. Hallam, the representative of the Group on the Insurance Acts Committee, had written a foreword, was discussed. It followed upon a resolution of the Stoke-on-Trent Panel Committee calling upon the Insurance Acts Committee to formulate and put into action a definite and vigorous plan of campaign designed to place the insurance practitioner in a strong position with regard to further negotiations over the capitation fee and other matters. One noteworthy feature of it, specially significant in view of the present attitude of the Ministry, was the well-displayed contrast between the capitation fee of 7s. 3d. in 1912, when the income limit for insured persons was £130 and the cost of living was less than half of what it is at present, and the capitation fee of 9s. (plus a temporary 9d.) 30 years later, with the income limit raised to £420 and the work of the practitioner increased very considerably. The booklet accused the Ministry of breach of faith, and the Insurance Acts Committee itself of a certain lack of sympathy towards its constituents, and the procedure adopted at Panel Conferences was the subject of some adverse comments.

Although the booklet was criticized in certain respects, Dr. Hallam and his colleagues were warmly congratulated upon a spirited production. The chairman, in summing up the discussion, said he thought it was the general feeling of the Committee that the organization, partly through lack of effective propaganda, was not functioning to the full extent that they would all desire, and that the Committee was thereby hindered in what it sought to do for the profession. The actual machinery might be improved, added to, or altered in some way. He suggested that the matter be investigated by a subcommittee, which should include as large a number of members as possible who would bring a fresh mind to the task.

It was agreed, with three dissentients, to set up an *ad hoc* subcommittee, consisting of the chairman (*ex officio*) and Drs. H. G. Dain, J. Hallam, I. G. Innes, G. H. Pearce, A. T. Rogers, and F. M. Rose, to investigate and advise on the machinery for maintaining contact between the Insurance Acts Committee and the individual practitioner, and to have before it the booklet issued by the "G" Group.

Industrial Medical Officers

The Committee devoted a good deal of attention to the question of the relations between the industrial medical officer and the worker's own doctor. It was evident from the experiences related in the discussion that in some parts of the country at all events there is a feeling that it is necessary to make clear to industrial medical officers that only such treatment as is necessary during working hours should be undertaken at the factory. It was recognized that there are acute and urgent cases, covered by the ethical rules, for which the factory doctor can properly give treatment, referring them back to the patient's private doctor, but one member of the Committee from an industrial area mentioned cases in which factory medical officers are holding surgeries in factories, where the workers have to wait as long to see the doctor as in the ordinary surgery outside. More important, however, is the question of dual responsibility, the patient no longer relying on the doctor of his choice but on the doctor of his employer's choice. The Committee was urged not to alter the ethical rules, which sufficiently delimit the respective spheres of industrial medical officer and private practitioner.

This matter arose again on a communication from the Leeds Division, where letters have been received from industrial medical officers suggesting that during the ensuing winter months they should, acting on behalf of the patient's insurance doctor, be allowed to issue insurance prescriptions to workers unable, in the present industrial pressure, to attend at their doctors' surgeries The Committee, after a review of all the circumstances, was unable to approve of such a suggestion.

Other Business

Much other business occupied the 5 hours of the Committee's meeting One of several matters relating to certification was the question of the utilization of national health insurance certificates for members of civil defence services. Attention was called to a statement in the Home Security Circular 41/1942 on pay during sickness for persons in such services, in which reference is made to the admissibility of certificates given for national health insurance purposes for production during absence from duty on account of sickness. It was agreed to request the withdrawal of the reference to national health insurance certification.

Other matters touched upon concerned the *National Formulary*, the provision of specially expensive drugs, medical benefit for juveniles, a possible anomaly in the distribution of the Central Practitioners' Fund, and questions affecting the range of service. The minutes of a meeting of the Scottish Subcommittee were considered and approved, and, finally, sitting as the National Insurance Defence Trust, the members heard a satisfactory statement from the Treasurer.

Correspondence

Planning for General Practice

SIR,—We do not blame Dr. F. W. Grant (*Supplement*, July 25, p. 9) for disliking the type of State Medical Service which he envisages; it is a nightmare! To him we shall be disenfranchized. unable to express opinions at variance with our department, lose all initiative fear to take risks in the performance of our work, and have a definite limitation of opportunity. This, however, is far from being a true picture.

He commends those of us who devote time in striving for ideas engendered by the war, and then lumps ideologists and faddists together as wanting to make the profession accept criticisms and reforms it would view with suspicion in peacetime. War by its upheaval does tend to remind us, and rightly so, that the world is not static and that ideas are not immutable, and that progress is the summation of small evolutionary changes which manifest themselves, however, by sudden and very often marked mutations. The 24-hour working day for doctors is a normal accompaniment of their life. In war it is only accentuated. The majority under these circumstances never will have the opportunity to plan if we take his point of view.

Competition is an honest and healthy ambition provided it serves the community with an ever-progressive and advancing service. The reward of ability should be increased status and remuneration, and this, in our opinion, is a more desirable one than an ever-growing practice, which, by the very increase in the number of patients, must detract from the ability of the doctor to maintain high standards. In passing we might point out that the writer's remarks on the Soviet Union are ill founded, for the competitive spirit and reward for diligence and merit have always been a corner-stone of Soviet economy—e.g. the Stakhanovite movement.

The people ought to be able to, and should, take an intelligent interest in the medical services as against the writer's eulogy of the "faith attitude" which has been thrust on them and has its roots in mysticism—the cloak of medical ignorance.

The assumption that in a State Medical Service a clean sweep would have to be made of the present service is unwarranted and illogical. Have we not now many aspects of health administered to a greater or lesser extent by the State—e.g., N.H.I., public health, venereal disease, tuberculosis, and mental deficiency? A new State Medical Service will have, therefore, to utilize the best in the present and use this as a basis to build on. Dr. Grant, while admitting that a State Medical Service has much to commend it, proceeds to criticize it in that privacy and free choice will not be obtained for the patients, and there will be no reduction in night work, in the total hours of work, and in non-routine calls for doctors. As regards "free choice," the consensus of opinion seems to be that this will be very little different for the vast majority of the people from what it is at present. The assumption that in a State Medical Service privacy would be lost and the hours of work retained is not correct. In such a service patients could be seen by appointment, thus ensuring the first. As regards working hours, etc., it must follow that doctors co-operating in clinics as teams must be able to cope more effectively with the day's work, and so distribute doctors to an all-round 24-hours service on rota.

Those among medical men who favour a State Medical Service demand that it should be an improvement from the point of view of both the public and the doctor. It depends on the solidarity with which the medical profession negotiates a State service whether our remuneration will be commensurate with the importance of the work we are rendering the community. It is precisely because of this lack of cohesion among us that N.H.I. remuneration has stood at such a low level, and is, in fact, an important contributory cause of the demand for an improved service. Those to whom a State Medical Service does not appeal would be at liberty to set up in private practice and carry on as at present.

The fact that practically all writers on the subject stress the desire for co-operation between medical men, and between these and hospitals, institutions, specialists, and consultants, surely indicates a dissatisfaction with our present *modus operandi* and an implied, if not always openly expressed, desire for change. The fears that a State Medical Service would be run bureaucratically surely depend on whether medical men take the initiative in instituting progressive changes and participating through their organizations in their own administrative machinery. It is only through apathy on our part that a service can be brought in which will not have enough representative practitioners on its councils.

It is now axiomatic that for efficiency and the prevention of waste of effort modern methods must depend on co-operative and large-scale work. This has been acknowledged in modern industry by the ever-growing trusts and cartels in all countries, which, by virtue of a planned division of labour, obtain maximum production. This, whether we like it or not, is the inevitable outcome of modern methods, and medicine cannot be excluded from this trend. But here we have to remember that medicine is as much a public utility as sanitation and the water supply, and cannot be allowed to fall into the hands of a company or corporation. The Government, in taking over such a service, must not be allowed to set up a dictatorial Department, but must be guided in its administration by representatives of the profession. Force of public opinion and the unity with which medical men can approach progressive changes will be our greatest safeguards in protecting our interests. We are a necessary and key service in the nation's economy, workers in the nation's health. Let us see to it that we give them the best possible under optimum conditions.—We are, etc.,

P. INWALD.
London, N 19 W. W. FOX.

The G.M.C. and Medical Certification

SIR,—The remarks of the General Medical Council, in dealing with the case of Dr. Molloy (misleading certification), as reported in the *Supplement* of June 27, must have caused some uneasiness among hard-working practitioners. To imply, as the G.M.C. seems to do, that we must read and reread the innumerable forms of medical certificates we are called upon to sign so as to have their details always at our finger ends demonstrates a complete ignorance of present-day conditions. Many of the official certificates are so overloaded with small type that they call for honourable mention when placed alongside a page from *Bradshaw's Railway Guide*. No two are alike, and, clearly, if we are to be tied to the letter of these certificates, as the G.M.C. appears to think we should be, then the position calls for immediate review.

There are many occasions when it is most impracticable to issue certificates strictly in accordance with their wording. Thus in the case of the chronic invalid who at regular stated times to meet the requirements of the agent of his society sends for a monthly certificate, it is my practice to enter only one date against date of examination and date of signing, whether I have actually seen the patient on that date or not. The certificate as read is not strictly in order, but no injustice is done, and it meets the requirements of all parties concerned, though the practice would apparently give the G.M.C. a "tummy"-ache.

I suggest that where there is clearly no intention to mislead and no injustice is done such practices must by a gentleman's agreement be overlooked. Alternatively, the form of these certificates should be altered to meet the case. In particular, if we are to be held responsible for having read the text of all certificates, then a standard form should be adopted which should be in reasonably bold type and be limited to not more than 20 words.—I am, etc.,

Chesterfield. JAMES P. DAVIE, M.D.

LONDON DISTRICT MEDICAL OFFICERS

In the *Supplements* of April 11 and May 9 reference was made to a decision of the L.C.C. to reduce from September, 1941, the salaries of many of its district medical officers. It will be recalled that a Ministry of Health inquiry was held in March of this year following the county council's appeal against the Minister's refusal to consent to the proposed reduction of the salaries of a number of its permanent district medical officers. The Minister subsequently adhered to his decision not to consent to the proposed cuts. There remained a number of temporary or assistant district medical officers in whose cases the Minister's consent was not necessary to any proposal for a reduction in remuneration. The L.C.C. has now decided to withdraw the cuts imposed on these last-named officers. It is to be congratulated upon this recent decision. The net effect is that all the cuts imposed by the council in September, 1941, on the salaries of both permanent and temporary district medical officers are now restored. The London District Medical Officers Committee of the Metropolitan Counties Branch of the B.M.A. has acted on behalf of London district medical officers throughout.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: M.R.C.P. course in neurology, West End Hospital for Nervous Diseases, Sept. 1 to 25, 3 p.m.; M.R.C.P. course in cardiology, Royal Chest Hospital, Weds., Sept. 2 to 23, 3.30 p.m.; Final F.R.C.S. clinical course, Weds., Sept. 9, 16, and 30, St. Mary Islington Hospital, and Tues., Sept. 22, Archway Hospital, 2 p.m.; Week-end course in advanced clinical surgery (including pathology), Hillingdon County Hospital, Uxbridge, Sat. and Sun., Aug. 29 and 30, 10 a.m. to 4.15 p.m.

B.M.A.: Branch and Division Meetings to be held

REIGATE DIVISION.—At East Surrey Hospital, Redhill, Sun., Aug. 9, 3 p.m. Agenda: To consider (*a*) Annual Report of Council and Supplementary Report; (*b*) Interim Report of Medical Planning Commission; (*c*) Preliminary and Final Reports of Division Study Group, etc.

BIRTHS, MARRIAGES, & DEATHS

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BIRTHS

ELLIS JONES.—On July 27, 1942, at Ashwood Maternity Home, Woking, to Rosemary (*née* Case Morris), wife of Surg. Lieut. E. Ellis Jones, R.N.V.R., a daughter.

EVANS.—On June 20, 1942, at Liverpool Maternity Hospital, to Mary Evans, M.D. (*née* Kane), wife of Flying Officer T. J. Evans, F.R.C.S., R.A.F.V.R., a daughter.

MARRIAGE

RUSSELL—MORRIS.—At Leeds, on July 20, 1942, between Lieut. P. M. G. Russell, F.R.C.S., R.A.M.C., and Stephanie Denman Morris of Bryn Hyfryd, Abergele, N. Wales.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 15 1942

THE B.M.A. AT WORK

Control of High-frequency Apparatus

With the valuable help of the Parliamentary Medical Committee, the B.M.A. has succeeded in securing an important modification of the Control of High Frequency Apparatus Order, 1940. Some months ago a deputation from the Association and the committee was received by the Postmaster-General, and represented to him the hardship suffered by many patients and many private medical practitioners owing to the restrictions imposed by the Order on electrotherapy. The Postmaster-General has discussed the matter with the other authorities concerned, and the following announcement has now been issued by the Home Office.

A relaxation has been made in the Control of High Frequency Apparatus Order, 1940, which prohibited the possession or use by any person in the United Kingdom of apparatus having a high-frequency output of over ten watts except under permit from the Postmaster-General. Under that Order it was not possible for permits to be issued except to certain classes of hospitals and similar institutions or to certain manufacturers and dealers and persons in charge of laboratories. This restriction has now been removed, and any person may apply to the Postmaster-General for a permit under the Order. A permit will not be issued until the applicant has installed a screen and mains filter in accordance with Post Office specifications. Any applications for a permit or for particulars of screening should be addressed to the Engineer-in-Chief, Radio Branch (W.2/8), General Post Office, Harrogate, Yorkshire.

The Secretary of State has also revoked the Aliens (High Frequency Apparatus Restriction) Order, 1940, which prohibited any enemy alien from having high-frequency apparatus without Home Office permission. It will still, of course, be necessary for any enemy alien who wishes to use or possess such apparatus to apply to the General Post Office for a permit.

PLACE OF PHARMACY IN MEDICAL PLANNING

DISPENSING BY DOCTORS THOUGHT UNDESIRABLE

The Pharmaceutical Society of Great Britain and the National Pharmaceutical Union have submitted a joint memorandum to the Committee on Social Insurance and Allied Services on the position of pharmacy in the future health services of the country. Various proposals are made with a view to the general reorganization of services which may be expected after the war, but it is pointed out that they are capable of immediate application even in present conditions.

First, with regard to hospital treatment, it is held that in any public service the supply of medicines in and from a hospital should be undertaken by a pharmaceutical department staffed by one or more pharmacists, or, in the case of small institutions, by a local pharmacist in private practice. The local pharmacist in private practice also might advantageously dispense prescriptions given to hospital out-patients. For those special services such as infant welfare, school medical care, and treatment of tuberculosis, which fall between the institutional and domiciliary field, a member of the pharmaceutical staff employed by the local authority should act as pharmaceutical supplies officer.

For domiciliary treatment, so far as the National Health Insurance scheme is concerned, provision is already made for medicines to be supplied by pharmacists, and it is urged in the memorandum that a similar arrangement should apply in all other domiciliary schemes of treatment, as, for example, public medical services. It is considered undesirable for a doctor to supply medicines. The reasons for this are, very shortly: (1) The training of the doctor in pharmacy is progressively smaller as the scope of the medical curriculum widens; (2) the practitioner supplying his own medicines is not likely to have available the wide range of medicaments which the pharmacist, serving the patients of many practitioners, must stock; (3) the practitioner can supply his medicines only when he is at his surgery (unless, of course, he is able to employ a dispenser), which limits the opportunity of his patients to obtain them; (4) there is no inspection of doctor's dispensaries, and tests of drugs or of the accuracy of the dispensing are not applicable. Nothing is said about rural conditions in which it may be easier for the patient to obtain his medicines from the practitioner than from a pharmacist.

The memorandum goes on to state that there are 15,000 pharmacists in Great Britain with facilities for supplying an excellent pharmaceutical service already utilized by the State for some 18 million insured persons. The uncontrolled extension of pharmacies offering a public service is not considered desirable, and it is held that new pharmacies should be opened only on proof of public need, and that no lower standard of staffing or service than that which obtains in National Health Insurance dispensing should be tolerated. Complaint is made of the system of remuneration under National Health Insurance, on the ground that the payment assumes that the pharmacist's business is already established on a profitable basis, and that the supply of medicines to insured persons is an addition or side-line.

Finally, the memorandum urges the importance of the advisory aspect of the pharmacist's work. Modern conditions are said to have enhanced the importance of the pharmacist as an adviser to the doctor. The latter frequently needs information about the properties of medicinal substances and guidance in the choice of such substances and the form in which they should be prescribed. Without such information and guidance it is suggested that prescribing is likely to take on a stereotyped character or to reflect an undue influence of propaganda designed to promote the use of proprietary products. Consultation between doctor and pharmacist should be encouraged. It is considered that failure to recognize the position of pharmacy and to utilize fully the knowledge and service of pharmacists means lack of efficiency and uneconomic use of medical supplies.

Correspondence

What the Patient Wants

SIR,—The interesting and thought-provoking letter from Surg. Lieut. Walton (*Supplement*, July 18, p. 7), giving the views of a serving officer on State medicine, stimulates me to tell a true story which illustrates the views of a serving private on the same subject.

During the last war I was on an official visit to the North of England, and I called to see a family of former patients of mine, convinced Socialists with whom I had often discussed the pros and cons of a State Medical Service. It so happened that the elder son, then in the Army, was home on leave, and I said to him, "Well, my lad, what do you think of a State Medical Service now that you have had some of it?" He was rather at a loss until I pointed out that in the Army he had all the advantages for which he had formerly contended—doctors paid a salary, free access of patients to every form of attendance required, no financial nexus or obstruction. "Well," said he, "my experience is that if you are *really* ill it is a grand service, with the best of treatment by first-class men in hospital. But if you are not feeling up to the mark—a 'belly-ache, for example—and you report sick you find that the doctor is not *your* doctor as he would be in civil life. He is a servant whose business it is to get you back to duty as soon as possible, and there is no sentiment about your relationship with him. That is all very well in wartime, but it would not suit me in peacetime, and I am certain my wife would hate it. We should want to have a doctor who realized that we had chosen him because we liked and trusted him and who would be a real family doctor."

There is a moral in this which I need not stress here except so far as to say, as a potential patient myself, "Them's my sentiments." When I am the patient I want my doctor to feel that I have sent for him *not* because he happens to be the officially appointed doctor for my area, but because I feel he is the man for me in my hour of need. And I have the temerity to believe that in so thinking I represent the man in the street—not, perhaps, when he is under the influence of politics, but when he or one of his family is ill—and that is what mainly matters to us as a profession. In our planning let us keep the man in the street in mind, and remember that he is not an automaton or a pawn in a political game but a human being with a mind and feelings (prejudices, if you like) of his own. If we as a profession, who ought to know men and women in their time of illness better than anybody, don't make our plans accordingly we shall be letting the public down, and the fact that incidentally we had obtained for ourselves a softer time and were now real civil servants would be regarded as aggravating an offence.—I am, etc.,

London, W.2. ALFRED COX.

Civilian Medical Services

SIR,—At a meeting of local practitioners called to consider the proposed limitation of areas of practice, it was resolved that in order to dispel from the public mind certain misconceptions which have arisen regarding this and other wartime medical economies, the following information should be furnished through the medium of the local press: (1) The restriction of civilian medical services is general and distributed evenly throughout the country, the calling-up of doctors being controlled by an impartial central medical committee. (2) It is not the intention of any competent authority, once the war is over, to bar the way to a restitution of the public title to free choice of doctor. Confident that similar steps with a view to reassuring the public are being taken in other parts of the country the meeting desired that Stockport's share in this common endeavour should be recorded in the *B.M.J.*—I am, etc.,

F. DALLIMORE,
Hon Secretary, Stockport Division, B.M.A.

The G.P. and the Future Medical Service

SIR,—G.P.s as a body will resent the imputation contained in the article in the *Supplement* for July 18, that the cause of much that is amiss in the practice of medicine to-day is the incompetence of the G.P. The further implication that what is needed is bigger and better examinations for students destined to be G.P.s should be resisted, for by now no one should be obsessed by the fallacy of thinking that examinations are a test of all that is desirable in the doctor, however much they may be a test of a certain form of specialized knowledge. We want more humanists in medicine, not professional knife and coin swallowers of much useless mental lumber that is forgotten as soon as learned, and for which some brains more than others have greater aptitude.

That the new G.P. arising from the ashes of the old is to be better fitted to make "an intelligent reference to the right department" is an ambition that is as futile as it is fatuous. If that is all that hospital staffs require of the G.P. why trouble to educate him medically any further than the stage of ward clerk, for any ward clerk knows that it is not customary to refer a hammer-toe, say, to the gynaecologist. It was said a few years ago that the G.P.'s surgery was rapidly becoming merely a kind of sorting office. Soon, perhaps, with the kind of super-G.P. envisaged in this article, instead of his surgery being only a sort of local P.O. it will perhaps become exalted to a species of G.P.O.

The picture, too, of G.P.s tripping up over each other in the wards of their local hospital has a charm all its own; but the average G.P. will be content to leave it at that. To him the day is generally too short and too strenuous; and when he often has, even in these days of increased wages, to make a living partly out of people who pay him 1½d. a week for attendance (including medicine) and not a sum reckoned in guineas for some brief and perfunctory examination, all he wants is to get on and be done with it, and perhaps have an hour to spare before bed-time for the benefit of his immortal soul.

Let the cobbler stick to his last; and leave the G.P. alone to his general practice.—I am, etc.,

Hove G. LLEWELLYN DAVIES.

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieut W H E. McKee to be Surg. Lieut-Cmdr.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Cmdr H M Petty has been placed on the Retired List.

J G. Sandrey to be Temp Surg. Cmdr.

Prob Temp Surg. Lieuts J. P. Sparks and J Burke to be Temp. Surg Lieuts.

ARMY

The following consultants have been granted the local rank of Brig.. Col. (acting) D S Stevenson, M B E., R A M.C.; Col. (temp) F. A E. Crew, T D., R A.M C.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs Capt. J A Sinclair has relinquished his commission on account of ill-health and is granted the rank of Major.

War Subs. Capts C. M. Steven and G L. St A. McClosky have relinquished their commissions on account of ill-health and are granted the rank of Capt.

Lieuts J Webster and W. H Murray have relinquished their commissions on account of ill-health and retain their rank

To be Lieuts · A. D Abdulla, W. Barr, J L Blair, W. R. Brown, C H Burridge, W. F Caldwell, G S. Clouston L. E. S Coghlan, C. L. Davidson, W A. Dewar, R E Fletcher, W. Gantley, G F. Gibberd, W. J. Gray, A R Gray, R. L. Hill, C E. W Hoar, A. S Hunter, D. B Irwin, C. I Irvine-Jones, N. Levy, S L. Lucas, R. I McAlley, H MacL. T. MacDonald, A. MacKinnon, C. G. Millman, M. J. Morton, J. C. Nicholson, L G. M Page, A R. V Patel, G D. R. Patten, R J W. Rees, J. C. Robertson, M. S. Robertson, A. W. Spence, A R G. Watson, J Wyllie, W. T. Agar, E. E. Alar-Akwei, S Alstead, W. I. Bain, S. V. Brookes, A. M R Cann, P. Cohen, J C B Craig, W. A. Elliott, E A Fiddian, G. D. Fleming, J. C. Heather, V. L Helm, P. F. J. Hickingbotham, A. H Hunt, D G Kennedy, G. A. Kiloh, T. E. Lamb, J. D Laurie, J. H M Little, M C., J. M. McInroy, T. B. McMurray, I. P. Munro, G. T Newton, G. D Pirrie, A K. Price, R F Roberts, C. R. Salkeld, M Sheehan, M. L Slotover, B Solomons, T. T Stamm, J. M M. Steven, R R S Strang, P H Taylor, F. E. Wheeler, M. E Winters, J L. Wormald, H A. Worthy, M M Wright, C Bard, G F. G Batchelor, R M Bolam, D. Cameron, J Crowther, S R Das-Gupta, J Dawson, H. Doberman, G. Houseman, M E MacDowall Jago, J A. James, G. Johnston, A Katz, A. M Langwill, P. M. McAllen, I F. MacMath, A I S Macpherson, J. O'Hara, R. McI. Paton, A S. Patterson, G. C. Price, R. L Rees, G. H Sanderson, E M Sewell, K. Smith, S Suzman, E. J Young-Thompson, H F. West.

ROYAL AIR FORCE

Miss C D. Middleton, M O, with the relative rank of Flying Officer, has resigned her commission on account of ill-health

Miss Edith Scott to be M O (Emergency) with the relative rank of Flying Officer for employment with the R A F.

ROYAL AIR FORCE VOLUNTEER RESERVE

Fl. Lieut. E L. Ellis has resigned his commission and retains his rank

Fl. Lieuts G E. B. Scott and H J Simmons have resigned their commissions

To be Fl Lieuts (Emergency): J C. Davidson and R. T. V. Clarke

Flying Officer F T. P. Bergin has resigned his commission

The commission of Flying Officer S P. Abraham is terminated.

Flying Officers D. A. Osborn, A. Robertson, E A. Wallis, F K Matheson, A. W. D. Martin, D F. Mungall, D. Salmon, J J. Black, J. E G. Vincenzi, C. Eppel, A L. Ross, W. I. Leslie, A. J. Chiappa-Sinclair, R Boggon, J F. S. McKee to be War Subs. Fl. Lieuts

To be Flying Officers (Emergency). W. H. N. Angus, J. B. Atkins, E R Devlin, W D Dick, R Lees, J. A F McLean, J. V. Mitchell, E. G. M. Palser, O B. Appleyard, C. C Barclay, R. C. H. Cooke, W. Y. Cornock, M. B Hay, H. A. Maclachlan, J. McIntosh, R D Muckart, A. L. O'Loghlen, J. M Urquhart, J A. C. Wilson, J W. Woodward, D. H Wright, C L. Barron, R. D. C Brackenridge, J. K. M Deas, E. E. Doyle, A. Everard, P. F Fletcher, W. P. Hedgcock, W. Meharg, D. K W Picken, D Robertson, A. C Tait.

BRITISH MEDICAL ASSOCIATION

ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the British Medical Association will be held in the Great Hall, British Medical Association House, Tavistock Square, London, W.C.1, on Wednesday, September 9, at 12.30 p.m. Business: (1) Minutes of the last meeting; (2) appointment of auditors; (3) report of election of President for 1942-3.

G. C. ANDERSON,
Secretary.

Branch and Division Meetings to be Held

CITY DIVISION.—At Metropolitan Hospital, Kingsland Road, E, Tues, August 18, 8 30 p.m. General meeting Agenda: To discuss Annual Report of Council, etc

WESTMINSTER AND HOLBORN DIVISION —At B M.A. House, Tavistock Square, W C, Wed, August 19, 5 p.m. Meeting Agenda: To consider Report of Divisional Study Group on "The Future of Medicine" and various aspects of Interim Report of Medical Planning Commission, etc All medical practitioners in area of Division are invited to attend.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: M R.C.P. course in neurology, West End Hospital for Nervous Diseases, Sept. 1 to 25, 3 p.m, Tues and Fri; M.R C P course in cardiology, Royal Chest Hospital, Wed., Sept. 2 to 23, 3.30 p m; Final F R C S clinical course, Wed, Sept 9, 16, and 30, St Mary Islington Hospital, and Tues, Sept 22, Archway Hospital, 2 p m; Week-end course in advanced clinical surgery (including pathology), Hillingdon County Hospital, Uxbridge, Sat. and Sun, Aug. 29 and 30, 10 a.m to 4 15 p.m.; Theory of physiology, eight lectures on Mon and Thurs, 8 p m, at 1, Wimpole Street, W, from Oct 5 to 29, suitable for M.R.C.P, F.R C S. (primary and final), and D.A candidates

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL —*Daily,* 10 a.m to 4 p m., Medical Clinics; Surgical Clinics and Operations; Obstetrics and Gynaecological Clinics and Operations. *Daily,* 1 30 p m, Post-mortems *Tues*, 10 a m., Paediatric Clinic; 11 a m, Gynaecological Clinic. *Thurs.*, 2 p m, Dermatological Clinic. *Fri*, 12 15 p.m., Conference (Surgical); 2 p m, Conference (Gynaecological); 2 p m, Sterility Clinic.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

BIRTHS

FERGUSON.—On June 29, 1942, at Altrincham, to Frances Thornton Ferguson, M B, Ch B. (*née* Wright), wife of Capt J H Ferguson, R A M C, a daughter (Frances Jane).

FYVIE.—On August 1, 1942, at Norwich, to Curtis (*née* Clark), wife of Capt H M Fyvie, R.A M.C., of Pietermaritzburg, South Africa, a daughter.

KELLY.—On July 28, 1942, to Ella Mary, wife of Dr. W P Kelly, Cowes, I.W., a son (Ian Lister)

KYNASTON —On August 3, 1942, to Joan, wife of Dr. Roger Kynaston, Kirkby-in-Furness, N. Lancs, a daughter (Georgina)

MACLEOD —At Lochmaddy, Isle of North Uist, on July 30, 1942, to Dr. and Mrs A. J. Macleod, a son.

DEATHS

ASHE —At the Dower House Ombersley, Worcs, on August 7, 1942, Henry Park Ashe, M.R C.S, L.R.C.P, after a short illness, aged 58

WILKS.—On August 4, 1942, Stephen Longmore Butterworth Wilks, M D (Lond), aged 75, at Colwyn Bay.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY AUGUST 22 1942

BRITISH MEDICAL ASSOCIATION

ANNUAL REPRESENTATIVE MEETING, 1942

The Annual Representative Meeting of the B.M.A. will be held at B.M.A. House, Tavistock Square, London, W.C.1, on Tuesday, Wednesday, and Thursday, Sept. 8, 9, and 10, 1942.

RESOLUTIONS BY DIVISIONS AND BRANCHES

Medical Planning Commission

Motion by Wandsworth:

That no decision for or against any form of change of medical practice should be expected until victory has been achieved.

Question 1

Motion by Guildford, Cardiff, Dorset, Dudley, Swansea, Isle of Ely, Lancaster, Isle of Wight, Trowbridge, Belfast, Lanark, Lincoln, Perth, Leigh, Lothians, Chesterfield, Greenwich, Harrogate, South-Eastern Counties, and West Norfolk:

That the following broad definition of the objects of medical service be accepted:

(*a*) to provide a system of medical service directed towards the achievement of positive health, the prevention of disease, and the relief of sickness;

(*b*) to render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional.

Question 2

Motion by Guildford, Lancaster, Isle of Wight. Isle of Ely, Trowbridge, Belfast, Dorset, Lanarks, Lincoln, Leigh, Harrogate, South-Eastern Counties, and West Norfolk:

That free choice of doctor and patient be an essential feature of any future service.

Amendment by Barnet:

That free choice of doctor and patient should be an essential feature in any future service, provided certain regulations exist to prevent the will-o'-the-wisp tactics at present employed by certain patients.

Amendment by Cardiff, Perth, Lothians, Chesterfield, and Greenwich:

That in any reorganization of general practice as full a measure as possible of free choice of doctor and patient should be preserved.

Question 3

Motion by Guildford, Cardiff, Swansea, Lancaster, Barnet, Trowbridge, Belfast, Dorset, Lanarks, Perth, Leigh, Lothians, Chesterfield, and Greenwich:

That group practice should be a feature of any future medical service.

Amendment by Harrogate:

That the words "but not an essential feature" be inserted after "feature."

Amendment by South-Eastern Counties, Lincoln, Isle of Ely, and Isle of Wight:

That in any future medical service group practice should be encouraged in areas where it is suited to local conditions.

Amendment by West Norfolk:

That the following words be inserted at the end of the motion: "doctors retaining their private practice and domiciliary work."

Question 4

Motion by Guildford, Cardiff, Dudley, Swansea, Lanarks, Lincoln, Leigh, Lothians, and Chesterfield:

That provision, of whatever character, should be made by the Government for the whole community.

Amendment by Belfast, Dorset, Perth, and South-Eastern Counties:

That provision, of whatever character, should be made by the Government for a section of the community only.

Amendment by Isle of Ely and Lancaster:

That provision, of whatever character, should be made by the Government for that section of the community already covered by National Health Insurance and those persons of a similar economic status.

Amendment by Harrogate:

That provision, of whatever character, made by the Government, should be limited to the present insured population.

Amendment by Greenwich and Deptford:

That provision for complete services should be made by the Government for the whole community, if the costs are borne by the taxation of the whole community, but that if the costs are borne by a contributory scheme, then some upper limit of income should be made, provided there is some provision for those just above the income limit to contract in if desirous of so doing.

Amendment by West Norfolk:

That treatment other than hospital treatment should be provided by the Government to the dependants of insured persons and those of like economic status: hospital accommodation should be made available for the whole community.

Question 5 (a)

Motion by Trowbridge, Belfast, Greenwich and Deptford, Harrogate, Isle of Ely, Lincoln, South-Eastern Counties, and West Norfolk:

That the basis of the co-ordination and integration of health services should be extension of the type of medical benefit available under National Health Insurance to the dependants of wage-earners and others of like economic status, coupled with the enlargement of its scope by the inclusion of consultant and specialist services.

Amendment by Barnet:

That while the Representative Body is in agreement in principle with the extension of the type of medical benefit available under National Health Insurance to dependants of wage-earners and others of like economic status, coupled with the enlargement of its scope by the inclusion of consultant, specialist, and ancillary services, the contracting doctor should be guarded against exploitation by his patient by some statutory or financial protection.

Amendment by Lanarks:

That after "status," the words "and voluntary contributors" be inserted.

Amendment by Dudley:

That the following words be added to the motion: "and with considerable additional remuneration to practitioners."

Question 5 (b)

Motion by Swansea, Leigh, and Chesterfield:

That the basis for the co-ordination and integration of health services should be the establishment of a whole-time salaried government medical service.

Motion by Leeds:

That any future medical service for the community should be completely freed from all financial competition and personal financial motives, and that this could only be brought about by a graded salaried service which should apply to hospital staffs and those engaged in consulting and general practice.

Question 5 (c)

Motion by Guildford, Cardiff, Dorset, Lancaster, Isle of Wight, Perth, and Lothians:

That the basis for the co-ordination and integration of health services should be some method other than the extension of the type of medical benefit available under National Health Insurance or a whole-time service.

Question 6

Motion by Guildford, Isle of Wight, Lanarks, Perth, and Lothians:

That the plan set out in broad outline in the draft report of the Medical Planning Commission be adopted.

Amendment by Lancaster:

That the plan as outlined in the draft report be adopted, provided that the complete indemnification of every general practitioner for the loss of his practice be arranged.

Motion by Guildford, Cardiff, and Dorset:

That the central machinery in the future medical service should take the form of a corporate body.

Motion by Macclesfield and East Cheshire:

That this meeting favours the establishment of a corporate body with proportionate representation of general practitioners.

Motion by Guildford, Cardiff, and Lanarks:

That the local machinery in the future medical service should take the form of regional councils, representative of the local authority or authorities, the voluntary hospitals, and the medical profession.

Motion by Lothians:

That in addition to regional councils, there should be district and area committees.

Motion by Guildford:

That any scheme involving the abolition of capital value of practices shall provide for compensation in the form of cash or negotiable security, as alternative to compensation by pension.

Motion by Dorset:

That the Representative Body considers that agreement to any new scheme for the regulation of medical practice is subject to equitable remuneration being obtained, and also to an adequate and agreed compensation being given for the capital value of practices.

Motion by DUDLEY:

That, with reference to para. 69 of the report, it shall be an essential of any scheme in which the profession are required to participate that adequate capital sums shall be allotted to every entrant to compensate for loss of goodwill, and that this meeting considers that this matter has not received attention at the hands of the Commission, as is evidenced by the summary manner in which this is dealt with in "Entry to Service," *Journal*, June 20, p. 749.

Motion by CARDIFF:

That a special compensation scheme should be devised for men in the Services and for those who have suffered loss of capital under varied war conditions.

Motion by GUILDFORD:

That provision should be made for closer association of general practitioners with the work of hospitals, and that arrangements for accommodation be provided for general practitioners to attend in hospital those of their patients whose entry is dictated by the need for nursing, etc., and not by the need for specialist medical treatment.

Motion by CARDIFF:

That a proportion of consultants should be remunerated on a salaried basis.

Motion by LANARKS:

That the medical advisory machinery should contain adequate general practitioner representation.

Motion by ISLE OF WIGHT:

That in the regional councils a large proportion of the administrative posts should be held by medical practitioners of wide experience.

Motion by LOTHIANS:

That the central machinery of the medical service should be a government department.

Motion by LOTHIANS:

That remuneration of general practitioners should be increased in respect of length of service, special skill, and additional qualifications.

Question 7

Motion by GUILDFORD, CARDIFF, DUDLEY, SWANSEA, ISLE OF WIGHT, ISLE OF ELY, TROWBRIDGE, LANARKS, LINCOLN, PERTH, LEIGH, LOTHIANS, CHESTERFIELD, GREENWICH, and DEPTFORD:

That, in view of the fact that the full adoption of the plan may be delayed for various reasons, some interim changes should be made.

Motion by LANCASTER:

That no changes be made until a complete scheme can be introduced.

Motion by BELFAST:

That no change be made until the war is over and practitioners in the Services have returned.

Motion by WILLESDEN:

That the Representative Meeting is of opinion that there should be no radical changes in the present medical services so far as the work of doctors is concerned until after the war, and until those doctors who are on service with the Forces have returned and have had ample time to consider proposals made and to express their views thereon, and that the Representative Meeting pledges itself to oppose by every means in its power any changes except those of a temporary nature which may be necessary to win the war.

Motion by DORSET:

That the Representative Body considers that no major steps affecting the future conduct of medical practice should be taken until the return of the majority of practitioners from the Forces.

Motion by HARROGATE:

That no changes be made until 6 months after the termination of the war.

Motion by SOUTH-EASTERN COUNTIES:

That no changes be made until the war is over.

Question 7 (i)

Motion by GUILDFORD, CARDIFF, DUDLEY, ISLE OF WIGHT, ISLE OF ELY, TROWBRIDGE, LANARKS, LINCOLN, LOTHIANS, CHESTERFIELD, and GREENWICH:

That proposals for immediate post-war application should include the two-way extension of National Health Insurance to include: (*a*) the dependants of wage-earners and others of like economic status within the current National Health Insurance income limits, and (*b*) the provision of consultant and specialist services.

Amendment by DONCASTER:

That the following be added to the motion: (*c*) the transfer of the National Health Insurance functions of Approved Societies to the Government.

Amendment by SWANSEA:

That proposals for immediate post-war application should include the extension of National Health Insurance to the whole community without income limit.

Amendment by PERTH:

That the words "post-war" be omitted.

Question 7 (ii)

Motion by GUILDFORD, CARDIFF, LINCOLN, ISLE OF WIGHT, PERTH, LOTHIANS, and CHESTERFIELD:

That the proposals for immediate post-war application should include the establishment of experimental co-operative practice in some areas.

Question 7 (iii)

Motion by DUDLEY, LEIGH, LINCOLN, LOTHIANS, and CHESTERFIELD:

That the proposals for immediate post-war application should include the creation of Regional Hospital Councils with executive or advisory functions

Amendment by GUILDFORD, CARDIFF, ISLE OF WIGHT, and PERTH:

That the words "executive or" be omitted.

Amendment by LANARKS AND SWANSEA:

That the words "or advisory" be omitted.

Amendment by TROWBRIDGE:

That the words "with adequate medical representation" be inserted after "Councils," and that the remainder of the sentence be deleted.

Health Legislation

Motion by BOURNEMOUTH:

That, with reference to the Draft Interim Report of the Medical Planning Commission, this meeting is of the opinion that further consideration and criticism be given to the machinery for introducing health legislation.

Remuneration

Motion by WANDSWORTH:

That this meeting, being already dissatisfied with the present capitation fee of the National Health Insurance, is not willing to accept any smaller fee for dependants brought in by temporary or permanent extension of the scheme than that in force for already insured persons.

Consultation with Profession

Motion by TORQUAY:

That the final draft of the Interim Report of the Medical Planning Commission should be referred to the profession before it is submitted to the Government, and that an assurance should be obtained from the Government that no action will be taken until the men now serving in the Forces can be consulted.

Motion by CARDIFF, MACCLESFIELD, and EAST CHESHIRE:

That the findings of the Medical Planning Commission should not be considered as final until the medical men now on active service have had an opportunity of considering them.

Conditions of Service

Motion by CARDIFF:

That the conditions of service should be the same for men and women and that both should have equal opportunity of promotion and of gaining experience.

Motion by CARDIFF:

That any resolutions agreed to are subject to the conditions of service and system of management being satisfactory to the medical profession.

Motion by DONCASTER:

That any salaried medical service should provide adequately for illness among its members, for pensions, and for care of a doctor's dependants in the event of his decease.

Administration

Motion by DONCASTER:

That in the event of a full-time salaried medical service the local and regional administration of the scheme should be predominantly in the hands of medical men.

Membership of Local Authorities

Motion by GREENWICH and DEPTFORD:

That, with reference to paragraph 60 of the Draft Interim Report of the Medical Planning Commission, it is essential that the existing law be amended to permit medical practitioners to act as members of local authorities while participating in medical services before the full plan as outlined in the report of the Medical Planning Commission can be implemented.

Hospital Staff Committees

Motion by BIRMINGHAM CENTRAL:

That, with reference to para. 89 of the Interim Report, this meeting is in agreement in principle that committees of the senior medical staff should be set up in all hospitals. The medical superintendent, however, should be the chairman of this committee, and the resolutions of the committee shall be transmitted to the hospital management committee through him, otherwise it will be impossible for the medical superintendent to carry out his duties as chief administrative officer. It is also desirable that committees of other members of the hospital staff should be appointed and their resolutions conveyed to the committee of management in a similar way.

Publicity

Motion by BIRMINGHAM CENTRAL:

That, in view of the inadequate way in which publicity was given in the Press and radio to the Report of the Medical Planning Commission, it is the opinion of this meeting that some responsible member of the Medical Secretariat should be appointed to ensure that the views of the Association are put forward in a proper manner.

General Practice

Pay of Fire Service M.O.s

Motion by Cardiff:

That (with reference to the paragraphs of the Annual and Supplementary Reports of Council under the above heading, Doc. A.R.M. 2, p. 1, and Doc. A.R.M. 3) the fees for the Fire Service should be referred to the Council for reconsideration and report.

Motion by Stratford:

That the paragraphs of the Annual and Supplementary Reports relating to the pay of Fire Service M.O.s be referred back to the Council for reconsideration on the grounds:

(*a*) That the system whereby post office medical officers are given the extra duties specified to perform, solely in light of their Post Office appointment, is incorrect: it makes for an inequitable distribution of work and must tend to take away the prerogative of the Local Medical War Committees to arrange for and control the distribution of medical man-power;

(*b*) the capitation fee accepted in the case of certain members of the National Fire Service (12s. with dispensing) is absurdly low: while the numbers affected may be low, to accept such a capitation fee, at a time when an increase of the fee for National Health Insurance work is being applied for, may dangerously affect negotiations in the latter case.

Motion by Isle of Wight:

(1) That a capitation fee of 12s. for the medical treatment of ex-regular firemen to cover treatment and the supply of ordinary drugs and dressings is inadequate;

(2) that a capitation fee of not less than 9s. 9d. (exclusive of drugs and dressings) should be payable.

(3) that it should not be obligatory upon the medical officer to supply drugs and dressings where he does not ordinarily dispense, and the payment, if he does supply drugs and dressings, should not be less than that paid under the N.H.I.;

(4) that provision for mileage should be payable above 2 miles as in the case of N.H.I. patients.

Certificates

Motion by Coventry:

That (with reference to the paragraph of the Annual Report of Council under the above heading, Doc. A.R.M. 2, p. 1) the Association should take energetic steps to reduce the present time-wasting multiplicity of special certificates and forms which add so much to the burden of the general practitioner.

Dependants of Serving Men

Motion by Bristol:

That (with reference to the paragraph of the Annual Report of Council under the above heading, Doc. A.R.M. 2, p. 2) this meeting expresses its dissatisfaction with the reply received from the Government in respect of provision of adequate medical attention for the dependants of those serving in the Forces; and instructs the Council to press again on the Departments concerned the urgent needs of Service dependants.

Motion by City of Edinburgh:

That, being fully conscious of the difficulties of many dependants of men and women serving in H.M. Forces in meeting their ordinary household needs, the Association make the strongest recommendations to the Government to include the dependants of serving men and women in a scheme of insurance covering medical attention and treatment.

Motion by Lothians:

That the Council be requested to ask the Government to extend medical benefit to the dependants of men serving with H.M. Forces.

Motion by Leigh:

That the benefits of National Health Insurance be made available immediately to the dependants of men serving with H.M Forces on a non-contributory basis and without any means test.

Reservation of Maidservants and Dispensers

Motion by Birmingham:

That (with reference to the paragraph of the Annual Report of Council under the above heading, Doc. A.R.M. 2, p. 2) the Council be asked to persist in its efforts to safeguard doctors' interests by securing the reservation of (*a*) at least one maid in each doctor's house; (*b*) doctors' dispensers.

Finance

Expenses of Central Medical War Committee

Motion by Birmingham Central:

That this meeting regards the payment by the Government towards the expenses of the Central Medical War Committee as being very inadequate.

National Health Insurance

Constitution of Insurance Acts Committee

Motion by Council:

That the fifth column of the schedule to the By-laws relating to the Insurance Acts Committee (otherwise appointed) be amended:

(1) By the substitution of "36" for "30" in line 17;

(2) by the addition of the following words after line 28: "6 to be elected by the Annual Conference of Representatives of Local Medical and Panel Committees";

(3) by the substitution, in line 21, of "27" for "26";

(4) by the deletion of the following words: "1 to be nominated by the Association of Local Government Medical Officers of England and Wales."

(*Note*: The effect of these amendments on the fifth column of the Schedule to the By-laws is indicated by the underlining in the copy quoted below:

"Registered medical practitioners appointed as follows:

6 such practitioners (being members of the Association) elected (in the manner prescribed by the Representative Body) by the elected Representatives of the Constituencies formed for Great Britain and Northern Ireland under By-law 39, namely, 4 by all the elected Representatives (acting together) of the Constituencies so formed for England and Wales, 1 by all the elected Representatives (acting together) of the Constituencies so formed for Northern Ireland, and 1 by all the elected Representatives (acting together) of the Constituencies so formed for Scotland together with (36) practitioners (whether members of the Association or not) to be nominated or qualified as under, viz.:

(27) to be selected so far as possible on a territorial basis from among practitioners nominated by the Local Medical Committees and Panel Committees formed in Great Britain and the Local Insurance Practitioners' Committees of Northern Ireland under the National Health Insurance Acts;

(6 to be elected by the Annual Conference of Representatives of Local Medical and Panel Committees);

1 (being a member of the staff of a voluntary hospital) to be nominated by the Hospitals Committee of the Association;

1 to be nominated by the Medical Women's Federation;

1 to be nominated by the Society of Medical Officers of Health;

with power for the members of the Committee appointed as above provided to co-opt as additional members such number (if any) of non-panel practitioners as shall be required to secure that 4 such practitioners shall be members of the Committee, 1 of whom shall be in general practice in an industrial area."

Public Health

Compensation for Personal Injuries

Motion by Cardiff:

That (with reference to the paragraph of the Annual Report of Council under the above heading, Doc. A.R.M. 2, p. 3) if the Council is unable to obtain a satisfactory solution to the question of compensation for medical officers injured in air raids the alternative procedure of medical officers being enrolled as volunteers under the Local Authority for National Service, using Form E.D. 60, should be investigated.

Scotland

Chairman of Scottish Committee and Membership of Council

Motion by Lothians:

That the chairman of the Scottish Committee should be, *ex officio*, a member of the Council during his tenure of office.

Central Medical War Committee

Medical Services of Defence Forces

Motion by North-East Essex:

That this meeting notes with concern the present wastage of medical personnel and suggests that the Council should approach H.M. Government with a view to correlating the medical services of the Navy, Army, Air Force, and Civil Defence under one head.

Other Motions

Election of Council by Groups in Great Britain or Northern Ireland

Motion by Grimsby:

That By-law 55 (3) be amended to read as follows: The said voting papers shall be sent to the Association at the Head Office within such time as the Council may from time to time prescribe by notice given as aforesaid, and the particulars which shall be included in the voting papers shall be confined to the candidate's address. (*Supplement*, July 11, 1942.)

By-law 55 is as follows:

(1) The election of twenty-two members of Council by the Branches or Groups of Branches and Divisions in Great Britain or Northern Ireland shall be by means of voting papers sent by post by the Association from the Head Office to each member of every Branch comprised in the Group.

(2) The said voting papers shall contain the names of those candidates who have been nominated either (*a*) by a Division or (*b*) in writing signed by not less than three members of any such Branch and sent to the Association at the Head Office on or before an appointed day, of which not less than 14 days' notice has been given in the *Journal*.

(3) The said voting papers shall contain such other particulars (if any), and shall be sent to the Association at the Head Office within such time as the Council may from time to time, prescribe by notice given as aforesaid.

(4) The expenses of the said election shall be borne by the Association.

(5) Not later than the second week in the succeeding month of June a notice of the result of the election shall be published in the *Journal.*

Amendment by LINCOLN:

That the words "and age" be added after the word "address" in the foregoing motion by Grimsby.

Hospital Service Plan for London

Motion by BARNET:

That the Representative Body, while approving in general of the Hospital Service Plan for London, emphatically protests at the fees payable under the proposed scheme to the patient's own doctor and deplores the fact that the B.M.A. should have agreed to such totally inadequate professional fees.

Medical Profession in Parliament

Motion by NORTH-EAST ESSEX:

That the Council be asked to consider greater representation of the medical profession in Parliament

Legal Advice in Negotiations with Government Departments

Motion by SHEFFIELD:

That the Council be instructed to engage the whole-time services of a barrister of repute to make a close study of medical law and economics so as to be prepared to give advice and direction in the preparation and presentation of the Association's case in any future negotiations with government departments and if and when necessary to take part in such negotiations on behalf of the Association.

Fees for Part-time Work

Motion by WEST NORFOLK:

That a new scale of minimum fees be laid down for all part-time work for public authorities, government departments, and societies, and that they should be negotiated by the B.M.A. on a national basis.

Supply of Oxygen to Medical Profession

Motion by LIVERPOOL:

That the Representative Body condemns the practice whereby manufacturers of oxygen withhold the supply of commercial oxygen at retail commercial prices to the medical profession.

Medical Records of Services Personnel

Motion by GUILDFORD:

That the Council be asked to take steps to make available to civilian practitioners the medical history, including results of any special investigations, of men or women discharged from the Services for medical reasons.

The position of absentee or of "distant" practitioners—i.e., the patient lives beyond a defined distance from the doctor's surgery—under the terms of service for insurance practitioners is the subject of the latest amendment of the Medical Benefit Regulations. This provides that the absentee or "distant" practitioner is relieved for the time being of his obligation to attend an insured person otherwise than by deputy, and the latter, notwithstanding that he is acting as deputy, assumes the obligations of the absentee doctor just as if the patient were on his panel.

B1 HOSPITAL APPOINTMENTS

The Minister of Health announces (Circular 2679) that it has been found necessary to restrict the freedom of holders of B1 posts to transfer from one hospital to another. With the recruitment of B2 practitioners on completing 6 months in their posts, it will no longer be possible to appoint them to B1 posts, and difficulties will arise if holders of the latter are free to transfer to another hospital without regard to the needs of the one at which they are at present employed. The Central Medical War Committee has suggested that the powers of Defence Regulation 58A should be invoked to immobilize holders of B1 posts, a suggestion which the Minister of Health, after consultation with the Minister of Labour, has accepted.

The effect of this is that if a holder of a B1 post wants to leave his hospital (except on transfer to another under the same authority) and the hospital considers him essential, the Ministry of Health's Senior Regional Officer (or, in the case of a London hospital, the Ministry of Health) must be informed. The case will then be investigated in consultation with the Central Medical War Committee, and unless it is one in which the doctor might reasonably be allowed to move, the appropriate National Service Officer will direct him to remain in his post. It is hoped that holders of B1 posts will recognize the difficult position in which hospitals are placed, and by willing acceptance of the temporary restriction, which will operate in the first instance for 3 months from August 8, obviate the need for a formal direction by the National Service Officer.

BRANCHES AND DIVISIONS

The grouping together of Branches of the B.M.A for the purpose of electing 22 members of Council is a necessary procedure so far as the machinery of the Association is concerned, but it does mean that in some instances the elected member of Council represents a very wide area, and for that reason opportunities for him to get to know the views of his constituents do not occur as often as they might. Group K (or to those who are not familiar with the grouping—the Dorset and West Hants, the South-Western, and the Wiltshire Branches) has overcome this in a way which, it is hoped, will be followed by other Grouped Branches. Early this year Dr. J. A. Pridham of Weymouth suggested to the secretaries of the Divisions within the area that each should send a representative to a conference held for the purpose of meeting the Council member, Dr. F. A. Roper. The suggestion was evidently approved, for on July 1, 27 representatives (16 from Exeter and the remainder from Plymouth, Dorset, Bournemouth, Weymouth, Blandford, Dorchester, Torquay, Beaminster) met at the Royal Devon and Exeter Hospital, Exeter, under the chairmanship of Dr. J. A. Murray of Exmouth. Although the chief subject for discussion was the interim report of the Medical Planning Commission (the views of the conference will in due course be placed before the Commission), other health matters of general interest to the area were discussed. It is hoped to hold a similar conference in a year's time.

Correspondence

Remuneration under a State Medical Service

SIR,—The Wembley Study Group has been fortunate in stimulating deep interest among the local practitioners, and at a large and representative meeting held on June 23 it was decided to request you to bring the following matter to the attention of the profession:

"Having regard to the discontent in the past over the question of remuneration, the meeting strongly affirmed that no concrete scheme could be given approval until an opportunity had been afforded of giving adequate consideration to the question of remuneration. Too often in the past has the profession had agreed schemes and fees thrust upon it, and while this group is willing to give its whole-hearted co-operation to any system which will improve the medical service of the country, it cannot lose sight of the fact that adequate payment, pensions, and compensation must be a *sine qua non.*"

—We are, etc.,

J. SHIRLEY CALLCUTT (Chairman).
M. BARNET STUNGO (Hon. Secretary).

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m., Post-mortems. *Mon.*, Operative War Surgery Course commences *Tues.*, 10 a.m., Paediatric Clinic; 11 a.m., Gynaecological Clinic. *Thurs* 2 p.m., Dermatological Clinic. *Fri*, 12.15 p.m., Surgical Conference; 2 p.m., Gynaecological Conference; 2 p.m., Sterility Clinic.

EDINBURGH POSTGRADUATE LECTURES.—At Edinburgh Royal Infirmary, *Thurs*, 4.30 p.m. Prof. T J Mackie: The Question of Air-borne Infection.

B.M.A.: Diary of Central Meetings

SEPTEMBER

3 Thurs. Journal Board, 1 45 p.m.

B.M.A.: Meetings of Branches and Divisions

EAST YORKSHIRE BRANCH.—At Quern House, Park Street, Hull, Wed., Aug. 26, 7.45 p.m. Discussion on Interim Report of Medical Planning Commission All medical practitioners in area of Division are invited to attend

REIGATE DIVISION.—At East Surrey Hospital, Redhill, Tues, Aug 25, 8 30 p.m Dr. Geoffrey Evans: The War Diet and its Effect on Health

APPOINTMENTS

SMITH, A. H D. M.C, T.D., M.B., Ch.B., Honorary Consulting Surgeon, Llanelly and District General Hospital.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

DEATH

BODKIN.—At his home, Hangersley, Ringwood, Hants, on August 14, 1942, Herbert Alfred Bodkin, F.R.C.S.Ed., D.O Oxon., M.R.C.S.Eng., L.R.C.P Lond, aged 61.

The personnel of the special subcommittee of the I.A.C. announced in the *Supplement* of Aug. 8 (p. 14, column 2) included the name of Dr G H. Pearce This was a misprint for Dr. J. C. Pearce (of Diss, Norfolk).

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 29 1942

GENERAL PRACTICE: THE GATEWAY TO NATIONAL HEALTH

BY

A. WILFRID ADAMS, M.S., F.R.C.S.

In our post-war planning the weightiest consideration naturally is given to general practice, for besides having great numerical preponderance general practitioners are the spearhead of the attack against disease. The family doctor's services to the public may be usefully grouped under three headings: the teaching of abundant health, implied in which is preventive medicine; early diagnosis; effective treatment. The cult of health should be given first place, but owing to the prevalence of illness the doctor's time is fully engaged in "rescue work" to the exclusion of the far greater didactic role. Preaching prevention is no comfort to victims seeking relief from present suffering. Moreover, teaching is prosaic and apt to fall on deaf ears, whereas curing is a dramatic and impressive role for the doctor. In the vision of the future treatment comes last for it will be least needed. For the present, however, disease does make first claim on the doctor's time.

Certain improvements in general practice, though quite attainable, are yet lacking; they are (1) adequate time per patient; (2) decent quarters and equipment; and (3) formal association with a teaching centre—a regional Alma Mater. The natural solution is to be found in compound practices, although isolation seems the inevitable lot of doctors in remote rural regions. A doctor must unite in partnership with three or four colleagues. Sharing the same premises, they can afford a suite of rooms well warmed and lit, cleaning staff, and a nurse on the premises to dress wounds and deal with telephone calls. Such a favourable setting would give the doctor the requisite time for questioning, diagnosis, and treatment. In addition to his general interests, each of the partners would devote himself specially to some main branch—e.g., ductless glands, nervous system, etc. Because of the prodigious growth of medical knowledge it is only "firms" that can now cover the whole range of diseases. Each member of the firm could be familiar with the problems of the others, and they could be mutually available during absence on holiday or through illness. *Continuity of interest* results. This is a boon to the doctor and a tremendous asset to the patient. When, occasionally, a specialist's opinion was needed the general practitioner would attend the consultation. This would be stimulating to him and give the doctor a formal link with the hospital and a share in the treatment. All consultations, other than those required at the patient's home, would, in the traditional way, take place at the regular hospital clinic or private rooms. If he travelled round between widespread family practices, a consultant's time would be wastefully consumed.

The Family Doctor Relationship

The size of the partnerships is important. Small voluntary combinations (3 to 6 doctors) are already working well, and it is but evolution to standardize them for all towns. Yet although independent practice is unequal to the greatly increased demands imposed by modern medicine the general practitioner *must* maintain his traditional attributes as a family doctor. As he draws his patients from the neighbourhood in which he dwells he is endowed with a knowledge not only of their vocations but of their social setting. In his professional life he may be acquainted with two or three generations of a family. Such associations breed respect among younger and inspire confidence and trust in older folk. Patients often consult their doctor about matters which are not medical in the ordinary sense. It is this readiness to impart personal and confidential matters that the profession should do everything in its power to foster; for it is only in such an atmosphere that the patient overcomes a natural timidity to divulge early some suspected horror like a lump in the breast or other sinister symptoms. Treatment relatively so efficacious in the early stages of disease is apt to be little more than palliative when applied late. Therefore we must always strive for early diagnosis, and this can never become routine until patients consult their doctor when anything appears amiss as readily as they ring the fire station or police in an emergency.

The vital influence of the small size of partnerships has been fully considered, because a scheme of a more revolutionary kind was outlined in the *Supplement* of February 21 this year. In this doctors would congregate at "health centres" to the number of 10 to 20 with a correspondingly great total of patients. This may have alluring features, such as cheaper costs, but in my view would prove disastrous to the status of "family doctor." Doctors would lack the impetus and zest engendered by the "team spirit," for this does not flourish in larger groups, even though they adopt formal alliance. Only in a small group is it possible to be familiar with each other's patients and professional problems, and to deputize with tolerable satisfaction. In larger groups accessibility would be impaired because the patients would be derived from a greater radius. This hinders early resort to the doctor; it consumes extra time on visits, and accentuates those peculiar trials of medical practice—epidemics and night calls. Few experienced persons deny that distance tells against the patient.

Another, but, I believe, spurious, advantage offered by the scheme is the means of special investigation and treatment at the doctor's premises. Those who in towns seek to enrich their establishments by elaborate equipment, pathological and minor operating facilities, may glory in the sense of proprietorship in a "private hospital," but they mistake their mission. They seek to specialize while their patients pay for their services as general practitioners. They cannot do both jobs well. The general practitioner ranges widely over the body. He must mainly rely on his native wits, listening, observing, mapping out tenderness or swelling, testing reflexes, using the stethoscope, torch, tape-measure, throat swab, finger per rectum, sampling urine, and observing faeces. These incur time but no special gadgets. Such means of enlightenment are still neglected, and avoidable mistakes occur. Until simple aids are well used doctors can scarcely demand special and elaborate appliances.

I gravely suspect a move for developing medical practice on the lines of a shopping emporium, although this has proved so successful in commercial spheres. The doctor with his patients is akin to the priest shepherding his flock, not to a salesman and his customers. As a corollary, the size for family practice corresponds to the parish. The atmosphere of intimacy is apt to be absent from consulting rooms arranged like rows of offices. Patients know little of their doctor as a social figure, and he is comparatively ignorant of the background of their lives. Thus both miss essential factors in handling a problem containing psychological as well as physical components.

Preventive Medicine and Hygiene

The infant welfare, school, and other public medical services now largely provide for the population up to the age of 18 years. This lessens the influence and prestige of the doctor and deprives him of experience of the young and of adolescents. Inevitably this will lead to a deterioration in his skill and competence. and entail *loss of continuity* in the medical care of the patients. If the Government deems average doctors delinquent in regard to infant and child health, the remedy is not to ignore them and enrol a rival set of doctors in the public health service, but to ordain that due regard is paid during medical training to this vital subject—the medical needs of young life. Not only every workman but every family must have its doctor, and at the small medical centre accommodating a partnership of 3 to 6 doctors the care of the rising generation should be included.

We exult over our curative devices, but prevention of diseases would be a greater triumph First, the practical applications of the principle "prevention is better than cure" must be given due prominence in students' textbooks. Its implications must be faced in industry. The public needs to be taught the rudiments of health in diet, respiration, footwear, clothing, oral and bowel hygiene, recreation, etc.—all of which are at present grievously ignored, and not by the uneducated only. Disease will then become the exception and abundant health the rule. But who among us is to assume the role of teacher? It is an immense enterprise; for human weakness has to be overcome, and while suffering man will often co-operate gladly over an austere regime. yet "when the devil is well the devil a saint is he." In this vast educational problem the public is most likely to heed the words of one who has helped them in the past and responded to their summons at all hours of the day and night, Sundays and bank holidays included. It will need not the efforts of a few hundred health officials but the missionary powers of a 100,000 doctors. Without the great body of general practitioners the Government will but touch the fringe of it. More than this, before students are enrolled their "vocational" aptitude for doctoring should be proved at a preliminary test.

As his contribution to the public health service the family doctor will, besides coping with such procedures as inoculations, give talks at his professional premises on infant welfare, feet, diet, air, exercise, environment, and all that contributes to glowing health. There would be instruction on wider topics such as tuberculosis, cancer, drugs, patent foods, and specious claims of remedies that are fostered by present ignorance and credulity. He must be remunerated accordingly, and in this work might be under the jurisdiction of the M.O.H., though allowed as much freedom of expression in teaching as possible. With medical practice thus organized the family doctor resumes his status as sole confidant and guardian in health matters. This fact mobilizes fully the healing influences derived from whole-hearted faith and belief on the part of the patient and complete responsibility by the doctor. Thus would growing duplication and rivalry give place to unity and concord in one of the highest callings.

MEDICAL WAR RELIEF FUND

THIRTY-SIXTH LIST

Amount previously acknowledged, £45,045 0s. 6d., and £100 3½% Conversion Stock and £40 3% Defence Bonds.

Individual Subscriptions

£100.—Capt E. C Cordeaux, R N

£5.—Dr A Gregory, Manchester (2nd donation), Lt.-Col. R. H Lee, I M S. (2nd donation)

£2 2s.—Dr G O Airey, Wilmslow, Ches; Dr S. H. Faulkner, Wilmslow, Ches; Lt-Col T Hunter, Ludlow (2nd donation)

£1 11s. 6d.—Dr T. Benson Evans, Prestatyn (13th donation).

£1 1s.—Dr Florence M E Davies, Corwen (2nd donation), Major W Happer, I.M.S, and Mrs Happer (11th donation); Dr W. R E Harrison, Storrington (2nd donation)

£1.—Dr Brenda H Alexander, Washington, U S A

£198 14s.—Shropshire and Mid-Wales Branch—per Dr Mackie (amount already sent £200 12s) Dr. C W Eames £5 (2nd donation); Dr J D O Poole £1 1s.; Dr. W. B Ballenden £10, Dr C H Flory £5 5s; Dr E. C Abraham £10, Dr G H H Booth £5; Dr E L N Rhodes £5 (2nd donation), Dr. G. M Westwood £20; Dr H M Shenkin £5 5s; Dr Margaret Marsh £2 2s, Dr H W Gardner £2 2s; Dr C L Stote, £4 4s., Dr A D Rope £5; Dr G. M. Yates £5 5s; Dr R. B M. Yates £10, Dr R H Urwick £10 (2nd donation), Dr F W H. Bigley £10 (2nd donation); Dr A. V. Mackenzie £5 5s (2nd donation), Dr. T J E Gittins £2 2s (2nd donation); Dr D. M. Hunter £2 2s (2nd donation); Dr L E Dickson £5 (2nd donation); Dr J A McClintock £10 10s (4th donation), Dr J. G C. Spencer £5 (2nd donation), Dr. Mabel Blake £3 3s (2nd donation); Dr. F H Edwards £12 12s (3rd donation); Dr G. H M. Franklin £5 5s (2nd donation); Dr G W Thompson £3 3s. (2nd donation); Dr A. R McClure £3 3s (2nd donation), Dr. G Wedd £3 3s. (2nd donation); Dr J Prentice £3 3s (2nd donation); Dr. W R H. Pooler £3 3s (2nd donation); Dr. G. Pollock £3 3s. (2nd donation); Dr. H. W. Bambridge £3 3s. (2nd donation); Dr. W King Hay £5 5s (2nd donation); Dr. F W. Melvin £5 5s (2nd donation)

£121.—Tanganyika Branch—per Dr N Chilton: Dr. T A Austin, Dr F Ball, Dr. H J. O'D. Burke-Gaffney, Dr. L. H Cane, Dr. N Chilton, Dr. J M. Clark, Dr J. B. Davey (2nd donation); Dr H. Fairbairn, Dr. E. J. Foley, Dr. S Forrest, Dr. M. Harvey, Dr. R H. C Higgins, Dr J. F Jarvis, Dr. A. J. Keevill, Dr G. A Macgregor, Col. G Maclean, Dr. R Nixon, Dr G. S P. Noble (2nd donation), Dr. R. R Scott, Dr. H M Shelley, Dr T H. Suffern, Dr B O. Wilkin, Dr G A Williams, Dr. G A Wilson.

£77.—Maidstone Division—per Dr. D H. Mills: Dr G. H. Adam £5 5s; Dr K B Alexander £5 5s, Dr A M Amsler £10, Dr J. V. Bates £1 1s; Dr F. R Cosgrave £5 5s; Dr A. F. Digby-Smith £5 5s; Dr. E P. Edmunds £3 3s.; Dr. Henry Gray £2 2s, Dr D R. C Gray £2 2s; Dr. B Halfpenny £1 1s.; Dr. G. E. R Hamilton £2 2s; Dr R H. Hardwick £1 1s.; Dr K Ingall £2 2s; Dr R. F Jarrett £2 2s.; Dr E R. Jones £2 2s; Dr R. H. Jones £2 2s., Dr E L M. Lobb £2 2s.; Dr J J McEnery £2 2s; Dr T. Martin £3; Dr F Newman £5 5s.; Dr. C. P. Oliver, jun, £3 3s; Dr F. Paine £2 2s, Dr. J. N Robins £1 1s., Dr E. L Sandiland £1; Dr. L H Taylor £5 5s.

£38 12s.—Lancaster L M.W C—per Dr. George (amount already sent £265 8s) Dr J. S Robson £2 2s, Dr B J. Acheson £2 2s (2nd donation), Dr H. Thistlethwaite £2 2s (2nd donation), Dr C Gould £2 2s (2nd donation); Mr H Abernethy £5 5s. (2nd donation); Dr J Aspin £5 5s, Dr C. J. Henderson £5 (2nd donation); Dr J A. Tomb £2 2s (2nd donation); Dr P J Daly £2 2s (2nd donation); Dr. J. D Silverston £5 5s (2nd donation); Dr. A M Clarkson £2 2s.; Dr. P J Murphy £3 3s (2nd donation)

£23 10s.—Blackpool Division (amount already sent £150 14s. 6d.)

£11 11s.—Per Col J. S Dunne (East Herts) (amount already sent £187 12s 1d) Dr T H Gardener £3 3s, Mr H H Dummere £5 5s; Dr. L Burvill-Holmes £3 3s

£10.—Fiji Branch

£5 5s.—Dudley L M W C—per Dr G Dudley (amount already sent £23 2s) Dr J. D W Shedden (2nd donation)

£5.—Newcastle-upon-Tyne Division—per Mr Weldon Watts (amount already sent £470 0s 6d) Dr. H. A Wilson (2nd donation)

Local Medical and Panel Committees

£274.—Surrey (5th donation).

£10 10s.—Huntingdonshire (2nd donation)

Total—£45,942 3s. 0d, and £100 3½% Conversion Stock and £40 3% Defence Bonds

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G. C Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1.

H.M. Forces Appointments

ROYAL NAVY

Surg Capt K H. Hole, O B E, has been placed on the Retired List.

Surg Lieut J. F Meynell to be Surg Lieut.-Cmdr

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lieut R. E C. Copithorne to be Surg. Lieut-Cmdr

Acting Surg Lieut-Cmdr J. K Sargentson to be Surg Lieut-Cmdr

Prob. Temp Surg Lieuts G H Blennerhassett, J Dickie, D S C, and D. J Hoskinson to be Temp. Surg Lieuts

ARMY

Lieut-Col A N Fraser, D S O, retired pay, late R A M C, on ceasing to be employed, is restored to the rank of Col

ROYAL ARMY MEDICAL CORPS

Lieut.-Col (acting Col) H A Rowell, M C, having attained the age for retirement, has been retained on the Active List, supernumerary to the establishment.

Lieut.-Col A L Robb having attained the age for retirement, has been retained on the Active List supernumerary to the establishment

Capts. (War Subs Majors and Temp Lieut.-Cols.) A. D Bourne and G W Crimmin to be Majors

The following War Subs Capts (Temp. Majors) from temporary commissions to be War Subs Capts and Temp Majors, retaining their present seniority: R N. Hunter, S C H Lane, P. Reid

War Subs. Capt D. W. Woodruff has relinquished his commission and is granted the rank of Capt

Short Service Commission—Capt. C. W. A. Hughes has been placed on the half-pay list on account of ill-health

REGULAR ARMY RESERVE OF OFFICERS

Col. A N Fraser, D S.O, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers

ROYAL ARMY MEDICAL CORPS

The following to be Brevet Majors under the provisions of Article 168, Royal Warrant for Pay and Promotion, 1940: Capt. (Temp. Lieut-Col. and War Subs. Major) J. S. Sloper, O.B E; Capts. (Temp Majors) R. J. Clausen, M.C., T. A J. M Dodd, and H J Davidson, M C.

TERRITORIAL ARMY, R A M.C.

Col J F O'Grady, T D, has relinquished his commission on account of ill-health and retains his rank.

Capt. J D W. McCracken has relinquished his commission on account of ill-health and is granted the rank of Major.

Capt. J H. Wilding has relinquished his commission on account of ill-health and retains his rank.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: Final F R.C S Clinical Course, St. Mary Islington and Archway Hospitals, Wed., Sept. 9 to 30, 2 p m *Theory of Physiology;* eight lectures on Mon and Thurs, 8 p m., at Wimpole Street, W., from October 5 to 29—suitable for primary and final M R C P, F.R.C S and D A candidates Anaesthetic course, lectures at 3 p m. and 4 30 p m at Royal Cancer Hospital, clinical demonstrations at various London hospitals, daily from October 5 to 17.

The Faculty of Medicine of the University of Birmingham has arranged a course of post-graduate lectures on nutrition and nutritional diseases, to be delivered at the Medical School, Hospitals Centre, Birmingham, as follows: Tues and Wed, Sept 8 and 9, at 4 p m, Dr. H E. Magee (Ministry of Health), "Principles of Nutrition", Tues and Wed, Sept 15 and 16, at 4 p m, Prof V. P. Sydenstricker (professor of medicine in the University of Georgia, U S A), "Nutritional Deficiencies and their Clinical Manifestations"; Tues., Sept. 22, at 4 p m, Dr J H. Sheldon (lecturer in clinical medicine, University of Birmingham), "Special Aspect of Nutrition and Nutritional Deficiencies in Relation to Industry" All members of the medical profession are invited to attend the lectures.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a m to 4 p m, Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations. *Daily*, 1 30 p m, Post-mortems *Tues.*, 10 a m, Paediatric Clinic, 11 a m., Gynaecological Clinic. *Wed*, 11 30 a m, Medical Conference *Thurs*, 2 p m, Dermatological Clinic *Fri*, 12 15 p m, Surgical Conference, 2 p m, Gynaecological Conference, 2 p m, Sterility Clinic

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W *Royal Chest Hospital:* Wed. 3 30 p m. M.R C.P. course in heart diseases *West End Hospital for Nervous Diseases:* Tues and Fri., 3 0 p.m. *Royal National Orthopaedic Hospital:* Sat. (Sept 5), 2 15 p m, Final F R.C S. course in orthopaedics.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL —*Fri.*, 4 p m Mr. S E Birdsall: Sinusitis in Children.

B.M.A.: Diary of Central Meetings

SEPTEMBER

8 Tues. **Annual Representative Meeting, 2 p.m.**
9 Wed **Annual Representative Meeting, 9.30 a.m.**
10 Thurs. **Annual Representative Meeting, 9.30 a.m.**
Council, 2 p.m.

B.M.A.: Branch and Division Meetings to be held

BIRKENHEAD AND WIRRAL DIVISION—At Arrowe Park Hotel, Arrowe, Birkenhead, Sun, Aug 30, 5 15 p m Discussion of Interim Report of Medical Planning Commission and other important business All medical practitioners in the area are invited to attend the meeting

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

MARRIAGE

BADENOCH—BRUNTON—On August 19, 1942, at St Martin's Church, Ancaster, Wing Commander Alec W. Badenoch, M A., M D, F R.C S, R.A F V R, son of the late J A. Badenoch and Mrs. Badenoch, Banff, to Jean McKinnell Brunton, M B, Ch.B, daughter of the late Alexander Brunton and Mrs Brunton of Leverhall, Musselburgh.

DEATH

CLARKE—On June 23, 1942, in a P O W Hospital, Italy, from heart failure, Lieut.-Col. A H Clarke, M.C, R A M C, dearly loved husband of Cicely (*née* Blunt), Maryville, Banchory, Scotland, and youngest son of the Rev H S. Clarke of Weybridge

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 5 1942

Correspondence

Planning for General Practice

SIR,—My admiration for the masterly skill of Dr. F. W. Grant's article (*Supplement*, July 25, p. 9) is not diminished by my disagreement with some of his opinions. The parallel he draws between the careers of doctors in the Services and in a salaried State service does not appeal to me as a close one. Difficulty in filling vacancies may well be because the prospect of opportunity to practise the art for which the doctor has been trained is necessarily very poor in normal times among bodies of fit Service men. Do not some Service and also school medical officers transfer to private practice in the hope of better financial rewards?

A high standard of efficiency is attained by many general practitioners in examination, diagnosis, and treatment, but many doctors would probably admit that in dealing with such conditions as anaemia, asthma, arthritis, diabetes, fractures, skin affections, and the injection treatment of varicose veins and piles, their work falls short of what they would wish and what they might reasonably expect to attain in more favourable circumstances; these latter would welcome any system which promised improvement in this direction without serious countervailing factors. There are some men who do their best work as individualists, but it may also be held that there are many more whose best work would be done in a team, and that were team work introduced the general standard of treatment would be raised.

Two defects stand out in the present system: the field of general practice is too large, and co-operation and co-ordination are largely absent when the work is viewed as a whole. The subject of medicine is a very large one and in its entirety beyond the capacity of any one individual. Can a doctor who attends 10 confinements a year be considered to be the most suitable person to undertake such work? Is a man who sees one case of rodent ulcer in 3 years likely to spot the condition at once and start the appropriate treatment as quickly as the man whose work brings him into contact with many more such cases? So long as a system exists under which each doctor attempts to meet all the medical needs of his patients (with, it is true, the consultant and the hospital to fall back on) maximum efficiency of medical man-power will not be obtained. The number of clinics administered by local authorities increases because of the efficiency of the system, and the G.P. grumbles that inroads are made into his sphere of action. Other developments apart, a survey of the last few years would indicate a further increase in clinics with further inroads and some narrowing of the field of action of the G.P., but this should not in the long run give rise to anxiety, for its effect in the future would be to divert some possible entrants to private practice into the public health services.

A sickness service must be a 24-hour service. The G.P. is potentially on call all the time, with the result that irksome and irritating demands interrupt such leisure as might be his in a service in which times of duty are planned. Effective planning should be possible under a State system to meet the needs of a general practice service based on a "health centre" or "district clinic." The total amount of work would not be less, but organization would increase efficiency and save time. I believe that some of the opposition to a State service would disappear if it were possible to promise that there would be adequate medical representation on the bodies administering the scheme.

The amount of money paid to the panel doctor depends on the size of his panel, and so long as that method of pay remains in force and with it the competition among doctors for patients so long will it be impossible to provide a service of co-operation and co-ordination such as a salaried State service appears to offer. Were the N.H.I. system extended to include dependants, with the provision of health centres, there would still be this fundamental obstacle to the ideal national medical service.—I am, etc.,

Worthing. C. GIBSON.

"If"

SIR,—Surg. Lieut. Peter Walton (*Supplement*, July 18, p. 6) raises points of the utmost importance to the medical officer at present in the Forces and to the whole of the medical profession. Some of his fears are, I contend, based on misconceptions of what a medical service co-ordinated under the State need be if we are sufficiently aware of, and sufficiently determined to be satisfied only with, the best possible health service for the public and the best possible conditions for all who practise medicine and surgery. We cannot have one without the other. I agree that we are the trustees for those in the Forces, and that we should fight any attempt at radical alteration without their full discussion and approval, provided always that in the meantime no cataclysmic changes occur in the social structure of the country.

If a State Medical Service realized the gloomy forebodings of "loss of initiative, dependence on a superior or soulless bureaucracy for our choice of work, treatment, promotion, good behaviour reports, and holidays, etc.," then no sane doctor would for a moment entertain it. That changes are desirable and will come whether we like them or not is inescapable. To prepare for or against this contingency is not defeatism but is just common sense. The structure of any State Medical Service must be built on the foundation of the needs of the public. It must provide the best and most complete health machinery to promote their well-being, prevent where possible their illnesses, and treat their illnesses when they do occur. The type, the quality, and the use of that machinery are the province of the medical profession, for we know most about it.

If Surg. Lieut. Walton and all of us are trained with a preventive as well as curative outlook; if we attend our patients, limited in number, in consulting rooms at health centres that provide the necessary equipment, and the ready means of obtaining pathological investigation, specialist advice and treatment, and access to hospitals; if we decide the type of work we will do and have freedom in treatment; if our hours of work and days of holidays, our discipline, and our medical procedure are decided not by an ogre of a superior or superintendent but by ourselves in committee with our colleagues at the centre; if we live away from our surgeries in any part we like of a particular district; if we do not have to buy a practice; if we get reasonable compensation for the practices we have; if we get a good and reasonable salary with pension, taking into account our years of service and attainments, and recognizing the fact that we can never so organize medicine to eliminate completely the casualties, the emergencies, and the night work; if we can treat all or nearly all our hospital patients under the direction of a specialist, either at a local district hospital attached to, or a general practitioners' wing in, a larger general hospital, where we may attend our maternity cases, do minor operations, assist at major ones, give anaesthetics, become clinical assistants, attend refresher courses, take part in research, and specialize ourselves according to our bent; if we are members of the local hospital medical committee and have adequate representation on the management committee; if we have a central medical board, with advisory and statutory powers under the Minister of Health; if that board is truly representative of all medicine and its personnel partly appointed and partly elected so that while continuity is maintained there is periodic retirement of members (provided that the board have powers to co-opt a member of outstanding ability who would otherwise retire—the number of such geniuses to be limited); if that board and all committees are divorced from party and local politics; if machinery is set up for receiving suggestions for improvements from below as well as directing from above; if periodic review of the state of medicine is compulsory every ten years or so, so that committees do not become stale; if all these things can be accomplished—and they can if we demand them—would not Surg. Lieut. Walton and many others view the prospect of State medicine in a more favourable light?

We must not sit back and say that these things will never be allowed or we shall be given a service that satisfies neither the public nor ourselves. We must first consider what is best for our patients and ourselves; then we must enlighten the public as to our ideals for them and ourselves; and finally we must organize ourselves in order to achieve our aims.—I am, etc.,

G. W. M. MACKAY, M.B.,
Co-secretary,
Practitioners' Co-ordinating Committee
London, N 2.

Serving Officer Views State Medicine

SIR,—Like Surg. Lieut. P. Walton (*Supplement*, July. 18, p. 6), I have tried to keep pace with the spate of correspondence about the future of medicine. What he writes is, in my opinion, largely true. None of us will deny that changes are necessary in the medical world at home, but the idea of an all-embracing State Medical Service with all the accompaniments of a soul-destroying bureaucracy appals me. The many admitted advantages of State medicine would be completely outweighed by the lack of freedom. This freedom, which one willingly relinquishes in time of war, is what many of us hope to return to when we come back to civil life. The State has already shown its hand by taking many thousands of patients out of the private practitioner's care without consulting the profession.

The Medical Planning Commission, to which we should be grateful, has undertaken a great task. It is hoped that the opinions of the many Service medical officers will be taken into consideration and that no hurried decisions will be made.—I am, etc.,

V. H. BOOBBYER,
Surg Lieut.-Commander, R.N V R.

"Unpaid Medicine"

SIR,—I have been much interested in the correspondence covering State medicine. I think we are suffering in these parts from "unpaid" medicine. Recently I journeyed 15 miles on two occasions to give gas at the nearest dentist's for an insured person, and received the sum of 5s. for the two administrations, yet I believe for private patients the official fee must not be less than 10s. 6d

I should be glad if you would publish this experience, which is but one of many such instances in connexion with administration of gas to insured persons in these parts.—I am, etc.,

Kintbury, nr Newbury. N. J. BOULTON

STATE MEDICAL SCHEME FOR SOUTHERN RHODESIA

Two Southern Rhodesian Ministers have discussed a State medical scheme in recent speeches The Prime Minister (Sir Godfrey Huggins), himself a doctor, said the Government would appoint a commission of inquiry after the receipt of a report by a similar commission to be set up by the Government of the Union of South Africa. He saw no objection to a contributory scheme for Europeans, but tho scheme must not exclude Africans However, it was an urgent question and would be considered as soon as possible. The Minister of Internal Affairs emphasized the need for the scheme, and suggested that doctors should be salaried employees of the Government. The essential thing was to secure efficiency and a high standard of service. The Minister also stressed the importance of hospital service being available to all

At a meeting called by the Edinburgh Division of the B M.A. local doctors agreed to accept service under the domiciliary maternity service scheme arranged by the city corporation.

BRITISH MEDICAL ASSOCIATION

ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the British Medical Association will be held in the Great Hall, British Medical Association House, Tavistock Square, London, W.C.1, on Wednesday, September 9, at 12.30 p.m. Business: (1) Minutes of the last meeting; (2) appointment of auditors; (3) report of election of President for 1942-3.

G. C. ANDERSON,
Secretary.

Diary of Central Meetings

SEPTEMBER

8 Tues	**Annual Representative Meeting, 2 p.m.**
9 Wed	**Annual Representative Meeting, 9.30 a.m.** **Annual General Meeting, 12.30 p.m.**
10 Thurs.	**Annual Representative Meeting, 9.30 a.m.** **Council, 2 p.m.**

B.M.A. LIBRARY

The following books were added to the Library during April and May, 1942:

Alexander, F. M.: The Universal Constant in Living 1942.
Boyle, H. H : Fractures of the Jaws and Edentulousness Second edition 1942.
Bret, P T.. Les Métapsychoses. Vol. I. 1939.
Castaigne, J , and Dodel, P · Eléments de Physiologie clinique de l'Appareil Circulatoire 1939.
Elton, C · Voles, Mice and Lemmings 1942.
Guillain, G : Etudes Neurologiques 1939
Held A. J.: Les Paradentoses et leur Traitement 1939
Jones, F. W · The Principles of Anatomy as seen in the Hand Second edition 1941.
Kahr, H : Konservative Therapie in Schwangerschaft Geburt und Wochenbett. 1939
King, Sir F Truby: Feeding and Care of Baby. Revised edition. 1940.
Kitchin, D H : Law for the Medical Practitioner. 1941
Langfeldt, G · The Schizophreniform States 1939
Leriche, R : Physiologie et Pathologie du Tissu Osseux 1939
Lewin, P · Foot and Ankle. Second edition. 1941
Merritt, A H. · Periodontal Diseases: Diagnosis and Treatment. 1939
Michon, P.: Le Temps de Réaction Techniques, Applications Cliniques. 1939
Muir, Sir Robert: Textbook of Pathology Fifth edition 1941
Pardee, H B · Clinical Aspects of the Electrocardiogram, including the Cardiac Arrhythmias Fourth edition 1942
Pardo-Castello V : Diseases of the Nails. Second edition 1941
Pearson, R B. · Pasteur, Plagiarist, Impostor: the Germ Theory Exploded. 1942
Piney, A · Synopsis of Blood Diseases 1942.
Rowbotham, G. F. · Acute Injuries of the Head 1942.
Simons, B · Röntgendiagnostik der Wirbelsaule. 1939
Smeeton, M. A · Practical Microbiology Fifth edition of *Bacteriology for Nurses.* 1939.
Sæbo, J . Kliniske Undersokelser over Hereditære progressive Hornhinnedegenerasjoner 1939
Sommer, K : Die Gonorrhoe der Frau ein Leitfaden fur die Praxis 1939
Tidy, N M Massage and Remedial Exercises in Medical and Surgical Conditions 1941
White, J C , and Smithwick, R H · Autonomic Nervous System Second edition. 1942.
Williams, L · Aids to Obstetrics Eleventh edition 1942
Wolff, E.: Diseases of the Eye. Second edition 1942
Woodworth, R. S · Psychology Twelfth edition 1940
Woolmer, R · Anaesthetics Afloat 1942.

H.M. Forces Appointments

LAND FORCES · EMERGENCY COMMISSIONS
ROYAL ARMY MEDICAL CORPS

Temp Col (local Major-Gen) H. L. Tidy has relinquished his commission, and is granted the honorary rank of Major-Gen

Temp. Col (local Brig.) Sir J. Walton, K C V O , has relinquished his commission, and is granted the honorary rank of Brig.

War Subs. Capt D Guthrie has resigned his commission, and is granted the rank of Major.

War Subs Capt J. A. Robson has relinquished his commission on account of ill-health, and is granted the rank of Major

War Subs Capt W. R. G Atkins, O B E , has relinquished his commission and retains the rank of Capt.

Lieuts J McB Thomson and R. D Gray have relinquished their commissions on account of ill-health and retain their rank.

To be Lieuts.: C. C. Ross, E A. Kahn, C. J. A. Bell, A P. L. Blakeley, E. P. H Charlton, A F. Crick, A. Dick, J W. Drummond, A R Gemmell, B. Gluck, J Goldman, R M. Gordon, J. I. Griffiths, J B. Harman, R J Harvey, I. H. Hewetson, S. J. Seymour-Hughes, D P Kennedy, K. E. Lane, J. W. Leith, A. F McCoubrey, J. L. MacDougall, W A. Mill, D B Morhan, J. Moorhouse, B E. T. Mosse, J. F. Riches, C. B. Robinson, W A. M Robinson, B. J. Shaw, F M. Steel, J. S. Taylor, E. Vure, O. P. G Whitfield, P. H. A. Willcox, J. F. A. Wood, A L. Wolff, J. D. White, A. F Barr, F. H. Bentley, B D. Berger, C. K. Boal, J. D. Crombie, H. B Cowan, J Colquhoun, W. H Cartwright, D O. Clark, P. W. S. Coghill, J. Devine, J Dowling, A T. G. Evans, S. J. Frewin, I W S Gibb, N F. C Gowing, K G. Green, A. M Jones, W. H. Lang, D. Livshin, J. D. McAdorey, R S. McClelland, T McMurray, R G. Riddell, G. L Robinson, A Robson, F. J. Sale, N L. Shepperd, I. A. Tumarkin, C. T. Vincent, R. S Wathes, J. P. Weiss, C. L. Worthington, A. E. Ward

The notification regarding Lieut J C. R Buchanan in a *Supplement* to the *London Gazette* dated October 28, 1941, is cancelled.

POSTGRADUATE NEWS

The Fellowship of Medicine announces the following courses: Anaesthetic Course, lectures 3 p.m and 4 30 p m , at Royal Cancer Hospital, clinical demonstrations at various London hospitals, daily from Oct 5 to 17; Theory of Physiology, eight lectures on Mons. and Thurs , at 8 p m., at 1, Wimpole Street, W , from Oct. 5 to 29, suitable for M R C P., F R.C S., and D.A. candidates.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W —*Daily*, 10 a.m. to 4 p.m , Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations. *Daily*, 1.30 p m., Post-mortems. *Mon.*, War Medicine Course begins. *Tues.*, 10 a.m , Paediatric Clinic; 11 a.m., Gynaecological Clinic. *Wed*, 11 30 a m., Medical Conference. *Thurs.*, 2 p m., Dermatological Clinic. *Fri.*, 12.15 p.m., Surgical Conference; 2 p m , Gynaecological Conference; 2 p.m , Sterility Clinic.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*Royal Chest Hospital*, City Road E.C.: Wed., 3 30 p m , M R C.P. Course in Heart Diseases. *West End Hospital for Nervous Diseases*, Gloucester Gate, N W : Tues. and Fri , 3 p m., M.R.C P. Course in Neurology. *Royal National Orthopaedic Hospital*, Stanmore: Sat (Sept 12), 2 15 p.m., Final F R C S Orthopaedic Course. *St. Mary Islington Hospital*, Highgate, N : Wed., 2 p.m., Final F.R C S Clinical Course *Radcliffe Infirmary*, Oxford. Daily, Revision Course in Anaesthetics. *National Hospital for Diseases of the Heart*, Westmoreland Street, W.: Tues. and Wed , 10 a m , Out-patient Clinics

BIRMINGHAM UNIVERSITY.—At Medical School, Hospitals Centre, *Tues. and Wed*, 4 p m Dr. H. E Magee. Principles of Nutrition

EDINBURGH POSTGRADUATE LECTURES —At Edinburgh Royal Infirmary, *Thurs*, 4.30 p m. Mr. T M'W Millar: The Problem of Perirectal Suppuration

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY —*Wed* Prof W J. B Riddell: Certain Aspects of Retinal Function

B.M.A.: Branch and Division Meetings to be held

NORTH NORTHUMBERLAND DIVISION —At Blue Bell Hotel, Belford, Sun , Sept. 6, 3 p m Agenda: Consideration of (1) Annual Report of Council, (2) Interim Report of Medical Planning Commission, etc.

APPOINTMENTS

G F. WALKER, M D , M R C P. Medical superintendent and physician at the Peterborough and District Memorial Hospital

BIRTHS, MARRIAGES, & DEATHS

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BIRTHS

ALEXANDER.—On July 23, 1942, at Washington, D C , U S.A , to Brenda Alexander, M.B , Ch B. (*née* Miles), wife of Eric R. Alexander, British Air Commission, Washington, D.C., U.S A , a son, William Miles.

KERSHAW.—On August 28, 1942, at Adlington Hall, Cheshire, to Mary Cowell, M D., D M R., the wife of Surg. Lieut. W. E. Kershaw, R.N V.R , a son.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY SEPTEMBER 12 1942

THE B.M.A. AT WORK

MEDICAL CERTIFICATION

For many months the British Medical Association has been pressing the Government Departments concerned to ease the burden and to clarify the arrangements in regard to medical certificates. It is now able to announce important developments in connexion with two groups of certificates. The first consists of those certificates sought by workers as evidence that they are unfit to take a particular employment to which it is proposed to direct them, or as evidence in support of an application for permission to leave scheduled employment. The second group consists of those certificates sought in support of applications for exemption from fire-watching duties.

Agreement has now been reached with the Ministry of Labour and the Ministry of Home Security as to the procedure to be followed in relation to such medical certificates. The doctor to whom application is made should give one of two forms of certificates:

(*a*) A certificate describing the medical condition and including a recommendation on the industrial or fire prevention issue involved.

(*b*) A certificate describing the medical condition, making no recommendation on the industrial or fire prevention issue.

Alternatively, a doctor for one reason or another can decline to give a certificate, informing the person either that he cannot give a certificate or that an official doctor has been appointed for the purpose, and the person should apply to the Employment Exchange to be examined by the official doctor.

If, however, the doctor issues a certificate which sets out a specific illness or disability, clearly recommending the person unfit for the employment in question, the certificate will be accepted. Where the certificate is not of this kind, or the doctor has not given a certificate, the applicant will be referred for examination to a Medical Referee. Certificates for such vague conditions as muscle strain, headache, cough, dyspepsia, nerves, and debility will be referred to the Medical Referee, who will undertake a second examination.

Steps are being taken to appoint Medical Referees on the nomination of Local Medical War Committees. Local Medical War Committees have been asked, in deciding upon their nominations, to bear in mind the very important issues involved, and to select practitioners, whether men or women, with special knowledge of this kind of work. In a number of Local Medical War Committee areas more than one Medical Referee will be appointed.

The fee to be paid to the Medical Referee is 10s. 6d. per examination and report, or two guineas per session of two hours involving, as a general rule, the examination of six to eight persons.

These same Medical Referees will be asked to determine the fitness or otherwise of certain men who have already made applications against fire prevention duties and as a result there is likely to be a considerable amount of work at the outset. Fresh applications by men and women for exemption from fire prevention duties will fall to be dealt with in accordance with the general arrangements set out above.

It will be noted that these new arrangements will enable doctors, where they so desire, to inform applicants for certificates that there is an official machinery for the purpose. The result will, it is hoped, be that the profession will be relieved from pressure in cases in which the doctor does not desire to give such a certificate or where the doctor is not certain a certificate is justified.

In other directions the Association is also busy, and it is hoped soon to secure agreement to proposals to relieve the burden caused by some certification insisted on by employers, particularly certification for short periods of absence. In short, the Association is seeking to relieve the profession from all unnecessary medical certification, recognizing at the same time that there is much certification which must fall on the doctor because he is the only person who can make the necessary testimony. The profession desires to maintain a high standard of certification, and these new arrangements should help in this direction.

REPORTING OF DEATHS TO CORONER

Recently the medical superintendent of a hospital in one of the Home Counties was asked by the coroner to report to him certain deaths, among them: (*a*) deaths occurring either within 24 hours of an anaesthetic (general, spinal, local) or operation, or before consciousness is fully regained; and (*b*) deaths within 24 hours of admission to hospital. The General Practice Executive Committee of the B.M.A. at its last meeting considered this matter, and had before it Counsel's opinion on the validity of the coroner's request in these two instances. For the convenience of readers, Counsel has himself summarized as follows the opinion laid before the committee.

OPINION OF COUNSEL

From the earliest times the common law has obliged every citizen to assist the coroner by reporting to him any death into which he ought to inquire. The law is well stated by *Jervis on Coroners* as follows:

> "In all cases of sudden death or death under any circumstances of suspicion, where the duty of informing the coroner is not by statute imposed upon any particular person, it is the duty of those who are about the deceased to give immediate notice to the coroner or his officer, or to the nearest officer of police, who then communicates with the coroner."

There is plenty of judicial authority for this statement, and none to suggest that the medical practitioner is in a different position from any other citizen. A common-law right or duty is not modified or abrogated by a statutory provision except in explicit terms. Therefore, unless a statutory provision can be found which expressly, not implicitly, overrides this particular duty, the duty is still binding on a medical practitioner. In the circumstances with which I am now dealing a medical practitioner is not under any *statutory* duty to report a death to the coroner.

Statute Law

The statute law governing the circumstances is as follows. By the Births and Deaths Registration Act, 1926, sect. 1 (1), a body may not be disposed of without a certificate of the registrar or an order of the coroner.

Death certification is governed by the Registration of Births and Deaths Act, 1874. Sect. 20 provides for the issue of forms of death certificate, and lays down that in the case of the death of a person who had been attended during his last illness by a registered medical practitioner, that practitioner must sign a certificate of the cause of death and give it to some person who is required by the Act to inform the registrar of the death. This person is, briefly, a relative, or someone present at the death, or the occupier of the house. The Registrar-General has complete freedom to settle the form of the certificate. The Births and Deaths Registration Act, 1926, did not affect the form, and I believe it was not changed when the Act was passed.

The 1926 Act, however, by its sect. 6 (2), obliges the certifying medical practitioner to deliver the certificate to the registrar, and to give notice in the prescribed form of its signing to one of the persons who are required to inform the registrar of the death. Neither of the Acts refers to any duty of the practitioner to report any death to the coroner, and they have therefore not affected any pre-existing common-law duty he may have owed to report the death.

Duties of the Registrar

Under the 1926 Act a detailed code of statutory regulations was made for the guidance of registrars (Registration of Births, Deaths, Marriages, etc. (England) Consolidated Regulations, 1927; S.R.O. 1927, No. 485, Part IX) Para. 75 of these regulations directs the registrar to report various classes of deaths to the coroner. These include: "(iv) Any death occurring after operation necessitated by injury, or occurring under an operation or before recovery from the effects of the anaesthetic." When the registrar has reason to believe that the circumstances of a given death oblige some other person or authority to report it to the coroner, he must satisfy himself that the duty has been carried out.

These regulations were carefully framed to create a watertight system by which the registrar should inform the coroner of any death into which the coroner ought to inquire. They were drawn up to harmonize with the provisions of the Coroners (Amendment) Act, 1926, which sets out the powers and duties of the coroner. The Home Office authorities who drafted these regulations were evidently in no doubt that medical practitioners owed in some circumstances a legal duty to report a death to the coroner. The Home Office circular on the subject dated June 28, 1927, after emphasizing that a doctor must always give a death certificate if he knows the cause of death, and must not withhold the certificate merely because the death may call for an inquest, continues: "If the practitioner has any reason to believe that an inquest may be necessary, it is of course his common-law duty as one of those about the deceased to notify the coroner, or his officer, or the police; but this does not of itself relieve him of his other duty of certifying the cause of death."

The Coroners Acts, 1887–1926, lay down the circumstances in which a coroner is put on inquiry, but do not impose a duty on any person to report a death to the coroner.

The Practitioner's Duty

Until the passing of the Births and Deaths Registration Act, 1926, no medical man seems to have questioned his obligation to report to the coroner any death into which the coroner ought to inquire. Since the Act came into force, however, a body of opinion seems to have grown up that the doctor's duty to report suspicious deaths to the authorities was restricted by it to the completion and signing of the certificate and the delivery of it to the registrar.

Assuming that the duty to report to the coroner existed before the 1926 Act, I cannot see how it can have been in any way modified by the passing of the Act and the Consolidated Regulations. It is true that these lay down a system by which the registrar shall report suspicious deaths to the coroner, and shall satisfy himself that they have been reported by the person who ought to report them. But I do not see how the imposition of this duty on the registrar could in any way relieve the certifying practitioner of a duty he already owed. The new system may work perfectly, and in practice it may be superfluous for the practitioner ever to report a death to the coroner. This fact, if it is a fact, cannot, however, absolve him from a legal duty, if he owes one, to report certain classes of deaths himself. The registrar may conceivably fail to carry out his statutory duty, and a death about which the coroner ought to know may not come to the coroner's notice. If a medical practitioner knows of such a death and has not notified the coroner he is surely at fault. He cannot say that the 1926 Act implicitly permitted him to assume that the registrar would do his duty.

In my opinion, therefore, a medical practitioner who knows that a death has occurred in circumstances which would put a coroner on inquiry under the Coroners (Amendment) Act, 1926, owes a common-law duty to report the death to the coroner, quite apart from his duty of certifying the death to the registrar under the Registration Acts. What, if any, penalty a doctor would incur for the breach of this duty is not clear. If a doctor were ever charged in court with its breach, the court would first have to hear prolonged legal argument on the question of whether the duty existed.

H.M. Coroner's Requirements

Assuming that the doctor owes the common-law duty of the ordinary citizen to report certain classes of deaths to the coroner or police, it is necessary to inquire how far this duty corresponds with the requirements of the coroner in question.

A citizen must report every death about which, to the best of his knowledge and belief, the coroner ought to be informed. The practitioner is in a better position than most other citizens to know what deaths the coroner ought to take notice of, and he owes a duty to employ his special knowledge. A court might reasonably expect a practitioner to know what constitutes a violent or unnatural death, or a sudden death of which the cause is unknown—the kind of death, in fact, into which the coroner is obliged by statute to inquire. Hence a coroner may fairly send a practitioner a standing request to inform him of all deaths that come under these headings; nor is it in my opinion unreasonable for such a request to cover the classes of deaths which, by the Consolidated Regulations, the registrar must report to the coroner.

The first of the coroner's requirements about which I am asked to advise seems on this footing to be reasonable. When a patient dies within such a time after the administration of an anaesthetic or the performance of an operation that one of these may have caused or contributed to the death, then it is a death into which the coroner is bound to inquire, for it is obviously not a natural death. I therefore think the practitioner in attendance owes a duty to report it. Twenty-four hours is, as the coroner says, purely a convenient and minimum period.

On the other hand, a medical practitioner is *prima facie* enabled by his professional training to decide whether a given death, not occurring in circumstances which of themselves put the coroner on inquiry, is a natural death. In my opinion the common law permits and requires a practitioner to answer the question whether, in the case of a death which may be natural, there is room for reasonable doubt concerning its cause, or for reasonable suspicion that it is not a natural death. I do not think a coroner is entitled to indicate a class of deaths which may include both natural and unnatural deaths, and in which circumstances do not necessarily raise a doubt or suspicion, and require the practitioner to notify all such to him. In doing so he is claiming a right to settle a question which is within the province of the practitioner.

I therefore do not think that the second class of deaths about which I am asked to advise is one which the coroner may lawfully require a practitioner to report to him.

The Home Secretary announces that he has restored to Dr. Herbert Cecil Duckworth the authority granted by the Dangerous Drug Regulations to be in possession of and to supply drugs to which those Regulations apply.

Correspondence

G.P. and Hospital Practice in Canada

SIR,—Perhaps the enlargement of a few remarks I made at recent B.M.A. meetings called for the purpose of discussing the interim report of the Medical Planning Commission might be of interest. These meetings have been so well attended, and competition to speak has been so fierce, that a very obvious inference can be drawn by all.

During 2½ years in house jobs in Canadian hospitals (east and west) I noticed the following:

1. There are no nursing homes in Canada. Let the hearts of some of our public health authorities beat faster with joy on reading this

2. There are a tremendous number of hospitals of all sizes dotted all over the place. All these hospitals have laboratories, x-ray apparatus, and other modern diagnostic means.

3. All doctors have access to hospitals. They admit and treat their own cases, order and read the results of laboratory and x-ray investigations, and act upon them. Those who wish to operate do so. They can thus carry on with their cases a stage further than in general practice here. These remarks apply to both public and private wards.

4. All hospitals take midwifery cases either in a ward or in a separate block. In towns and cities a confinement case in a private house is rare. All doctors do their "midder" in hospitals; "midder" goes on day and night, as the house-surgeons know who have to give all anaesthetics and do many public ward cases.

5. The steptococcus is not the inevitable companion of the G.P. on these occasions.

6. The G.P. waiting an hour or more—perhaps at night—for a confinement to finish has a comfortable sitting-room at his disposal, with telephone and daily paper. The settee has an equipment of sheets, blankets, etc., if a doze is required. There is also a kitchenette with refrigerator, and he can make tea or coffee, etc, himself or have it made for him, depending on staff arrangements. His car is meanwhile plugged into an electric point outside the hospital and the radiator does not freeze When it is 20° below zero these are all useful arrangements.

7. Exceptions to all foregoing remarks are the large teaching (University) hospitals, of which there are only 3 or 4 in Canada—e.g, the Toronto General—which like ours here do not admit the G.P. to their public wards. But they all have luxurious private blocks.

8. There is no panel system, and what the G P. charges his poor patients in public wards is nobody's business.

9. Specialists can be called in at any stage of the case, and it is usual to call in a specialist on the staff of that particular hospital. No particular fuss is made if an outside man is called in. Specialists also have their own cases in hospital; the G.P. does *not* cram the wards with his patients, as the reader might think by now.

10. There is no confusion over several doctors coming into one ward. All orders, from one tab. ac. acetylsal. to an intravenous injection of a sulphonamide, are written and signed for in sister's order book open on the desk for all to see; by *all* I mean nurses and house staff and visiting doctors.

11. Simple pathology—such as cell counts, microscopical examination of urine, and staining for the more obvious bacteria—is

done by house-surgeons. More complicated work is done by a pathologist and radiologist who visit every day, or twice a week according to the size of the hospital.

12. The above remarks apply equally to doctors single-handed in practice or working as members of a group in the local Medical Arts Building. As Dr. Harry Boyde points out, these often call themselves "clinics"; even so they have to send some patients to hospital.

I am, etc.,
Ilford. FRANCES E. SMITH.

Aid for the Overworked G.P.

SIR,—For a considerable time I have been watching for news that the B.M.A. had achieved some simplification and reduction of the certificates required of those of us who remain to carry on the practice of medicine. So far I have looked in vain. On the other hand the approved societies are to press for more care in the issue of certificates (*vide* the report of their National Association). Are we to receive a circular stressing the need for more care, with the penalties involved, or are the approved societies to be told very firmly that while all care is exercised they must be less exacting in their demands and that certain modifications must be introduced? Suggested modifications are: (1) the replacement of monthly certificates by six-monthly ones where feasible; (2) the reduction of weekly certificates to one at the beginning and end of the incapacity; (3) the reintroduction in some form of the Regional Medical Officer purely for reference by doctors of those patients whom they suspect of "putting it on" but to whom for various reasons they have to give the benefit of the doubt.

It would further assist the decreasing remnant of civilian practitioners if the B.M.A. secured: (1) the authorization of prescriptions for quantities of drugs that are to be taken regularly or of prescriptions "to be repeated three times"; (2) the official recognition that it is adequate only to indicate on N.H.I. records the major maladies and the duration; (3) the issue of standard private certificates so that employers would be left in no doubt at all, especially in the case of patients who are off a day or two before they attend the doctor; (4) the removal of doctors from the lists of authorized persons for the duration of the war where justices of the peace and ministers of religion can just as well do the certifying. Many of these amendments would go far in peace to save the doctor's time and energy for clinical work. In war they are plain common sense, beyond any quibble. Emergency conditions need emergency sanctions and immediately, for the war is now three years old.

Propaganda planned psychologically and carried out repeatedly could save much time and irritation. A notice such as the following in the leading papers once a month and displayed adequately in all waiting-rooms would gradually impress a public that does not want to cause extra trouble but so often does:

"Now that so many doctors are in the Forces and the work of those remaining is so heavy:

"1. Do not send for or telephone your doctor if you can go to him.

"2. Do not send for him after he has gone out; this may need a special journey and waste time and petrol.

"3. If you are insured, make sure you have your medical card and thoroughly understand it.

"4. If you are an anxious relative wait till the doctor calls to talk to him.

"5. When you do go to your doctor make sure you are not going out of hours.

"6. Don't ask for certificates to cover absence from work for the period before your attendance at the surgery.

"7. Kindly pay your account on the first application; this will save time, paper, and postage.

"8. If your usual doctor is in the Forces please state this openly at your first attendance; your own doctor will not then suffer because he is away."

Someone may be able to improve on this, but something of its kind where it cannot be missed, and repeated often, would achieve much.—I am, etc.,
Timperley. JAMES A. KINNEAR BROWN.

Future of Medical Practice

SIR,—Articles and letters in the *Journal* on the future of medicine assume that doctors will be free to practise in the future as they have been doing in the past. That assumption is dangerous and untrue, for the Government by the hands of its local authority agents will soon have control of all practice. Read Prof. Picken's recent articles in the *Supplement*; study the steady encroachment on our work even in the past 10 years; listen to the declared aims of those authorities regarding their intended control of all hospitals and the remains of private practice, and realize how very soon we shall be disinherited without consultation, compensation, or thanks. Personally, I think we have talked too long, and it is now too late to avert our fate.

I would ask my fellow-members of the B.M.A. to consider these points: Do you think that an optional association like the B.M.A., armed only with powers of persuasion and commanding a membership which does not embrace all medical men, can battle successfully for us with our adversaries? Is it not true that any gain we might obtain would depend on the generosity of such opponent, and is it not true that on the whole we have little else to show for our negotiations in the past but the contempt of our opponent? Is it not true that the B.M.A. membership embraces both the local authority and private doctors: that the local authority doctors make the balls that the civilian doctors fire, and guide and direct the encroachments we suffer from? The B.M.A. smiles equally on the slayer and the slain. It provides a nominated sanhedrim whose members plan a nebulous future which for ever will be a mirage and a dream, whose only use is to bemuse us until the State axe falls on the now emaciated neck of private practice.

The remedy is a compulsory all-in union with disciplinary powers to include dentists, nurses, and doctors. This would make us masters in our own house, able to face the future, none making us afraid This alone can save us. It is needed badly. It is needed now.—I am, etc.,
Glasgow JAMES COOK.

Industrial Certificates

SIR,—I still notice from time to time in your columns grumblings by the laity on the subject of doctors' certificates issued for use in factories either claiming release from work or advising transfer I have recently kept very full records of these certificates and patients, and it appears quite certain that there is very little wrong with the certification.

One point, however, does emerge, from which it appears that the doctor is being put in a false position. There are a number of cases in which a worker has already applied for release or for transfer through the normal channels at work, and the reasons given for this application are purely domestic. For instance, if a woman has a home to run she may not be able to combine shift work with the efficient running of a house and the care of husband and children. When these negotiations fail the worker either is told to apply to her doctor for medical evidence in support of her plea or applies on her own account. In order to make out a better case for the issue of a certificate all sorts of symptoms are alleged and the previous history of a failure of negotiations is suppressed.

It is quite understandable that a doctor in his consulting room will recognize that there is some underlying cause for the application to him for a certificate, but will be at a loss in these cases to find suitable words in which to express a medical opinion. The resultant certificate, therefore, sinks to the level of an allegation of nervous debility or anaemia or some attempt is made to explain the domestic circumstances. It will be seen, of course, that when such a certificate is produced as a piece of evidence in the reopening of negotiations at the worker's place of employment, it will very easily lend itself to criticism on the grounds of having been issued without sufficient consideration.

I do not for the moment suggest a remedy, nor even that a remedy is necessary. Such cases seem to fall, to a large extent, within the province of the National Service Officer, but I think we should remember that the doctor is the last remaining bastion of freedom of speech and thought in these troublesome times of conscription, and that an appeal may be made to him, either by the employee or by the employer on the employee's behalf, with the unconscious intention of avoiding unnecessary complications.—I am, etc.,
"AN INDUSTRIAL MEDICAL OFFICER".

H.M. Forces Appointments

ROYAL NAVY

R. Milne to be Temp Surg Rear-Admiral.

Surg. Lieut T. A. Turnbull to be Surg. Lieut-Cmdr.

ROYAL NAVAL VOLUNTEER RESERVE

Prob. Temp. Surg. Lieuts E E. Vaughan, L. R S Taylor, and R G G Evans to be Temp Surg. Lieuts

ROYAL ARMY MEDICAL CORPS

Lieut-Col. (Temp. Col) J McP Mackinnon has attained the age for retirement but is retained on the Active List supernumerary to the establishment

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Capt (Temp Major) A A B Scott to be Brevet Major, under the provisions of Article 168, Royal Warrant for Pay and Promotion 1940

War Subs Capts (Temp Majors) C E Gallagher and D A D Kennedy, M C, from temp commissions, to be War Subs Capts. and Temp Majors

War Subs Capts. G A Campbell and R C. MacLennan from temp commissions to be War Subs. Capts, retaining their present seniority

TERRITORIAL ARMY, R A M C.

Supern for Service with Leeds Univ., Senior Training Corps (Medical Unit).—A. Durward to be Lieut.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs Capt. R. R. Murray has resigned his commission and is granted the rank of Major

War Subs Capt. T. A Nean has relinquished his commission on account of ill-health, and is granted the rank of Major.

War Subs. Capts. J W. Green, S. G. Smith and J. S. Kennedy have relinquished their commissions on account of ill-health and are granted the rank of Capt

Lieuts. E J Murphy, A. S. Sheahan and A J. Matheson have relinquished their commissions on account of ill-health and retain their rank.

Dr (relative rank of Lieut.) K. Caseley has relinquished her Emergency Appointment as M O.

To be Lieuts : J M Clow, T B. Harvey, D. F. Ryan, E. H. C. Earl, A. S. Thorley, J. R B. Alexander, F. H. Batchellor, D. S. Boyle, P L. Brunnen, T S. Chalmers, P J Cremin, P. A. Duke, H. Goldstone, H F. Green, C H. Jones, R. McInroy, N. H. A MacKinnon, N. C. Norman, K. I. Peckitt, I. E. Phelps, R. P. A. Rigg, J. F. Smith, J. T Spare, A Stephen, F. J. E. Stuhl, H. R. Thomson, K. F C Brown, A. J Cokkinis, A. A. K. Datta, E. D. C. W. Davies, D. V. Maddison, J. MacFarlane, E. L McQuitty, R. Nutt, B. O. Porchetta, A. G Potts, J. S Pringle, L. Rendell-Baker, G K C. Rettie, R S. Ritson, A. I Ross, J H Tasker, D. MacG Williamson, A. L Wyman

WOMEN'S FORCES

EMPLOYED WITH THE R A M C.

Lieuts. A. M. Bean and M H. Edmond have relinquished their commissions and retain their rank

The following M O.s have been granted commissions in the rank of Lieut : Margaret M. Gourdie, Elizabeth Matheson, Janet S F. Niven, Rosa M. Piggot, Elizabeth L. Taylor-Jones, Enid J Fair, Elizabeth M Mitchell, Bertine M Will, Elizabeth M Rees, Esmé M Grant, Margaret M. Shepherd, Eva Dolan, Thelma M. Ward, Leah Rosenbloom, Emily S. O Lewis, Eveline M Cumming

ROYAL AIR FORCE

To be M O s (Emergency) with the relative rank of Flying Officer for employment with the R A.F : Winifred M. Bond, Hilda Brice, Esmé H M Gillieson, Kathleen M Harding, Joan S. Millett, Joan M Whiteman, Doreen Davies, Olive I Nicholson, Emily E E. E Hill, Jane S Weightman, Josephine H. Wood, Lillie L. Jackson, Nora Thomas, Joan I. Hallinan

ROYAL AIR FORCE VOLUNTEER RESERVE

Squad. Ldr. J. T. Linklater has resigned his commission and retains his rank

G T W. Cashell to be Squad Ldr (Emergency).

To be Fl. Lieuts (Emergency): F B Kiernander, D. A. Ropertson, R. J. Rutherford, and J. C. Hodgson

Fl. Lieuts A. L. Basham and E. D E E O'Brien have resigned their commissions

Flying Officers D. E Williams, R A. Mitchell, J N Williams, M J Hackett, J Allen, I R. C. Batchelor, C. B. Grimaldi, H. S Mason, J. Boardman, J. V. Braithwaite, T J Cockburn, J. S Fraser, A C Smerdon, J B Fawcitt, W. G. F Gibson, F. O Davies, A. H. Fairlamb, M. E. Gordon, C W. Lawson, A Livingston, K P. G. Mears, H L. Campbell, J. K Denham, W. F. Dickie-Clark, A A Smith, C M Miller, H. R. Rollin, T W. Robson, M. D. L. Finlay, R H. Armin, A C. Camm, J W Jackson, A. R. Silcock, W. H T. Shepherd, D G. MacNeill, N. W. R. Lucas, R. B. Walker, R D Sloan, D G B Richards, L H. Mattison, N T Brown, C. M. Carr, R E McLachlan, C. Bucknall, R E. Glennie, C A. Forrander, A Skene, J. M. Black P. A Dawes, R L Markham, R. M Douglas, H L B Girvan, H. S Boyce, P. S Davies, J M Russell, G. H Campbell, H Jefferson, B. A. D Stocker, G W E. Walker, G R. Bedford, H R L. Fraser, C. E. Waterman, G A. Beck, R. L Hill, A M. Thomson, A. M Turnbull, A J Abraham, R T Bevan, D Coueslant, W. F Hall, C M Mackenzie, H. V. Roberts, G P. Wood, H Goulden, S. Gruber, H V. Reeves, H L Roxburgh, E. S. Samuels, A. D. Maclean, W. E. Scott, J F Swan, W J. Weetch, G N Blackburn, R B Clayton, J. M. Dawson, E. N. Jenkinson, A. M P Laurent, D. U Macdonald, J. J O'Callaghan, L B Scott, J A. Sutton, E. Sanders J K McCabe W. L Price, and R G Derniss to be War Subs Fl. Lieuts

Flying Officer M F J. Clarke has relinquished his commission on account of ill-health

Flying Officer G. H. James has resigned his commission.

To be Flying Officers (Emergency): A C Barry, H. L. Joyce, R McAndrew, J. F. Bell, W L. Brace, T D Fraser, W E Grice, A. G. Richards, N. Sher, H D. Collins, J R Healy, J. C Mellor, A. Pearce, W N. Rollason, M. G. Simmons, G C. C. Wharton; J Ball, J R. Bryson, D A. Davies, H. D Freeth, K. MacI Mackenzie, A. R. V. Moynagh, J. Posner, J M. Thomson.

DENTAL BRANCH

Flying Officer W O Baird, M R C S, L R C P., to be War Subs. Fl. Lieut

INDIAN MEDICAL SERVICE

Lieut-Cols N. S. Jatar, C I E., D.S O., and M. A. Nicholson, C I E., have retired

EMERGENCY COMMISSIONS

Capts. V. M. Albuquerque and J. G. Stonham to be Majors.

The services of Lieut R. Kodandaram have been dispensed with on account of ill-health

To be Lieuts : R. A. Johnson, F. H. McCay, A. M. Kerr, J. D. C. Currie, G A. Ransome.

COLONIAL MEDICAL SERVICE

The following appointments are announced: J P Guthrie, M R.C S., L.R C P, and W. H. G. Patton, M B, Ch B, Medical Officers, Kenya; H S De Boer, M C, M R.C.S., L R.C.P., D.P.H, Director of Medical Services, Uganda; J F. Lucey, M B., B Ch, Medical Officer, Tanganyika Territory; C. Michie, M.B., Ch.B., Medical Officer, Sierra Leone

B.M.A.: Meetings of Branches and Divisions

EAST YORKSHIRE BRANCH

At the annual general meeting of the East Yorkshire Branch, held at Hull on May 8, Dr. T. MORTON J. STEWART gave as his presidential address, entitled "The March of Time," an amusing account of the changes he had seen in medical practice since leaving Edinburgh in 1915. The following officers were elected: *President and Representative in Representative Body,* Dr. N. Gebbie. *President-Elect and Honorary Secretary and Treasurer,* Dr. E. M. Dearn. *Vice-President,* Dr. C. Simpson. *Immediate Past-President and Deputy Representative in Representative Body,* Dr. Stewart. *Charities Secretary and Treasurer,* Dr. D. M. Mackay.

NORTH OF ENGLAND BRANCH

At a meeting of the North of England Branch, held in association with the Newcastle-upon-Tyne and Northern Counties Medical Society, at Newcastle-upon-Tyne on May 21, with Dr. F. W. GRANT in the chair, Sir CHARLES WILSON gave an address on "Morale." There was a good attendance, and a vote of thanks to the speaker, proposed by Dr. G. MUIR, was carried with enthusiasm. The lecture was preceded by a radiological demonstration in the radium department of the Royal Victoria Infirmary by Mr. C. J. L. THURGAR, Dr. D. RAMAGE, and Dr. M. WILLIAMS.

At a meeting of the North of England Branch, held in association with the Newcastle-upon-Tyne and Northern Counties Medical Society, at Newcastle-upon-Tyne on May 28, with Dr. J. N. TURNBULL in the chair, Prof. E. C. DODDS gave an address on "The Therapeutic Aspect of Endocrinology in General Practice." He stated that from the time of Galen until the 19th century glandular therapy had no rational basis. The first advance in endocrinology was the experimental production of diabetes mellitus by removal of the pancreas, followed in 1890 by the cure of a case of myxoedema by Murray of Newcastle, who had administered thyroid gland. Later crystalline thyroxine was isolated, identified, and synthesized. Insulin, being of a protein nature, presented greater difficulties to the investigator. Of the sex hormones testosterone, oestrone, oestradiol, and progesterone had been identified chemically and manufactured on a commercial scale. Stilboestrol and its allied products had been found to be more potent than oestrone or oestradiol in relieving menopausal upsets and inhibiting breast function. Sex hormone therapy had a definite use in medicine, but indiscriminate administration could not be approved. A vote of thanks to Prof. Dodds for his address, proposed by Dr. F. DICKENS, was enthusiastically supported by the meeting. The lecture was preceded by a physiological demonstration by Prof. D. BURNS and Dr. J. SECKER.

NORTH OF ENGLAND BRANCH: CLEVELAND DIVISION

At the annual general meeting of the Cleveland Division, held at Middlesbrough on May 22, with Dr. H. FALLOWS in the chair, the sum of £21 was voted to medical charities, three-quarters to the Royal Medical Benevolent Fund and one-quarter to Epsom College. It was agreed that the county council should be approached concerning an increase in the salaries of district medical officers of 20%. The following officers were elected: *Chairman,* Dr. W. B. Levie. *Vice-Chairman,* Dr. Fallows. *Secretary and Treasurer and Representative in Representative Body,* Dr. W. A. Kirkpatrick. *Assistant Secretary and Deputy Representative in Representative Body,* Dr. J. W. Ridley.

WAKEFIELD, PONTEFRACT, AND CASTLEFORD DIVISION

At the annual meeting of the Wakefield, Pontefract, and Castleford Division, held at Wakefield on April 26, with Dr. F. W. SULLIVAN in the chair, the officers were re-elected, with the addition of Dr. T. Walker as deputy representative in the Representative Body. The honorary secretary presented a report on the work of the Local Medical War Committee for 1941-2, and the committee was re-elected. Other matters before the meeting were the salaries of the police surgeon for Wakefield and the public assistance medical officers for West Riding and Wakefield.

POSTGRADUATE NEWS

The Fellowship of Medicine announces a revision course in anaesthetics, lectures 3 p m and 4 30 p.m., at Royal Cancer Hospital. Clinical Demonstrations daily at various London hospitals, from Oct. 5 to 17. The theory of physiology, eight lectures on Mon. and Thurs., at 8 p m. at 1, Wimpole Street, W., from Oct. 5 to 29, suitable for M R C.P, F.R.C S, and D A. candidates. Full particulars are available from the Fellowship of Medicine.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE 1, Wimpole Street, W — *Royal Chest Hospital:* Wed, 3 30 p.m, M.R C P. Course in Heart Diseases. *West End Hospital for Nervous Diseases* · Tues. and Fri, 3 p m., M R C.P Course in Neurology *Royal National Orthopaedic Hospital* · Sat (Sept. 14), 2 15 p m, Final F R C S Course in Orthopaedics. *St. Mary Islington Hospital:* Fri., 2 p m, Final F R.C.S Clinical Course. *Radcliffe Infirmary:* Daily, Revision Course in Anaesthetics. *National Hospital for Diseases of the Heart:* Tues. and Wed., 10 a.m, Out-patient Clinics.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL. —*Fri*, 4 p m, Mr. N Asherson · Acute Mastoiditis.

BIRMINGHAM UNIVERSITY —At Medical School, Hospitals Centre, *Tues* and *Wed.*, 4 p m. Prof V. P. Sydenstricker: Nutritional Deficiencies and their Clinical Manifestations.

EDINBURGH POSTGRADUATE LECTURES —At Edinburgh Royal Infirmary, *Thurs*, 4 30 p m. Dr Charles Cameron: Differential Diagnosis of the Chronic Affections of the Lungs.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY —*Wed.*, Dr Paul Bacsich: Comparative Anatomy of the Retina.

DIARY OF SOCIETIES & LECTURES

SOCIALIST MEDICAL ASSOCIATION —At Conway Hall, Red Lion Square, W C., *Wed*, 5.30 p m. Prof. M Greenwood. Epidemiology and War.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

DEATHS

HILL.—On August 28, at Hawick Cottage Hospital, Hawick, Scotland, after a short illness, J Macvie Hill, B Sc, D.Litt, of Wunoke, Green Hill Park, New Barnet, Herts, senior representative of the Crookes Laboratories, Park Royal, N W.10.

JOHNSTONE.—On September 1, 1942 (very suddenly), at his residence, 17, Moor Park Avenue, Preston, Lancs, George Gordon Johnstone, M C., M A, M D (Camb.), D.P H, beloved husband of Constance Johnstone and elder son of the late Thomas Johnstone, M.D., M R.C P, of Ilkley and Harrogate.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY SEPTEMBER 19 1942

British Medical Association

ANNUAL REPRESENTATIVE MEETING, LONDON, 1942

The Annual Representative Meeting, 1942, the first to be held since 1939, was opened in the Great Hall, B.M.A. House, London, on Tuesday afternoon, September 8, and continued during the following two days.

The principal business was the consideration of the draft Interim Report of the Medical Planning Commission (published in the *Journal* of June 20). The chair was occupied by Dr. H. G. Dain (Chairman of Representative Meetings), who was supported by Mr. H. S. Souttar (Chairman of Council and Chairman of Medical Planning Commission), Sir Beckwith Whitehouse (President of the Association), Dr. T. Fraser (Past President), Dr. J. W. Bone (Treasurer), and Dr. P. Macdonald (Deputy Chairman, Representative Meetings). Almost all the Divisions in Great Britain and Northern Ireland were represented, as well as the Oversea Branches of Otago (New Zealand), Victoria (Australia), and the Punjab, and there were four Public Health Service representatives.

FIRST DAY

Tuesday, September 8

In presenting the preliminary section of the Annual Report of Council (*Supplement,* May 30), Mr. Souttar referred to the loss of Sir Henry Brackenbury. He reminded the meeting of the long and eminent services he had rendered to the Association in a succession of high offices: "He has passed on full of years and honour, leaving behind him a great example." In a further personal word the Chairman of Council spoke of the arduous work carried out at the head office by Dr. Anderson and his colleagues, and the whole of the staff during the three years of war. In addition to the ordinary work of the Association they had had placed upon their shoulders the vast amount of work connected with the Central Medical War Committee and the Medical Planning Commission.

ASSOCIATION FINANCE

Dr. J. W. Bone presented the financial statement for 1941. The membership was now at its highest peak—over 41,000—though, in spite of this, the revenue from subscriptions was slightly down, owing to the reduced subscriptions from serving members. The Association's liabilities had been reduced and there were ample reserves to meet all contingencies. The value of the Association building was about £750,000, and its available space was fully let. The amount of rent received last year was £12,700. As for the future, it appeared that the financial position for the current year, barring accidents, would reveal a substantial credit balance.

Dr. A. Beauchamp (Birmingham) asked the meeting to express the opinion that the payment by the Government towards the expenses of the Central Medical War Committee was very inadequate. He believed that the actual expenses were £17,000, and the amount provided by the Government was £7,000. Dr. W. D. Anderson (Glasgow) and Dr. C. I. Schiff (City of London) spoke to the same effect, the latter asking why the Association should bear any part of the cost of what was a Government obligation. Dr. Bone replied that while the Government allocation was not generous, the Council regarded the Association's financial contribution as a donation to the war effort, also as a contribution to the medical profession as a whole by the members of the Association, and finally as making possible a valuable piece of Association work. The Birmingham resolution was carried.

GENERAL PRACTICE

The National Fire Service

Dr. S. Wand, chairman of the General Practice Committee, gave a review of his committee's work during the year, especially in relation to the recommended increase in medical fees and to certification.

Dr. J. A. Moody (Stratford) moved to refer back certain paragraphs of the report relating to the pay of Fire Service medical officers, on the ground that the system whereby Post Office medical officers were given the specified duties, solely in the light of their Post Office appointment, was inequitable, and also that the capitation fee for certain members of the Fire Service (12s. with dispensing) was too low. He gave instances in which arrangements for medical attention for firemen, which had obtained satisfactorily for years, had been upset in favour of the new arrangement whereby the Post Office doctor was given the work. Dr. R. W. Rae (North Staffordshire) spoke to the same effect. He knew that they would be told that the firemen were a selected group of people of a healthy type, who, if they became chronically ill, were discharged and pensioned; but it was a wrong principle. Dr. Howie Wood (Isle of Wight) said that the scale of payment for the National Fire Service compared unfavourably with the payment under National Health Insurance—9s. 9d., plus 3s. 3d. for medicine. Moreover, the Fire Service M.O., like the Post Office M.O., had to visit within three miles without extra charge, whereas for insurance patients the distance was two miles. Dr. E. A. Gregg suggested that it was unwise to cite the capitation fee for N.H.I. as a standard for anything.

Dr. Wand, in reply, said that his committee was promised that existing arrangements would not be interfered with, and every case in which such interference had been alleged had been taken up. As regards the 12s. capitation fee, this was a specially picked body of men, regular firemen before the war, part of whose emoluments was the provision of medical benefit. There were no "chronics" among them, and there was no certification or record-keeping as insurance practitioners understood it. He believed the 12s. fee to be equal to about 20s. for N.H.I. patients.

The Stratford motion was carried.

Dependants of Serving Men

Several motions called on the Council to ask the Government to extend medical benefit to dependants of men serving with the Forces. The Secretary (Dr. G. C. Anderson) said that for the past two years or more representations had been made to the Government Departments concerned and the same answer had always been made, that the Government was not prepared to make the provision which was asked.

Dr. F. H. Bodman (Bristol) moved to express dissatisfaction with the Government reply and to instruct the Council to press again on the Government the urgent needs of Service dependants. Any general practitioner or out-patient physician was aware that the dependants of civilians had never been so well off in their lives. With the disappearance of unemployment and the existence of high wages, war bonuses, and overtime payment, these people were consulting their private doctors and calling in consultants with the greatest ease. But the dependants of Service men told a different story. Here was the beginning of a new depressed class. In many cases the families of Service men had had to move out of their houses into furnished rooms, the mother had to supplement her family allowances by going out to work, and the health of the children suffered. The Government's reply was that in the great majority of cases the pay and allowances provided by the Service Department should be sufficient to provide the cost of treatment; but in fact it was only a small minority of these people who could afford it.

Dr. Wand, on behalf of the Council, accepted the Bristol resolution, which was supported by Dr. Margaret Martin (Edinburgh) and carried.

Reservation of Maid-servants and Dispensers

Dr. F. E. Gould (Birmingham), as one who had been "part-time domestic servant" for some months past, moved that the Council be asked to persist in its efforts to safeguard doctors' interests by securing the reservation of at least one maid in each doctor's house and doctors' dispensers. By "reservation" he implied "essential occupation." His reference to "at least one maid" had in view the case of branch surgeries.

The Secretary said that since the calling-up of women began to be a serious matter for the employer at the beginning of this year, inquiries on this subject had been received from perhaps 200 members. During the past three months the matter had been actively pursued with the Ministry of Labour and National Service, and the Ministry had consented to give special consideration to any case where the doctor was experiencing difficulty owing to the absence of domestic or secretarial assistance or where for some reason a dispenser had been called up when he should not have been. Fifty cases had been referred, with in many instances satisfactory results. Here or there a case had not been made out. A doctor, for example, could hardly claim to retain a maid if there were in his house two or three daughters not otherwise employed. The Ministry was "playing fair" and was prepared to investigate any cases brought forward. The local interviewing boards had been instructed by the Ministry not to withdraw dispensers from the doctor's service. As far as secretaries were concerned, each case must be considered on its merits. The Birmingham motion was carried.

Dr. MONA MACNAUGHTON (Newcastle) did not think the motion went far enough. The method Dr. Anderson had described was a cumbersome one, and she moved that the responsible authority be asked to give the same consideration to the exemption from military and other services of domestic staff employed by private doctors as was given to similar staffs in hospitals. The local office of the Ministry of Labour should have power to direct a maid to a doctor's service. Dr. WAND said that he was prepared to accept this motion. He pointed out that District Man-power Boards could not receive representations regarding the deferment of clerks employed by bureaux associated with Local Medical War Committees or Public Medical Services unless these people had first satisfied some Ministry that they were in an essential occupation. This was a matter which the General Practice Committee would have to take up. The Newcastle motion was carried.

NATIONAL HEALTH INSURANCE

Dr. E. A. GREGG (chairman of the Insurance Acts Committee) said that the Ministry of Health was not prepared to admit that practitioners had a case for a further increase in the capitation fee. This question was still being pursued with the Ministry, and a communication had just been received from them which, had it not been for the present meeting, would have been considered by the Insurance Acts Executive Committee that week. During the past year his committee had been concerned with matters of reorganization. It was felt that some of the difficulties which insurance practitioners experienced were due to a failure to maintain a satisfactory contact between the centre and the periphery. An endeavour was being made to strengthen the linkage. It was proposed that the I.A.C. be enlarged by six additional representatives to be chosen by the Annual Panel Conference and by one further direct representative who would be allocated to Scotland so as to enable the elections in that country to be made on a satisfactory territorial basis.

The motion amending the constitution of the Committee in the manner described was carried. Dr. A. BEAUCHAMP (Birmingham Central) urged that the additional six members should all be engaged in insurance practice. Dr GREGG replied that there was no suggestion that the six should be other than active insurance practitioners, and he accepted a motion to that effect.

Dr. E. M. TUSTIN (East Somerset) moved that no member of the I.A.C. should serve for more than five years consecutively. This would be a means of introducing new blood into the committee. Dr. GREGG said that a resolution of this kind was likely to raise nearly as many difficulties as it attempted to cure. He did not think it would be a good thing for the Representative Body to deal with a question of this kind, which ought to be left to the Panel Conference. There was no reason why the mover, if there were difficulties in his own group, should not endeavour to secure there a limiting condition of this kind without imposing it upon the whole country. The motion was lost.

The Insurance Capitation Fee

The CHAIRMAN said that a number of motions had been submitted relating to the capitation fee. He suggested that the Representative Body should refer these to the Council with a view to their consideration by the Insurance Acts Committee and the Panel Conference. It was always a false step for the Representative Meeting to interfere in negotiations which a committee of the Association was at that moment carrying on.

Dr. GREGG said that with a slight modification he would welcome a motion put down by the City of London:

> That this meeting reaffirms the dissatisfaction expressed at the last Annual Representative Meeting with the capitation payments under National Health Insurance and calls upon the Council to continue to press this question upon the Government.

Dr. C. I. SCHIFF (City of London), in moving the resolution in these terms, said that it seemed to him necessary that the Representative Body should year by year, until the capitation fee was satisfactorily adjusted, continue to express publicly its dissatisfaction. The public still remained under the impression that the doctors were making a "good thing" out of National Health Insurance, and it should be made clear that in the opinion of the profession they had never been dealt with in such a manner as would have made the system a thoroughly efficient one. The motion was agreed to.

MEDICAL PLANNING COMMISSION

Statement by the Chairman

The meeting then turned to the discussion of the draft Interim Report of the Medical Planning Commission. The motions and amendments on the paper relating to this subject numbered about 170, and to many of the motions the names of a large number of Divisions were attached.

Mr. H. S. SOUTTAR (Chairman of Council and of the Commission) said that the Commission was set up by the Council after a very careful selection of its members. The planning which it undertook was of the greatest complexity and members were chosen for their aptitude and experience in dealing with these problems. The report, which was the result of a year's hard work, had not been considered by the Commission as a whole: it would be so considered later in the light of what the Representative Body decided. The tendency of the discussions in the Commission had been towards an appreciation of the value of co-ordination in general practice. It was believed that in future individual doctors would no longer work in isolation, they would work in groups, and the Commission desired advice as to how those groups might best be formed. One method of grouping, around health centres, had been worked out in some detail. The health centre was not an entirely new idea; it was developed 20 years ago by the Dawson Committee, but it had now been elaborated more fully. Some felt that if health centres were set up they might provide for general practitioners many of the advantages enjoyed by consultants in relation to their hospitals. The discussions had also envisaged a co-ordination of hospitals. There was a very general feeling that it was absurd to continue with several distinct types of hospitals working independently, and that the voluntary and municipal hospitals must in some way be co-ordinated, an ideal that had been greatly advanced by the work of the Nuffield Committee which was exploring the problem of regionalization. Several possible solutions to the various problems were put forward in the report of the Commission. Some favoured a whole-time State salaried service and others an expansion of national health insurance, and there were plans intermediate between these two, but it was of the utmost importance to have the opinions and criticisms of a representative body of the profession on these points.

The CHAIRMAN said that the questions on which it was hoped to obtain a definite reply from the Representative Body were the following: (1) free choice, (2) group practice, (3) whole-time versus part-time service, (4) the inclusion of the whole community or only a section of it in the provisions, also methods of administration and conditions of service.

Motion for Deferment until after the War

Dr. C. J. GROSCH (Wandsworth) moved: "That no decision for or against any form of change of medical practice should be expected until victory has been achieved." Hasty action, he said, would probably cause division in the Association. Large numbers of doctors, mainly the younger men, had gone into the Services, having left their practices, sometimes with mortgages upon them, and naturally they were anxious lest, by some decision taken in their absence, they should find when they came back to civil life that the capital as represented by the goodwill of their practices had disappeared. His Division was willing to accept any change in medical service which was thought necessary during the war so long as it did not serve as a precedent to their disadvantage after the war was over.

Major R. SCOTT STEVENSON (Marylebone) supported the Wandsworth motion. He said that the lips of the men in the Services were sealed: they were prevented from saying anything about the future status of their profession. He believed that those men would resent it if such a meeting as that were to decide in their absence the structure of medical practice for the next generation, though they would resent it even more if their civil colleagues sat and did nothing while other people outside decided the structure for them.

The SECRETARY said that a few months ago a medical man attached to a unit in this country where a number of medical men were stationed wrote that he had arranged a meeting to discuss these matters but had been told by his commanding officer that while they might hold their discussions they must not transmit their findings to anyone. He (Dr. Anderson) immediately took up the matter with the Director-General of Medical Services, pointing out the vital necessity of obtaining the views of the men in the Services, and asked him to issue an instruction to the Commands that meetings of medical members of the Forces should be allowed and that any conclusions they came to might safely be transmitted to the Secretary of the B.M.A. Therefore Major Scott Stevenson was not quite correct when he said that officers were debarred from transmitting the results of their discussions.

Major SCOTT STEVENSON: That has not percolated down to the people in the lower ranks of the Service to which I belong.

Dr. F. GRAY (Council) pleaded for a fair deal for the men on active service. How was it possible for such men to take a fair and adequate part in such discussions? Yet these were the men who would feel the full effect of any decisions taken, for they would remain in practice for years after the great majority of the people in that meeting had retired. What Wandsworth was moving would in no way interfere with the consideration to be given to the report of the Commission. Dr. N. F. MOLONEY (Council) said that before the end of the war some scheme should be in existence, otherwise a scheme, and possibly a reactionary one, over which the profession had no control, would be prepared for them. Dr. D. V. M. ADAMS (Lanark) thought that if the Wandsworth proposal were agreed to the work so laboriously done by the Commission would come to nothing. The interests of the men on service were in the special charge of the men at home.

Dr. W. E. DORNAN (Sheffield) said that public opinion and doubtless also the opinion of the Government on this matter of health services were being moulded by other bodies; therefore there was the greater need for concrete proposals to be put forward by the profession. If nothing were done now the position after the war would be that thousands of young men, released from the Services, would find themselves unemployed, with no chance whatever in such circumstances of striking a bargain with any Government that might be in power. Dr. O. C. CARTER (Bournemouth), who also spoke against the Wandsworth proposal, pointed out that a very large proportion of the young practitioners on service had been without experience of civil practice, and those of them who were older would be doing their younger colleagues the greatest possible service by planning ahead. The absent men would like to know to what sort of practice they would presently return, instead of having to anticipate a condition of chaos and uncertainty. The education authorities and industrial organizations were planning for the future, and the Government itself did not consider the present time inopportune for reconstruction.

The Wandsworth motion was lost, and a similar motion by Halifax urging that there should be no change in current medical practice until all absentee practitioners were home again was lost also.

Definition of Objects of Medical Service

The meeting proceeded to the consideration of the seven questions set out in Section V of the draft Interim Report of the Commission. The CHAIRMAN moved, as the answer to Question 1:

That the following broad definition of the objects of medical service be accepted: (*a*) to provide a system of medical service directed towards the achievement of positive health, of the prevention of disease, and the relief of sickness; (*b*) to render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional.

In making the formal motion, which was in the name of over 40 Divisions, the Chairman said that he hoped no time would be wasted in debating the abstract term "positive health." Dr. J. B. MILLER (Council) said that the phrase "positive health" was a telling one and to jettison it would be a psychological error. It drew attention to a preliminary statement which many might not otherwise consider. Dr. W. V. HOWELLS (Swansea) emphasized the value of providing all necessary medical services for the individual. For some years he had endeavoured to get a pathological service established for insured persons but had failed. An amendment by Cleveland and other Divisions to delete the phrase "positive health" was lost, and the general motion approving the broad definition was accepted.

Free Choice

The CHAIRMAN moved, again formally, as the answer to Question 2 the following words standing in the name of 34 Divisions:

That free choice of doctor and patient is an essential feature of any future service.

Dr. H. W. BOWYER (Bolton) moved to substitute "important" for "essential" in the motion. It would be unwise, he said, for the profession to fetter itself with such an inelastic attribute as "essential" in connexion with free choice. Circumstances might arise in which the scope of free choice would be limited. In order to provide a 24-hours and 7-day service rotas would have to be set up and assistants provided, and under such arrangements free choice might become very limited. Moreover, if grouping of practices came into existence the tendency would be for individual doctors in a group to concentrate on certain aspects of medical practice, and it might be to the general advantage for a patient to receive his treatment from one specially qualified member of the group without much relation to free choice. Dr. T. CRAIG (Newcastle) said that 99% of the doctors in this country had been selected as the result of free choice of their patients, but, of course, it would be recognized that free choice had some common-sense limits. Dr. J. C. ARTHUR (Gateshead) said that his Division wished to urge that steps be taken to extend free choice to any class of the community to whom it was not already available. Free choice was regarded as one of the fundamental rights of the individual. Dr. A. T. ROGERS (Bromley) said that by tying themselves to the word "essential" their movements in any future service would be restricted. The amendment by Bolton to substitute the word "important" for "essential" was lost.

Dr. C. M. SCOTT (Barnet) urged that free choice would be an essential feature in any future service but should be subject to the proviso that regulations existed to prevent the "will-o'-the-wisp" tactics at present employed by some patients. He had in mind patients who, for trivial reasons, sought change of doctor at frequent intervals.

Dr. C. W. SOMERVILLE (Lothians), on behalf of several Divisions, moved: That in any reorganization of general practice as full a measure as possible of free choice of doctor and patient should be preserved. This was offered in substitution for the word "essential." Dr. J. H. STEPHEN (Aberdeen) said that if they were to consider the possibilities of group practice in the long-term policy which was being planned then the question of free choice came in in quite a large way, and he thought the amendment just moved by the Lothians furnished the necessary margin to allow for the cases in which free choice was not practicable. The Lothians amendment was carried and was also adopted as the substantive motion, so that the answer to Question 2 was:

That in any reorganization of general practice as full a measure as possible of free choice of doctor and patient should be preserved.

Group Practice

The CHAIRMAN again formally moved, as the answer to Question 3:

That group practice should be a feature of any future medical service.

He said that two problems were embodied in this, that of group practice, and—subsidiary but important—that of the nature of the health centre. Group practice might be an extension of present partnerships, and might be considered apart from the health centre question. He asked representatives to discuss group practice first and to defer health centres to a later stage.

Dr. G. PRIESTMAN (Bradford) moved to add the words "but not an essential feature." Dr. T. CRAIG (Newcastle) favoured group practice, but insisted that it be entirely voluntary, without departmental interference, and under the control of the doctors concerned. Dr. W. YEOMAN (Harrogate) feared that if group practice were considered as an essential of the service the profession would lay themselves open to have it forced down their throats whether they wanted it or not. Dr. P. INWALD (Council) asked if anyone was prepared to affirm that individualistic methods of practice were achieving results which ought to be expected in modern medicine. He mentioned some of the effects of isolation, such as the waste of time and effort involved in a number of doctors visiting the same area, perhaps the same street. Doctors had become so much preoccupied with competitively making a living out of their practices that they tended to become mere dispensers of medicine and signatories of certificates, without proper opportunity for leisure or for undertaking postgraduate or research work. Yet it would be possible co-operatively to arrange reasonable hours of duty and provision for night and emergency calls.

Dr. S. WAND (Council) said that with doctors working together the patients got better advice and treatment. If a consultant found it necessary to call in the advice of another consultant, it was obvious that a general practitioner, desiring an independent opinion, should be able to call in a colleague. If it was agreed that group practice was a desirable thing for the patient then it must be regarded as an essential feature of the scheme, for, unless it were so regarded, independent and individual practice would still go on.

Dr. C. F. T. SCOTT (Willesden), while favouring voluntary group practice in the sense of practitioners co-operating together, was sceptical of the value of any rigid system of groups imposed from outside. Dr. W. W. Fox (Council) said that if it was their opinion that a number of doctors working together would produce better results than by working alone, then the principle of group practice should be supported, and the subjective reactions of some who said that they did not like to work with a number of other doctors ought not to be regarded.

The amendment to add the words " but not an essential feature " was lost, but a further amendment by Harrow was adopted, namely:

> That group practice should be a feature of any future medical service, provided that it does not involve the introduction of supervisory control in clinical matters.

Dr. J. E. Gaze said that the Harrow Division was greatly in favour of group practice, but wanted to emphasize the need for control by the doctor concerned of the treatment of his patients and to establish that principle at the outset. An amendment by Reigate affirming that group practice on a voluntary basis should be a feature of any future medical service was withdrawn in favour of the Harrow amendment.

Dr. McWhan (S.-E. Counties of Scotland) moved as an extension of the motion already carried that in any future medical service group practice should be encouraged in areas where it was suited to local conditions. The Chairman pointed out that no one would imagine that the Commission desired to impose group practice where it was not suitable. In reply to a question, he said that it would be, to begin with, in selected areas. This motion was withdrawn, and a motion that group practice should be tried in selected and contrasting areas for a period of five years in order to estimate its strength and weakness was lost.

Dr. J. C. Arthur (Gateshead) moved:

> That group practice should be a feature of any future medical service, but the groups should not be formed arbitrarily by any outside authority; they should be arranged by the doctors themselves.

He agreed with the general principle of group practice, but he objected to coercion into it by any outside authority. The Gateshead idea was that these group practices should be run by themselves, possibly with suggestion and help from headquarters, but financially controlled groups should be avoided.

Sir Kaye Le Fleming said that on reading, for the first time for several years, an important report under the auspices of the Association in the preparation of which he himself had had no share, he had formed certain general impressions, one of which bore distinctly on this question of groups. To his mind the report as a whole drew too much attention to measures which were going to be introduced by somebody somewhen and somehow, and did not dwell enough on the power to effect co-operation or to bring about reform which existed in their own profession without any stimulus from outside. They were all agreed that the group system was likely to be good for the public, but no group system could be really good unless those who took part in it were ready and willing to work together. A group system could not be forced on an area where men were not prepared to co-operate. A group system did in fact exist, in major or minor ways, in various parts of the country, and the sooner they got down to working together in a group form the sooner the public would derive benefit and the less time it would be necessary to waste on discussions such as the present.

The Gateshead amendment, that any groups should be arranged by the doctors themselves, was carried. The answer to Question 3, therefore, was that group practice should be a feature of any future medical service—the original proposition—modified by the amendments of Harrow and Gateshead, that group practice must not involve the introduction of supervisory control in clinical matters, and that the groups should not be formed arbitrarily by any outside authority.

The report of the debate on Medical Planning will be continued in our next issue.

The B.M.A. and the World Situation

On the last day of the meeting two resolutions of general import were moved from the chair and carried unanimously and with acclamation. The first of them read:

> That this Representative Meeting of the British Medical Association sends to its medical colleagues in the U.S.S.R. its warmest greetings and its heartfelt appreciation of the fine part they are playing in the magnificent struggle of the Russian peoples against the common enemy.

It was agreed that this be conveyed to the Russian Ambassador, M. Maisky. The second resolution read:

> That the Representative Body, realizing that vast and urgent measures for the control and treatment of preventable diseases will be needed on the Continent on the cessation of hostilities, (1) pledges its full support in the task of organizing and administering the necessary relief measures, and (2) asks the Council, in collaboration with Government and international relief agencies, to take early action so that the necessary organizing, administrative, and coordinating measures should be fully prepared beforehand.

H.M. Forces Appointments

ROYAL NAVAL VOLUNTEER RESERVE

Prob. Temp Surg. Lieuts A. O. John and J S. Law to be Temp Surg Lieuts.

ARMY

Lieut-Col. F. C K. Austin, from R A.M.C, to be Col

ROYAL ARMY MEDICAL CORPS

The following Majors to be Lieut-Cols: (Temp. Col.) G. T Gimlette; (Temp Lieut-Col) W. Millerick, M C.; C. A Slaughter and H A. Boyle

Capts. (Temp Majors) R A. Smart and G M. Robertshaw and Capt. S F. Cranston, short service officers, have been appointed to permanent commissions, retaining their present seniority.

The notification regarding Capt. H N Walker in the *London Gazette* dated Aug. 16, 1940, has been cancelled Capt H N Walker has retired on account of ill-health, receiving a gratuity

Short Service Commission.—Capt N. F. Field has been placed on the half-pay list on account of ill-health.

REGULAR ARMY RESERVE OF OFFICERS

Major-Gen. W H. S. Nickerson, V C., C B., C M G, late R.A.M C, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

Royal Army Medical Corps

War Subs. Capt L. Godlove, from temp commission, to be War Subs. Capt., retaining his present seniority.

TERRITORIAL ARMY, R.A.M C.

Supern. for Service with Birmingham Univ., Senior Training Corps (Medical Unit).—Major R. J. S. McDowall has ceased to be employed

WOMEN'S FORCES

Employed with the R.A.M C.

War Subs. Capt. F. B C Livingston has relinquished her commission on account of ill-health.

ROYAL AIR FORCE VOLUNTEER RESERVE

Fl. Lieut. F. H. King has resigned his commission and retains the rank of Wing Cmdr

To be Fl Lieuts (Emergency): G. G. Lennon and R. W. Tannahill

Flying Officers J. C. Garland, A. M. Abrahams, G. O Richardson, E. H. L. Cook, and J. F. Rickards to be War Subs. Fl Lieuts.

To be Flying Officers (Emergency): M. C. Bell, P. G Epps, R. A. House, G. H. B. Roberts, P. Q. M. Spaight.

REMUNERATION OF SHIP SURGEONS

As was reported in the *Supplement* of June 20, the British Medical Association has recommended to the Ministry of War Transport that, as a wartime measure, ship surgeons should receive a basic salary comparable with that of junior medical officers in the Services. As this matter is under the control of the individual shipping companies, the Ministry forwarded the Association's recommendation to the Employers' Association of the Port of Liverpool, which has brought it to the notice of its members, and to the Shipping Federation, which has advised direct representations by the B.M.A. to the company concerned in any particular case. The Secretary of the B.M.A. will be glad to hear from any ship surgeon whose remuneration is not in accordance with the recommendation made.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: Final F R C S clinical instruction, Weds., 5 30 p m, from Sept. 30 to Oct 28, cases will be demonstrated in the wards of a centrally situated hospital, Sats, Oct. 3 and 24, 2 30 p m, clinical teaching will be given at the same hospital; cases will be examined by postgraduates and then demonstrated

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W.—*Daily*, 10 a m to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations. *Daily*, 1.30 p m., Post-mortems. *Mon.* Course on War Surgery of the Extremities begins *Tues*, 10 a m., Paediatric Clinic; 11 a.m, Gynaecological Clinic. *Wed.*, 11.30 a.m., Medical Conference. *Thurs*, 2 p m., Dermatological Clinic. *Fri.*, 12.15 p.m., Surgical Conference; 2 p m, Gynaecological Conference; 2 p m, Sterility Clinic.

Fellowship of Medicine, 1, Wimpole Street, W.—*Royal Chest Hospital*. Wed., 3 30 p m, M.R C.P Course in Heart Diseases *West End Hospital for Nervous Diseases:* Tues and Fri., 3 p.m, M R C.P Course in Neurology *Royal National Orthopaedic Hospital:* Sat (Sept 19), 2 15 p.m., Final F.R.C S Clinical Course in Orthopaedics *Archway Hospital:* Tues, 2 p m Final F R C S Clinical Course. *National Hospital for Diseases of the Heart:* Tues. and Wed, 10 a m, Out-patient Clinics.

Birmingham University.—At Medical School, Hospitals Centre, *Tues.*, 4 p m, Dr J H. Sheldon: Special Aspects of Nutrition and Nutritional Deficiencies in Relation to Industry.

Edinburgh Postgraduate Lectures.—At Edinburgh Royal Infirmary, *Thurs.*, 4 30 p m., Mr. R. I. Stirling: " Sciatica " from an Orthopaedic Point of View

Glasgow University: Department of Ophthalmology.—*Wed.*, Prof. Loewenstein: Lipoidal Changes in the Retina.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

Smith.—On September 7, to Jean, wife of Lieut Wm Clark Smith, R.A.M.C, Fair View, Long Newton, Stockton-on-Tees Co. Durham, a son.

DEATHS

Ireland.—On August 30, 1942, from typhoid fever, in the Middle East, Capt Patrick G L Ireland, younger son of Dr. Aubrey Ireland, Shrewsbury.

Younie.—At Calcutta, suddenly, on Sept. 9, 1942, John Younie, Indian Civil Service, beloved husband of Dorothy Younie, M.D., Glenvar, Dollar, Scotland.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 26 1942

ANNUAL REPRESENTATIVE MEETING

SECOND DAY

Wednesday, September 9

INTERIM REPORT OF MEDICAL PLANNING COMMISSION

(Debate Resumed)

The Extent of the Provision

On the resumption of the Annual Representative Meeting on September 9, with Dr. H. G. Dain in the chair, a debate took place on the fourth of the questions set out in Section V of the draft Interim Report of the Medical Planning Commission: "Should provision, whatever its character, be made by Government for the whole community, or for a part of it only? If the latter, to which section of the community should it be limited?" The Chairman, following the agreed procedure, formally moved: "That provision, of whatever character, should be made by the Government for a section of the community only." An amendment stood in the name of 19 Divisions as follows:

> That provision, of whatever character, should be made by the Government for the whole community.

Mr. H. J. McCurrich (Brighton), in moving this amendment, said that a service covering so wide a field was comparable with the education service, which was open to the children of all citizens, though there was no compulsion to take advantage of the State service. If extension of National Health Insurance came about only 10% of the population would remain outside its provision, and to set up an enormous organization for the exclusion of the 10% of ineligibles seemed unnecessary.

Dr. A. T. Rogers (Bromley) supported the amendment. His Division felt that there was much to be said for the inclusion of the whole population in any form of practice agreed upon for the future. If the amendment were rejected it meant that the profession reserved the right to "exploit" the one-tenth who would be outside the scheme. Dr. P. Inwald (Council) said that in New Zealand, some of the Scandinavian countries, and Russia the whole population was included in medical benefit, with no disadvantage to the common health. The Government must have the right to provide for the whole country. Dr. E. S. Pasmore (Kensington) was unable to support either the motion or the amendment. The view of his Division was that provision should be made available by the Government, but not necessarily provided by the Government, for the whole community. Dr. S. W. Swindells (Grimsby) said that it would be ludicrous to equip clinics for a national service and then declare 10% of the population to be debarred. Dr. D. G. Morgan (Cardiff) thought that any hesitancy as to the Brighton amendment might disappear when it was remembered that in the municipal services provision was made for the whole community. Dr. Armstrong Harris (Westminster and Holborn) said that if 10% of the population were left out there would be a tendency for a number of doctors to leave the scheme alone and undertake private practice. This would be regrettable because it might give rise to a feeling that it was the best doctors who had stood out.

Sir Kaye Le Fleming, who said that the debate had surprised him, asked whether it was likely that any Government which undertook to introduce a scheme of medical services would scrap all the existing machinery and begin *de novo*. The aim in view was to see that every member of the community got a full medical service at a proper economic cost, but that could not be done all at once, and in this country we moved by evolution, not by revolution. It was clear to him that development would come about as a result of the State becoming more and more responsible for different groups of the population. He thought the Brighton amendment impracticable and likely to tie their hands in future discussions. Dr. W. W. Fox (Council) asked how it could be called a revolution if the provision for the majority of people was already in existence and was extended to the remaining 10%. Dr. D. F. Whitaker (Guildford) said that exactly the same arguments were used against National Health Insurance on its introduction in 1911. It was said then that no change at all was desired by the medical profession; but the Act had now been running for 30 years and no responsible body of opinion had as yet asked for its repeal. Was the medical profession prepared to allow that there should be two services in this country, one for the people who had a lot of money, and the other for the rest? He claimed that the younger men in the profession were in favour of provision for the whole community. Dr. S. Wand (Council) begged members to be realists. If provision were made for 90%, there was no need to include the remaining 10%, who were quite able to provide it for themselves. Dr. A. Phillips (City of London) asked what was the reason for suggesting the exclusion of the 10%. Was it that the profession wished to continue a certain amount of "exploitation"? The profession, especially during the last 30 years, had been steadily evolving in the direction of Government control, and there was no reason why this should not continue until the whole community was included in Government provision.

Dr. J. C. Arthur (Gateshead) said that this country had been well served by evolutionary methods; it had never been fond of revolution, which perhaps explained why it had the most stable Government in the world to-day. It had been stated that a scheme which brought in 100% of the population was still evolutionary, but it seemed to be assumed that 90% were already in the scheme, which was far from being the case. If dependants of the insured population were now brought in a very considerable step would have been taken, and if it proved satisfactory they could afterwards go further. Dr. A. Lucas Young (Eastbourne) said that his Division believed that in any system of medicine which might be adopted after the war the medical service provided should be available for the whole community, but not that the actual provision or the organization thereof should be carried out by the Government. Mr. McCurrich, replying on the amendment, complained of certain bogies which had been brought out. He could not see that the extension of the benefit to the whole community was any more of a revolution than the introduction of the Education Act, 1870

The Brighton amendment: "That provision, of whatever character, should be made by the Government for the whole community," was put to the vote, with the result:

For 94
Against 92

The Chairman: Your very divided opinion will pass to the Commission for its consideration.

Mr. Mark Fraser (Cumberland) moved as a rider to what had just been carried: "That the patient should have the right to contract out and the doctor the right to charge fees for attendance to patients not on his list." This was carried.

Questions were raised from the meeting as to whether it had been intended to include hospital service in the Government provision mentioned in the Brighton motion. The Chairman was of opinion that the words "of whatever character" must be taken to include hospitals. Dr. N. E. Waterfield said that he thought there were many in the meeting who, like himself, did not understand the position. The emphasis in the debate had been on general practitioner services, and no one had mentioned hospitals. The majority in favour of the Brighton amendment was only two, and if he had understood that it was meant to include hospital services, he for one would have voted in the opposite direction. The Chairman said that he could not allow the question to be reopened on the plea that the issue had not been precisely defined.

Principle of Payment for Medical Services

Dr. C. M. Scott (Barnet) moved: "That whatever Government provision may be made in agreement with the profession, the principle of payment for medical services, excluding public assistance, either directly or through contributory or insurance schemes, should be maintained." Dr. D. C. Barron (Sheffield) supported the motion. Payment should be made for services rendered, whether in a health centre or in any other way. Whatever the provision, there would always be more than one class participating. There would be a very poor class, such as those now on public assistance; a large class able to pay for their services by reason of their regular contribution to some insurance scheme; and, over and above these, a third class able to afford private fees. No scheme should be adopted which made it possible to preclude the payment of fees by those able to pay them.

The CHAIRMAN said that as it had been decided that the services should be provided by the Government, he did not see how they could say that it should be paid for by those included in the provision. But he would allow the motion to be put. The motion was carried.

Debate on Whole-time State Service

The meeting next came to Question 5, which asked whether the basis of the services should be the extension of the type of benefit under National Health Insurance, the establishment of a whole-time salaried Government medical service, or some other method. The CHAIRMAN decided to take a straight vote on a motion in the name of Bromley and three other Divisions:

> That the basis for the co-ordination and integration of health services should be the establishment of a whole-time salaried Government service.

Dr. A. T. ROGERS (Bromley), in moving this, admitted that his Division was not nearly so agreed on this motion as on the motion just carried. The point which swayed them in its favour was that if group practice—already agreed to by the meeting—came in, its success would depend on amicable agreement among those working it, and such agreement was likely to be imperilled if there was constant competition for payment and patients were earmarked for one practitioner in the group or for another.

Dr. C. O. STALLYBRASS (Liverpool) moved to delete the word "Government" from the Bromley motion. The word meant either too much or too little, and to avoid confusion it should be left out. Either it meant a whole-time service run directly from Whitehall under regulations—which was the last thing they wanted—or an organization by the Government of the service only in its main basic principles, with the administration in detail left to some other body. Prof. R. M. F. PICKEN said that "Government" meant Government, whether central or local. If there was to be a salaried service it must be provided by some form of governing body. To delete the word "Government" would be to cloud rather than to clarify the issue.

The Liverpool amendment was lost, and discussion continued on the Bromley motion.

Dr. H. W. POOLER (Chesterfield) said that in effect the Commission's report envisaged a State Medical Service. One point of some importance was the loss of goodwill which the Commission's "scheme" would occasion. Practitioners would have no voice in the choice of their successor to what would probably be the main part of their practice—namely, that conducted at the health centre—and there was no guarantee that the successor to that part of their practice would be willing to buy what remained of their private practice. He regretted that the Commission had missed an opportunity of cutting out two evils which beset them at the present time. One of these was the evil of having to decide, with considerable embarrassment, as to the certification of the work-shy and hypochondriacal person. If practitioners were made independent of this through a whole-time service they would be able to deal with the position very much better. The other evil was the unfortunate atmosphere of suspicion and jealousy which did exist, whatever might be said about it, and seemed likely to be perpetuated in some form in the health centres.

The CHAIRMAN reminded Dr. Pooler that the Commission had made no decisions of any kind. It had furnished suggestions on which it was open to the present meeting to make decisions.

Dr. J. A. L. VAUGHAN JONES (Leeds) said that there was a steady and increasing move towards nationalization or socialization of essential services, partly owing to the dictates of war emergency, but also to a general reorientation of ideas. One example was the limitation of profits, which might eventually lead to the elimination of the purely profit motive. The war had strengthened the tendency to place all major security burdens, including health, upon the State. There was no need to elaborate the deficiencies of the present system, but it must not be forgotten that the public also was conscious of them. There were three main arguments against a whole-time salaried service. The first was a supposed loss of personal initiative and incentive. A great deal of nonsense had been talked about this. It had never been proved that whole-time teachers of medicine or medical officers of health suffered from a lack of initiative. The second argument was a supposed loss of free choice. But such loss was not peculiar to a full-time salaried service. A recent analysis of the statutory social services made in connexion with the Beveridge Committee showed that free choice of doctor so far as National Health Insurance was concerned was more apparent than real. When a practice changed hands only 10% of insured persons exercised their right to change their doctor, and even that 10% included those who had meanwhile moved to other districts. The third argument was the "soul-destroying effect of democracy," but this the speaker was prevented from demolishing by the expiration of his time limit.

Dr. A. PATTON (Leigh) said that in his Division the large majority of opinion at first was in favour of whole-time State service as against an extension of National Health Insurance, but when the interim report of the Commission was published in June several members rather changed their views and the majority in favour of a State service was quite small at the finish. What was strongly felt was that in any scheme medical control should be ensured to the fullest extent that was reasonable.

Dr. C. I SCHIFF (City of London) said that his Division would view with favour the establishment of a State Medical Service freely available to the whole population. Such a service must, however, function with a minimum of bureaucratic control, and there must be adequate remuneration for doctors, who should be provided with pensions on retirement, holidays with pay, fixed hours of work, facilities for postgraduate study, and compensation for loss of existing practices. A State Medical Service was bound to come about. Events were tending in that direction whether the profession liked it or not. Here was an opportunity to take Time by the forelock and to show that they themselves were capable of forming an organization which would be economical of energy, preserve professional dignity, and serve to the best advantage the people of this country.

Dr. J. M. HUNTER (Londonderry) supported the extension of the present system. While the doctor might be in a better position under a State Medical Service, the patient would not be better off. The National Health Insurance system had many faults, but it had worked well under great difficulties, and to scrap it would be a great mistake. Free choice was bound to be interfered with to a greater extent under a State service than under an extension of National Health Insurance. Mr. H. J. MCCURRICH thought that the meeting was in danger of reaching a decision which would negative the principle of contracting-out to which it had already agreed. If doctors were in a whole-time State Medical Service how would contracting out be possible, at least in country districts? In large towns, no doubt, certain doctors would continue to do private practice only. Dr. P. INWALD urged that the profession must not put itself again in the position of its forerunners who in 1911 opposed National Health Insurance because of the fear of the future. Such an attitude would leave them unprepared when the Government introduced its own scheme, and their plight would then be an unenviable one. Dr. F. M. ROSE (Preston) said that it was forgotten by some speakers that a long-term policy was being planned and that the money relationship between doctor and patient was at present one of the greatest difficulties. It was not that patients did not pay their bills, but that sometimes the doctor felt that he was not giving to his fee-paying patients the service they ought to have because he was afraid that they might think that by making extra visits he was merely running up the account against them. It might be argued that the money relationship could be ended by an extension of National Health Insurance, and so it could to a certain extent, but not as fully as in a State service, in which the question of one patient more or less would not affect the doctor financially.

Dr. F. GRAY (Council) said that he greatly admired the idealism of the speakers who had advocated a State Medical Service, but he begged the meeting to come down to earth, and preferably to earth at the lower end of Whitehall, because that was where they would have, in fact, to consider the Government side of a salaried service. The profession had more experience now of Government methods than had their predecessors thirty years ago. National Health Insurance had been in existence for 29 years and the Ministry of Health for 23. What was the experience of them from the point of view of the patient and the doctor? The record of the Ministry could be summed up by saying that it was out to secure the cheapest possible service. Some time ago Sir Kingsley Wood, when Minister of Health, talked about a "national medicinal thirst." In a State Medical Service was it not likely that instructions would be issued to the profession to limit prescribing along certain lines?

Sir KAYE LE FLEMING said that for something like twenty years he had heard this problem debated, and had never heard but one answer to it. What were the advantages it was hoped to secure by a whole-time State Medical Service? Security, leisure, pensions. Very well, they could have them, but they would have to pay for them and what were they going to pay? What was the salary going to be? He drew attention to the way in which Government Departments remunerated the medical services of the Army, the Navy, and so on. From this it would be seen to what range of salaries they might aspire. They would lose liberty to practise as they liked, and they would be servants of the Government, which had never shown any great interest in the welfare of the profession. The public did not want such a system, the present meeting would show that the profession did not want it, and he believed the Government did not want to start it if they could help doing so. There was a risk of State salaried service arising under economic pressure, and if as and when the State took responsibility for looking after the health of wider sections of the public the demands which the profession made for remuneration were too high the Government might say, "Well, after all, it will pay us to put in the whole-time salaried man, and there will always be a minority of the profession ready to take these posts."

Mr. McAdam Eccles asked whether hospital services were to be considered as included in the motion. If they were it would mean that the voluntary hospitals would have to be run by State salaried staffs. The Chairman replied that the proposals would apply to every member of the profession who took part in the service, whether in general practice, in hospital, or in whatever it might be.

Dr. T. Craig (Newcastle-upon-Tyne) spoke of the sacrifice of freedom which a whole-time service would entail. "If you are prepared to sacrifice all that for the sake of sitting pretty with a salary, well, it is up to you." Dr. W. W. Fox said that if the profession did nothing about it a State Medical Service would eventually come about in this country; and, imposed from without, it would not come up to the standard which a medical profession should demand. When the war was over there would be many thousands of doctors coming back to this country looking for practices, and these might form a nucleus which the Government might use for the introduction of a State service for which the profession was not prepared. Dr. N. E. Waterfield said that before the war he was fortunate enough to visit Soviet Russia and make an inspection of the medical services of that country. It was the general experience of the visitors that Russian general practitioners were very much dissatisfied with the State medical service, and were doing their best to get out of, at any rate, a part of it. (Cries of "Question" and "Quite true.") In addition, the patients themselves were dissatisfied with the service, and private practice was being allowed in order that they might have the opportunity of getting the doctor of their choice.

The motion: "That the basis for the co-ordination and integration of health services should be the establishment of a whole-time salaried Government service" was put to the meeting and lost by a huge majority. There were demands for a count, which resulted:

For	20
Against	177

The result was greeted with loud cheers.

Dr. C. M. Scott (Barnet) had a long resolution on the agenda, which in large part fell to the ground on account of previous decisions, but the Chairman allowed him to move the last clause of it, which read: "That the contracting doctor should be guarded against exploitation by his patients by some statutory or financial protection." He said that if dependants of insured persons were to be included there should be some kind of protection for the doctor against unnecessary work. This amendment was not designed to discourage seekers after "positive health" but to save the doctor from trivial calls.

The motion was agreed to in the form of a recommendation to the Planning Commission for consideration. Further motions on the question of the basis of future health services were held over for the later debate on health centres.

The Plan in Broad Outline

The Chairman next directed the attention of the meeting to the sixth question set out in Section V of the report: "Should the plan set out in broad outline be accepted in its present or an amended form?" The points arising were: administration, central and peripheral; health centres; unification of hospitals; and appointment of practitioners to the service. He moved formally that the plan in broad outline in the draft report be adopted, to which there was an amendment by Shropshire and Mid-Wales:

> That the plan in broad outline in the draft report of the Commission be adopted only in so far as it relates to changes in central and local administrative and advisory machinery and to unification of hospitals under a regional body.

Dr. J. A. R. Ireland, in moving the above, said that his Division accepted the suggestions in the report under "Administration," and with regard to hospitals it felt that the hospital system should be brought together under a regional body which would be able to get the best both out of the voluntary and out of the rate-aided and State-aided hospitals.

The Chairman: If this amendment is adopted it rules out the possibility of health centres. Dr. Ireland: My Division is against health centres.

Dr. H. S. Pasmore (Kensington) said that his Division was prepared to give this motion its support for the main reason that it did not commit them to the health centres as described in the report. They would prefer the health centre to be confined to pathological and radiological services and the like. It seemed as if the health centre as visualized in the report would be a glorified out-patient department, and the model described seemed to be inconsistent with the close personal relation between doctor and patient on which the Association had always insisted. It was also assumed that ten or twelve doctors in compulsory association and in competition for a capitation fee would co-operate and work amicably together, when in fact it was difficult enough for three or four partners in a voluntary association to do so.

Dr. A. Beauchamp (Birmingham) hoped that the meeting would not pass the Shropshire amendment. In Birmingham the question of health centres had been gone into very thoroughly and the opinion by an overwhelming majority on a plebiscite was that health centres were desirable in such a city. There would be no regimentation, the centres would not be glorified out-patients' departments, but places where practitioners could carry on their practices very much as now but with better facilities. A health centre would be started in his area, probably very soon. In Birmingham the doctors already worked in co-operation; they were very good friends, and although there was competition it was of a healthy kind. Dr. S. Wand endorsed the remarks of his Birmingham colleague, and asked the meeting to reject this amendment and to debate health centres on their merits.

The mover of the Shropshire resolution consented to delete the word "only," so that it no longer implied disapproval of health centres, and in this form it was carried.

Health Centres

The discussion on health centres took place on an amendment by Gateshead: "That the proposals relating to the establishment of health centres be not approved." Dr. J. C. Arthur, in moving, said that what was not approved was the arbitrary setting up of health centres as set out in the report. His Division did not entirely disapprove of the health centre idea. It felt that the idea was perhaps worthy of exploration, but that before any definite conclusion was reached such centres should be tried out experimentally in some selected areas. The initiation of such a centre should be in the hands of the doctors of the area.

Dr. C. W. Somerville (Lothians) said that in his country district they were strongly in favour of the idea. In his country town there were only four resident doctors, but the doctors in outlying villages were anxious to take advantage of the centre for consultation with their colleagues, and one doctor who was strongly in favour of it lived twelve miles from his nearest medical neighbour. The centres should have laboratory equipment and possibly *x*-ray outfits. Dr. J. G. Thwaites (Brighton) said that his Division looked upon the health centre as an integral part of a future health service for the nation. The centres should not be left to experimental or haphazard growth, but organized efficiently and completely. He hoped also that auxiliary services would be attached to the centre—for example, nurses and health visitors—and that the centre might have provision for certain physical treatments and a theatre for minor operations. The dental services might be usefully combined with the centres.

Dr. T. Craig (Newcastle) supported the amendment. At two meetings in the Newcastle Division the subject had been considered at great length. Those for whom he spoke were not in favour of consultations by specialists taking place at the centre. The ideal of a health centre was the ideal doctor's surgery. Dr. S. Wand (Birmingham) said that he was asked at a meeting in his area why he thought health centres superior to a form of group practice carried out in the surgeries of individual doctors. He regarded them as superior on clinical, economic, and social grounds. As to the first, he reminded the meeting that they had been asking for years for work which as general practitioners they could most properly perform and which had been taken away from them and placed in other hands by the local authorities. But to do this work, as to do much else in modern medicine, required the fullest co-operation between general practitioners themselves and between general practitioners, consultants, local authority medical officers, and those in ancillary services, each section of the profession with every other section. Was it not best to do it in a place where all these people could meet together? He was satisfied that the cost of the building was not an insuperable difficulty. Not only could the buildings be provided, but the profession could arrange for their provision if necessary. As for the social advantages, he felt that if the gallery at that meeting were filled with their wives and families the heartiest acclamation at the idea of health centres would come from that quarter, because it would be realized what a relief they would mean to the doctor's household. If the health centre idea were not accepted he could foresee a time when the best they could hope for would be that the local authorities would take away more of their work, and the worst, that some other body would come and say, "You have no constructive ideas; you must do as we say."

Dr. R. W. Rae (North Staffordshire) said that his Division had passed a resolution that health centres were feasible only in a full State service, but the full State service had been turned down by that meeting. He thought that in their consulting rooms and surgeries they had enough equipment and accommodation for dealing with their patients. Radiological work should go to the hospital. Dr. J. G. McCutcheon (Glasgow) spoke of the domestic advantages which health centres would bring. They would enable the doctor to live in a different and much more private house, and his difficulties in procuring a locumtenent during temporary absence would be greatly eased. In his ordinary work it would be of inestimable advantage just to be able to tap at a door and ask a fellow doctor to step in and confirm his finding.

Dr. T. W. Turner (Guildford) spoke of the advantages of group practice. He liked working with other people. He had had more help from his fellow general practitioners than from the "pundits." Indeed, such help, when requested, had never been withheld. Dr. Howie Wood (Isle of Wight) said that his Division was very much in favour of the health centre. One of the reasons which weighed with many of them was consideration for their wives. He believed that if a census of opinion of doctors' wives were taken it would be found that there was universal support for the idea of practice away from home. The domestic difficulty was accentuated by the maid problem. Dr. S. W. Swindells (Grimsby) said that mere grouping of doctors, unless done under the authority, would not be recognized for such purposes as infant welfare.

Dr. F. W. Grant (South Shields) said that what the Commission recommended was a statutory scheme of health centres. On the previous day the meeting had agreed to group practice as a feature of any future medical service, but the groups were to be arranged by the doctors themselves, and now they were asked to agree to a chain of statutory health centres in which the groups would not be formed, for the idea of setting up statutory groups had been refused. Dr. A. Staveley Gough (West Herts) said that the committee of his Division was against the general establishment of health centres, but in favour of the experimental establishment of some centres and of further study of the subject. Some districts did not need health centres, in others they would take the form of diagnostic clinics, and in others again their chief purpose would be for consultation. A controlling body, such as a regional council, with a medical majority, should decide where and in what form health centres should be established in its area. Dr. W. N. Leak (Mid-Cheshire) was opposed to the establishment of health centres, although the idea was attractive in many ways. What his constituents feared was that they would be too governmental in character. There was no guarantee that a short while after these centres had been established consultants would not come along "and every case of stomach-ache would call for the gastro-enterologist." The care of the patient should be in the hands of the general practitioner, and his hands should be strengthened as much as possible.

Dr. F. Gray (Council) said that there was some danger in this discussion of the subject being confused by a mass of detail. The scheme set out in the interim report was not the only one. Several speakers had expressed grave doubts as to that scheme, and, speaking as a member of the Commission, he had grave doubts himself. In fact the actual scheme in detail was, he believed, unworkable. But it must not be supposed that any scheme was therefore unworkable.

The Chairman pointed out that in paragraph 69 of the interim report reference was made to ". . . a health centre which would be provided by a statutory health authority." He did not want to have the idea of a health centre turned down because of a difficult word like "statutory" at this stage, because there was no body at the moment proposing to set up a service of statutory health centres. It must be expected that the service would be tried out by some means or other in a number of districts, and he gathered that opportunities for so doing were likely to occur before long.

In order to get a straight vote from the meeting the Gateshead amendment was waived in favour of a proposition moved by Dr. Wand, seconded by Dr. Inwald, "That the principle of health centres be approved," and this was carried by a considerable majority. The Chairman said that he took it that the meeting would not wish to go into more detail at the moment. Prof. Picken suggested that the Commission would wish to have the opinion of the Representative Body on its proposals, and eventually the following was proposed formally from the Chair—

> That the plan in broad outline so far as it affects health centres set out in the draft Interim Report of the Medical Planning Commission be adopted—

to which an amendment was moved by Dr. J. C. Arthur (Gateshead) that the words in paragraph 69 referring to its statutory character be omitted. His object in moving this was to make sure that the meeting did not commit itself to any cut-and-dried scheme of health centres. They had to decide whether there should be erected all over the country a series of expensive buildings in which general practitioners had to work. It might be desirable that that should be done, but he did not think it desirable that the meeting should advocate such a concrete scheme, which would have to be paid for by some outside authority. No scheme of the kind should be approved until there had been a full experimental investigation. While they approved health centres in principle they objected to this suggestion in the report that the choice should be a statutory form of health centre. It would be better to have experimental health centres run by the doctors themselves. It was a form of activity which might well be undertaken by the B.M.A.

The Gateshead amendment was lost, and the original motion approving in broad outline the plan for health centres as set out in the report was carried.

ELECTIONS

In the course of the meeting the results of elections were announced as follows:

Chairman of Representative Body—Dr. Peter Macdonald.
Deputy Chairman—Dr. J. B. Miller.
Treasurer—Dr. J. W. Bone.

Twelve members of Council elected by grouped representatives:

Group (1) Dr. J. A. L. Vaughan Jones, (2) Prof. A H. Burgess, (3) Dr. H. W Pooler, (4) Dr. J. A. Brown, (5) Dr. W. E. Thomas, (6) Dr. E. A. Gregg, (7) Dr. F. Gray, (8) Dr. O C. Carter, (9) Dr. N. E. Waterfield, (10) Dr. J. Hunter, (11) Dr. J. G McCutcheon, (12) Dr. W. Lyle.

There were contests in Groups (6), (8), (9), and (11).

Eight members of Council elected by representatives voting together:

Mr. W. McAdam Eccles, Dr. F. M. Grant, Sir Kaye Le Fleming, Dame Louise McIlroy, Sir Ewen Maclean, Dr. J. C. Matthews, Dr. L. A. Parry, Major R. Scott Stevenson.

Elected by the Annual Representative Meeting to represent the R.A.M.C. on the Council, Major-General R. W. D. Leslie; and to represent the R.A.F.M.S., Air Marshal Sir Victor Richardson. (The Council was empowered to elect the representatives of the R.N.M.S. and the I.M.S.)

[Owing to paper restrictions and the necessary publication in our next issue of the annual report of the Insurance Acts Committee the debate on medical planning will be held over until Oct. 10]

ANNUAL GENERAL MEETING

The statutory annual general meeting of the Association was held on Wednesday, September 9, in the Great Hall of B.M.A. House in London. The chair was taken during the first part of the proceedings by the retiring President, Dr. Thomas Fraser of Aberdeen.

The Secretary read the notice convening the meeting.

The minutes of the annual general meeting held in London on September 11, 1941, which had been published in the *Journal*, were approved and signed by the President.

Induction of New President

Dr. Fraser then introduced his successor, Professor Sir Beckwith Whitehouse. He mentioned the circumstances of the Aberdeen Meeting of 1914, when he was hon. secretary, which was overshadowed by the outbreak of war, and the Aberdeen Meeting of 1939, when he was President, which was followed swiftly by the present war. His presidency, unduly prolonged, had not been a very happy period owing to the extra burden he had had to carry in his private practice with the calling up of his partner, and to the increasing difficulty of travel, which made participation in the central affairs of the Association a very trying matter. He was glad that a younger man, living nearer to London, was to follow him. He spoke of Sir Beckwith Whitehouse's distinguished career and his popularity in the Midlands, where he carried on his practice. He then vacated the chair in his favour and decorated him with the badge and chain of office.

Sir **BECKWITH WHITEHOUSE**, who was received with loud applause, said that he wished that this ceremony could have taken place in his city of Birmingham, and that the Annual Meeting might have been held there, as had been anticipated for 1940, with the customary pageantry and entertainment. It would be his constant duty to uphold the dignity of the profession and to look after the interests of the Association and the public it served.

The **SECRETARY** read a letter which he had received from Sir Beckwith Whitehouse that morning stating that as there was to be no entertaining at this year's Annual Meeting he had felt that he would like to send a cheque for 100 guineas to be credited to whatever fund was felt to be most deserving of their attention at the present day. (Applause.) The Secretary added that after consultation with the Chairman of Council and Treasurer it had been decided to place Sir Beckwith Whitehouse's generous donation to the credit of the Sir Charles Hastings Fund.

Election of Auditors

On the motion of Sir Beckwith Whitehouse, seconded by Dr. C. F. T. Scott, Messrs. Price, Waterhouse and Co. were reappointed the Association's auditors until the next annual meeting, at a fee of 300 guineas.

Vote of Thanks to Past President

The **CHAIRMAN OF COUNCIL** (Mr. H. S. Souttar) proposed a hearty vote of thanks to Dr. Fraser for his services to the Association. He referred to the splendid reception which was given to the Association at Aberdeen and to the many occasions since then on which the President, often with great difficulty and even personal discomfort, had come down to assist their deliberations in London.

The resolution was carried with loud applause.

President's Address

Sir **BECKWITH WHITEHOUSE** then proceeded to read a short Presidential Address, which is printed at page 357 of the *Journal*.

The **CHAIRMAN OF THE REPRESENTATIVE BODY** (Dr. H. G. Dain) proposed a vote of thanks to the President, who, he said, had offered many suggestions of great value, which would assist them in the consideration of the large issues they were at present debating.

This vote of thanks was also heartily accorded and the meeting terminated.

St. Dunstan's (wartime address: Church Stretton, Shropshire) is responsible for the hospital treatment and rehabilitation of members of the fighting Services, the Merchant Navy, and of the police, fire, and Civil Defence Services, who are blinded through the war. Civilians who are thus blinded receive treatment in an E.M.S. hospital to which an ophthalmic surgeon is attached. The National Institute for the Blind has undertaken the rehabilitation of blinded civilians, whose welfare in general is the responsibility of county and county borough councils. Hospitals in the Emergency Hospital Scheme should therefore notify the National Institute (224, Great Portland Street, London, W.1) before civilian blind are discharged; they should also notify the local authorities of the areas in which such persons propose to live (Ministry of Health Circular 2630).

Correspondence

General Practice and National Health

SIR,—One is always glad to find the importance of the work of the general practitioner appreciated in something other than vague terms by those in the position of Mr. Wilfrid Adams (*Supplement*, Aug. 29, p. 21). My object in writing is to thank him and to support some of his arguments and not to criticize, except in one minor point.

When I started practice, a long time ago, the abrupt change from hospital to private routine presented many difficulties, such as the many extra calls on time, the want of someone at hand to consult, equipment, and, worst of all, the want of beds and of nurses to carry out one's orders. Mr. Adams rightly says that the role of the general practitioner is early diagnosis and effective treatment. When the G.P. starts practice he has had no experience of the former, as nearly every patient he has seen in hospital has been suffering from a more or less established disease or disability, the earliest stages of which have to be found in the consulting room or in the homes of the people. And how is he to give effective treatment in many cases without the help of the hospital? He must often despair that he cannot, for want of bed, nurse, or equipment, give the treatment that he knows that his patient ought to have at times when it would be most effective; he acquires some of these requisites in time, but he is still too often in want of a bed both for cure and for diagnosis. In many areas there are to-day small local hospitals, though in some of these too many of the beds are occupied by patients under the care of members of the staff of the central hospital.

As to early diagnosis, I do not agree with Mr. Adams, if I read him rightly, when he objects to means of special investigation and treatment at the doctor's premises. Surely one of the advantages of doctors working in a group would be that one of them might carry out special lines of treatment, such as ultra-violet radiation, electrolysis, CO_2 snow, etc. Another might do urine testing, blood counts, and various microscopical investigations, all of which should be within the competence of any doctor who might choose to undertake them, and which are not only invaluable for early diagnosis and treatment but add greatly to the interest of one's work.

Mr. Adams appreciates the value of the family doctor's talks on health to his patients. I believe that these, given in the surgery or in the homes of the people, are the only sort of lectures that get at the right people and at the right time. For some years now these domiciliary talks have been given with excellent results by district nurses, as those can testify who have practised long enough to see the changes in the homes of the working classes. I believe such talks are of more value than all the official health lectures, because they have on each occasion a practical application and are given to those who cannot or will not attend formal lectures. If the nurse, why not the doctor?

May Mr. Adams's hope be fulfilled—that the general practitioner will take a share in the work of the M.O.H. but without too strict control; for as Lord Dawson has recently written, "Individualism will not flourish easily within the rigid boundaries of a State service." We know that authority, schools of medicine, and fashion all tend to make progress difficult.—I am, etc.,

Bath CHAS. E. S. FLEMMING.

The Absentee Doctor

SIR,—A regular feature of the correspondence on the future of medical practice has been the wish that no decision be taken till after the war, when serving practitioners may have an opportunity of expressing their opinion. Letters have appeared from doctors in the Forces deprecating any radical change, and looking forward to the time when they can return to conditions very similar to those they knew. One is tempted to think that these doctors have left their practices in care of partners or assistants, and that they confidently anticipate resuming control of lucrative practices after cessation of hostilities.

It might be well, however, to consider the position of those doctors who, working single-handed and trusting to the efficacy of the B.M.A. Protection of Practices Scheme, have closed their practices completely on enlistment. The scheme *has* prevented the irretrievable transfer *en bloc* of a panel to neighbouring practitioners; it *has* secured payment to an absentee doctor of a portion of his panel fees, though these steadily diminish every quarter; and, judging by the admonishing notices received periodically from the bureau, it *has* secured payment of a ridiculously inadequate sum representing private fees. Cessations from insurance and removals from the district ensure a steady diminution in the size of the absentee doctor's panel, and absolutely no provision has been made to maintain the numbers on his list. Theoretically it may be possible for an acting doctor to accept a new panel patient on behalf of an absentee practitioner, and to treat him provisionally, but I very much doubt if such acceptances have ever been made. The scheme allows for any patient accepted during the war to change to a doctor returning from the Forces, after the termination of hostilities, but one cannot believe that many will exercise this privilege. Failing any change in the system, therefore, the returning doctor can expect to find himself the possessor of a fragment of a practice, on which he may still owe a large sum of money.

This state of affairs should have been foreseen, and might have been prevented by various measures—e.g., the arbitrary allocation of a certain proportion of the new entrants or arrivals in a district to absentee doctors, the care of these persons being provisionally undertaken by the acting doctors. This would have avoided a precipitous decline in a doctor's list, and a steady diminution in the value of the quarterly payments. Whether it is too late to amend the scheme to rectify this injustice is a debatable point. In any case these circumstances should be borne in mind in the event of compensation being paid for practices; and in fairness to these men, and incidentally to those doctors who practise in devastated areas, the pre-war value of a practice should be that on which compensation should be paid. Such returning doctors will demand financial rehabilitation, and will resent being so handicapped in unrestricted competition with neighbours who have remained firmly established during the war years. They will no doubt welcome any scheme that provides security from financial embarrassment, and will not view with such distaste as has been exhibited by many, a State Medical Service.—I am, etc.,

London, N 15. LIONEL B. LIEBSTER.

Co-ordination or State Control?

SIR,—I note with interest a report in the *Daily Telegraph* of a meeting of the Association held in London on Sept. 9 from which the following sentence purports to be a quotation of one of the speakers—"Neither the people of this country nor the bulk of the medical profession desire to become regimented units of a system of bureaucratic control." How truly this sentiment is echoed by all classes of the community can be ascertained by discussions at any hour of the day or night, and it is to be hoped that we shall now see an end to the supine attitude of the profession which has taken it for granted that a State Medical Service is both desirable and inevitable.

It should be patent to any student of modern politics (by which I mean a system of governing the country) and of modern economics (by which I mean a system of book-keeping) that there are much simpler ways of providing the best medical service for the community than by the fascist method of State control. By all means let us have co-ordination which can best be carried out by the State, but let us remember that Great Britain is supposed to be a democratic country fighting for democratic principles, and that once the shackles of obsolete finance and autocratic government have been removed the problems which are so prominent to-day will disperse like the morning mist warmed by the rising sun. —I am, etc.,

W. SAYLE CREER,
Manchester. M Ch Orth., F.R C.S.

MEDICAL WAR RELIEF FUND

THIRTY-SEVENTH LIST

Amount previously acknowledged, £45,942 3s., and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Individual Subscriptions

£2 12s. 6d.—Dr. A. Whyte Castle, Glasgow (4th donation)

£2 2s.—Capt. N Bickford, R A M.C. (5th donation); Lieut -Col G. Birdwood, I.M S, Walmer; Dr. G. Vernon Bull, Sandhurst; Dr. A. McK. Fleming, Gibraltar (2nd donation).

£1 11s. 6d.—Capt G. Fitzgerald O'Connor, R.A M C (2nd donation)

£1 1s.—Major W. Happer, I.M S., and Mrs Happer (12th donation); Fl. Lieut H. J. Richardson, R A F V.R.

£1.—Dr. R S Munro, Northenden

£90 7s.—Lancaster L M.W C.—per Dr. George (amount already sent, £304) Dr. G. Geddes £5 5s (2nd donation); Dr L Mather £3 3s (2nd donation); Dr R T. Rankin £2 2s (2nd donation); Dr E. S Jackson £10 10s (2nd donation); Dr. W Graham £3 3s (2nd donation); Dr K E Thompson £10 10s; Drs Watterson, Hogarth, MacFadzean, Cliff, and Hodge £20 (2nd donation); Dr I. D Kitchin £5 5s; Dr R B Wilson £2 2s. (2nd donation); Dr. W B Boys-Stones £2 2s; Drs Howat, Howson, and Stewart £3 3s (2nd donation); Drs. Schofield, Schofield, and Taylor £10 10s (2nd donation); Dr. J. B. Reid £2 2s.; Dr. W. W. Moore McKinney £5 5s (2nd donation); Drs. Watterson and Nicholson £5 5s (2nd donation)

£25 4s.—East Grinstead and District Medical Society—per Dr. A C. Sommerville (amount already sent £23 2s); Dr. W. E. Wallis (2nd donation; Dr. W. H. Marshall (2nd donation); Dr. H B Shaw (2nd donation); Dr. C K. Thornton (2nd donation); Dr. A Orr-Ewing (2nd donation); Dr. R Stanley (2nd donation); Dr J H. M Frobisher (2nd donation), Dr. C R. Steel (2nd donation); Dr E G. Sibley (2nd donation); Dr. H. F Wilson (3rd donation); Dr. A. C Sommerville (2nd donation); Dr. B C. Morton Palmer.

£23 1s.—Doctors in the Isle of Man—per Dr. D. Pantin (amount already sent, £107 15s). Dr A R. McPherson £2 2s (4th donation); Dr L. Woods £5 5s (4th donation); Dr J. H. J. Stuart 10s (3rd donation); Dr R. Marshall 10s. (4th donation); Dr A. K. Soutar £1 1s (3rd donation); Dr. D. Pantin £5 5s (5th donation); Dr G. R. D. McGeagh £3 3s. (4th donation); Dr. E E. Brierley £1 1s (4th donation); Drs B and K Vernon £2 2s (4th donation); Dr. C S. Pantin £2 2s (4th donation)

£14 1s.—Members of Llanelly Medical Board (amount already sent, £12 12s).

Local Medical Aid and Panel Committees

£200.—East Sussex.

Total—£46,310 10s., and £100 3½% Conversion Stock, and £40 3% Defence Bonds

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G C. Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W C 1

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieut G. T Holroyd has been transferred to Emergency List (Substituted for the notification in the *London Gazette* dated July 7)

E Griffiths to be Surg Lieut

ROYAL NAVAL VOLUNTEER RESERVE

Prob Temp Surg Lieuts. J. Carrick, D A. H McNaught, F Hutchinson, R McF. Kirkpatrick, J W. Hannay, H Howard-Swaffield and B W. Davy to be Temp Surg. Lieuts.

ROYAL ARMY MEDICAL CORPS

Lieut -Col. C. McQueen, M C, retired pay, has reverted to the rank of Major at his own request whilst employed during the present emergency.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Temp Col (local Major-Gen) Sir Charles Gordon-Watson, K B.E., C V O, has relinquished his commission and is granted the honorary rank of Major-Gen

War Subs Capt A. F. F Shepherd has relinquished his commission on account of ill-health, and is granted the rank of Major

War Subs Capts W. N. Taylor, K. C S. Skene, and E. W Turner have relinquished their commissions on account of ill-health and are granted the rank of Capt.

Lieuts M. Sheehan, A H H Guilbride, C H Burridge, I W Monie and J T S Brown have relinquished their commissions on account of ill-health and retain their rank.

Dr. (relative rank War Subs Capt) K M. Mathews has relinquished her appointment of M O.

To be Lieuts.: R L. T Hill, J. Wylie, L. Tajkef, W. V. Bayne, J Booth, R. T Bowes, A J Cameron, J Carson, J. J B Connolly, G T. Cribb, R T Davies, C H. Devereux, J. R Dow, I O. Evans, P R. Evans, L W. Freeman, L. A. Gifford, J Gilchrist, R. Glenn, D Halpern, H. Harris, I J Harris, K. F. W Hinson, C. H Brown, J H. Hughes, R. R. Hughes, K C D. Jones, H T Knowles, I Leveson, W. H G M Ling, T McCarroll, A. H MacGeachy, D Malcolm, R. P Mattock, R A Morr, R Ormiston, A C. Parkinson, W H Parkinson, C. W Richards, J R Rickett, J. P. Senior, A. U Somerville, R. G. Taylor, G. K. Tutton, L. Whitten, A. I Guest.

WOMEN'S FORCES

EMPLOYED WITH THE R A M C

War Subs. Capt J M. Hudson has relinquished her commission.

The following M O s have been granted commissions in the rank of Lieut.: Jessie J H. Beattie, Sheila D M. Brown, Clara J. Fraser, Alice Yates, and Margaret M. Goudie (*correction*).

ROYAL AIR FORCE

Squad Ldr (Temp) C A. Cooper has been granted the rank of War Subs. Squad. Ldr

Mrs J G. E F. Miller has been promoted to the relative rank of War Subs Fl Lieut

AUXILIARY AIR FORCE

Squad. Ldr. (Temp) W D. Peock has been granted the rank of War Subs. Squad Ldr.

ROYAL AIR FORCE VOLUNTEER RESERVE

G. K. Cooper to be Fl Lieut. (Emergency).

Flying Officers B H O'Dowd, J. J Glynn, W L. Hardman, F. E Massie, J. B H McArthur, D C. Rawlins, R H Evans, K. S Mullard, H N G. Hudson, A. E McDonald, G A. D Lamb, F. W. Laurie, L. Clement, C M. Gregory, C. A N. Anderson, O Plowright, P. M. Peters, R. J. Campbell, H A. Wilson, W Sewell, G W. Bellis, J. L Connor, W. D. Roden, A M Fraser and H. L. Ross (*correction*) to be War Subs. Fl Lieuts

To be Flying Officers (Emergency): J D Broadbent, W. A Hamer, A. E. Howarth, J F Pelmore, and A. W P. Stone.

INDIAN MEDICAL SERVICE

Major G Nelly has retired on account of ill-health

Capt. E. C. Hicks to be Major.

EMERGENCY COMMISSIONS

L. W. A. Rose to be Lieut

COLONIAL MEDICAL SERVICE

The following appointments are announced: R A. Allen, M.B, Ch.B., and G A. Mott, M.B., B Ch, Medical Officers, Gold Coast; H. W. Forshaw, M B., Ch B, and J A. B. Nicholson, M B., Ch.B., Medical Officers, Nigeria; H N Reed, M B, B S., Medical Officer, Tanganyika Territory; J. E. O'N Gillespie, M D., Medical Officer, Trinidad; G. N. Samuel, M B., Ch B, Medical Officer, Sierra Leone; R H Georges, L R C S, L R.C P., District Medical Officer, Antigua, Leewards; M A W Roberts, M.B, B.Ch., Surgical Specialist, Nyasaland

POSTGRADUATE NEWS

A short course of lectures on common skin diseases will be held at St John's Hospital for Diseases of the Skin, 5, Lisle Street, W C, on Tuesdays, Sept 29 and Oct 6, 13, and 20, and Thursdays, Oct 1 and 8, at 4 30 p m The lectures are free and are open to medical officers of all the Allied Forces, graduates, and undergraduates Details will be announced weekly in the postgraduate diary column of the *Supplement*

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W—*Daily*, 10 a m. to 4 p m, Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations *Daily*, 1 30 p.m. Post-mortems *Tues*, 10 a m, Paediatric Clinic; 11 a m., Gynaecological Clinic. *Wed.*, 11.30 a m., Medical Conference. *Thurs*, 2 p m, Dermatological Clinic *Fri.*, 12 15 p m, Surgical Conference; 2 p m., Gynaecological Conference; 2 p m., Sterility Clinic.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*St Mary Islington Hospital:* Wed. 2 p.m, Final F R.C S Clinical Course *London Homoeopathic Hospital:* Wed, 5 30 p m., Final F.R C.S. Clinical Surgery Instruction. Sat (Oct 3), 2.30 p.m, Final F.R C S Clinical Teaching *National Hospital for Diseases of the Heart:* Tues. and Wed., 10 a.m., Out-patient Clinics

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 5, Lisle Street, W.C—*Tues*, 4 30 p m. Dr. H Corsi: Scabies and Parasitic Infections. *Thurs.*, 4 30 p.m. Dr. W Griffith Bullous Eruptions

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—*Wed.*, Prof. A. J Ballantyne: Pathology of the Retinal Veins *Thurs.*, Mr E. Wolff: Normal Histology of the Retina *Fri.*, Mr. Wolff: Pathological Histology of the Retina.

DIARY OF SOCIETIES & LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C—*Thurs.*, 3.30 p m Dr. Beatrice D. Pullinger: Experimental Tumours and Trauma

BIOCHEMICAL SOCIETY—At Department of Biochemistry, South Parks Road, Oxford, *Sat* (Sept. 26), 11 30 a m Communications.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTHS

FRESHMAN—On Sept 15, 1942, at The Green, Wingham, nr. Canterbury, to Tress, wife of Edgar Freshman, F R C S, a daughter.

LE VAY—On July 27, at Ripley, to Esther (*née* Wyndham), wife of Lt. H. Le Vay, R.A M C., a son (Michael John)

MCLAREN—On September 18, to Margaret, wife of Capt. G. N. McLaren, R.A.M.C., The Poplars, Neasham Road, Darlington, a son

The Ministry of Health states that some doctors are still using the old *National Formulary* which was superseded on December 1, 1941, by the *National War Formulary*. Since this not only causes inconvenience to patients and chemists, but also in many cases means a waste of drugs which are in limited supply, doctors are asked to cease using it, and to conform with the rule that no preparation should be prescribed by title alone unless that title appears in the *B.P.*, the *B.P.C.*, or the *National War Formulary*.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY OCTOBER 3 1942

British Medical Association

REPORT OF INSURANCE ACTS COMMITTEE, 1942

1. Five meetings of the full Insurance Acts Committee have been held during the past session. In the interval between meetings the work of the Committee has been conducted by an Executive Commitee which has met on six occasions.

Constitution of Committee

2. The constitution of the Committee has been changed by (*a*) an increase from 26 to 27 direct representatives of Local Medical and Panel Committees; (*b*) the elimination of representation of the Association of Local Government Medical Officers; and (*c*) the election of 6 members by the Annual Conference of Local Medical and Panel Committees. The procedure governing the election at the Annual Conference is set out in a new Standing Order which the Conference is being asked to approve.

Recommendation A.—That the following addition be made to the standing orders of the Conference:

> *Election of six members of the Insurance Acts Committee:* For the purpose of this election "Representative" shall be defined as the duly appointed representative of a panel committee, or, in his absence, the deputy duly appointed in his stead in attendance at the meeting.
>
> Nominations may be made only by representatives, and a representative may make not more than one nomination. Only practitioners actively engaged in National Health Insurance practice are eligible for nomination.
>
> Nominations must be handed in, on the prescribed form, before noon of the first day of the Annual Conference, the voting, if necessary, taking place during the afternoon session. Only appointed representatives or deputy representatives in attendance at the meeting are eligible to vote.
>
> The Insurance Acts Committee shall be empowered to fill casual vacancies occurring among the elected members.

Insurance Capitation Fee

3. The various resolutions passed at the Special Conference on July 31, 1941, were sent to the Ministry of Health, and have been noted for suitable action by the Committee at the appropriate time.

Wartime Bonus

4. Panel Committees are aware of the action taken by the Committee in submitting an application for a wartime bonus for insurance practitioners. The memorandum which formed the application was submitted to Panel Committees, and was subsequently revised by the Committee after considering their observations. It was then forwarded to the Committee's legal advisers for their comments on the substance of the memorandum and for their suggestions in regard to its presentation to the Ministry. Ultimately, the memorandum was forwarded to the Ministry substantially in the form in which it was prepared by the Committee (*Supplement*, July 4, 1942). On July 14 the Ministry replied as follows:

"The Minister of Health has had under consideration your letter of June 24 asking for a further increase in the capitation fee payable to insurance practitioners in order to compensate them for the increase which has taken place in the cost of living since the beginning of the war.

"In reply I am to refer the Insurance Acts Committee of the British Medical Association to previous correspondence on this matter, including your letter of May 15, 1941, in which it was stated that 'the Committee is prepared to withdraw this part of its claim until adjustments to meet the higher cost of living are made in the remuneration of others with comparable income.'

"It is still the policy of the Government that increases in remuneration to meet the increase in the cost of living should not be granted to classes of persons whose incomes are similar in amount to those of insurance practitioners, and the Minister regrets therefore that he is unable to accede to the Committee's request."

5. The Committee was profoundly dissatisfied with the Ministry's reply, and immediately asked for a meeting between the two parties with a view to amplifying the Committee's application. Such a meeting was arranged, and subsequently the following letter (dated Aug. 14) was received from the Ministry of Health.

Copy of Letter from Ministry

"I have now had an opportunity of putting very fully to the Minister the views expressed by you and your colleagues when you came to see me on July 23. It may be convenient if I set out here what I believe to be the chief points which you wished me to bring to his attention by way of supplementation of Dr. Anderson's letter of June 24. You stated very emphatically that insurance practitioners were increasingly dissatisfied with their position; that they had conceived themselves as partners with the Ministry in the promotion of a positive health policy; that instead of being treated as such they had been driven by successive actions of the Ministry into what was frankly described as an attitude of hostility to the Department, and that this deterioration of relations dated from the proceedings before the Arbitration Tribunal of 1937. It was said that not only the result of that arbitration but also the method of presentation of the Ministry's case before the tribunal had been resented by the profession. That resentment had been deepened by the action of the Ministry in refusing in 1941 to entertain an application for an increase in the capitation fee on the ground that it would require legislation. This ground of objection, it was alleged, was taken at a time when legislation was actually being drafted which not only permitted of the amount of the fee being raised, but introduced, without consultation with the profession, additional classes of the population into insurance.

"It was into this background that you set the claim of the insurance practitioners that they were entitled to more generous treatment, and the case was amplified by statements of the additional burdens of work placed upon them without any corresponding increase in their remuneration. Reference was made not only to the bonuses granted, with the approval of the Minister, by local authorities to their officers, including their medical officer, but also to the increases of remuneration secured by the industrial workers, including managerial staffs. You agreed that there was no accurate or statistical measure of the increased work of practitioners, and suggested that such validity as the prescription figures may have had as an index of work no longer obtained, since doctors, for various good reasons, partly of necessity and partly of choice, were inclined less and less to give prescriptions for minor ailments and more and more to rely on suitable advice. There were more of these minor ailments about, and some of your colleagues stated that their summer surgeries were now as frequented as their winter surgeries used to be. All this, it was suggested, indicated a need for a more generous approach by the Ministry to the capitation question than had hitherto been in evidence, and you made it clear that you did not wish the matter to be dealt with merely as one relating to a cost-of-living bonus.

"As I said, I have put your supplementary arguments, which I hope I have set out adequately, to the Minister, and he has given the most sympathetic consideration to the views of the deputation.

"In reply, I think I ought to deal first with certain matters which belong to the background of history to which you referred. As I tried to explain to the deputation, the method of proceeding by way of arbitration leads insensibly to an atmosphere of litigation which is not in the best interests, or to the liking, of either party, and we are agreed, I think, that this is one of general questions of procedure to which a great deal of thought must be given in relation to the future. Since I saw you I have taken the opportunity of re-reading the shorthand notes of the evidence given on behalf of the Department, and I am bound to say that I cannot find anything in the evidence beyond what was necessary to support the Department's case, which was, as you know, not that the insurance doctors were in any way deficient either in skill or in zeal, but that the progress of medical science since the last award had not in fact added to the burden of general practice but had had, if anything, the contrary effect.

"Coming to nearer matters, I found it necessary, as you know, to rebut the suggestion that the Ministry were unfair in their attitude in 1941. I think I ought to put it on record that at the date when the Committee's original application for an increase in the capitation fee was rejected, the question of immediate legislation was not, in fact, under consideration, and that as soon as legislation was decided upon negotiations were at once opened. Let me also clear up another point which seemed to be an occasion of affront to the deputation—namely, our approval of bonuses to local authority officers, including the M.O.H., with salaries over the current Civil Service bonus limit of £500. I hope I convinced the deputation that with certain exceptions the Government have no power to interfere with the salaries paid by local authorities to their officers, and that this element of freedom from central control is regarded, and rightly regarded, by local authorities as an important matter of principle. It is true that medical officers of health are in a special position in this matter, but after full consideration the view was taken here that it would be unfair to single them out and use the powers of the Department to exclude them from the benefit of a general policy adopted by a local authority for dealing with its staff. As I pointed out, the general Government policy of refusing to pay direct Exchequer grants in respect of any bonus to an officer in receipt of a salary over the Civil Service limit has been maintained.

"Turning now to the present claim of the Committee, perhaps I may put the position as follows. We had an award in 1937 of 9s. per insured person. Your Committee found this award unsatisfactory, but none the less it was and remains an award made by a competent tribunal after a long and searching inquiry. The war came with all its consequences to everybody. Practice expenses increased We have met these expenses and we have met any reasonable claim in respect of the new class brought into insurance. I believe we are agreed on that. What is left? You say the award was all wrong—that is, that the whole basis of the tribunal's consideration was wrong We do not and cannot admit that, but the Minister has promised a fresh basic inquiry as soon as conditions permit such an inquiry to be made. You agree, I understand, that the precise material for such an inquiry is not presently available. That way of solving this recurrent problem is barred. The 'service facts' which both of us would wish to present to an arbitrator on any question of 'basis' are unobtainable at the moment. Records have gone overboard and we are left with generalities Moreover, this absence of material on which to base a judgment does not merely negative the idea of an arbitration. In the absence of an arbitration the Minister in this matter is bound to hold the scales fairly between the profession and the body of contributors, employers, employees, and taxpayers who foot the bill, and he, no less than an arbitrator, must be satisfied that a case for an alteration of the fee has been fairly made out

"On the question of bonus I do not think it is in dispute that the Civil Service bonus is limited to those earning under £500 and that it is on a diminishing scale and is not, as in the last war, on a percentage basis.

"We should be the last to deny that insurance practitioners—and indeed the medical profession as a whole—are hard worked, chiefly, no doubt, owing to the demands of the fighting Services, but for a number of subsidiary reasons connected with war conditions But this is true of many other classes of the community, and the Minister and the Secretary of State for Scotland, whom he has consulted, feel it impossible to accept this as a ground for again reopening the award and going beyond the additional 9d. granted in 1941, which seems to them a fair return for the measurable additional practice costs occasioned by the war, and a recognition of the effect of the recent legislation.

"One further point occurs to me. We must not lose sight of the fact that large questions affecting the future of the medical profession are now emerging. The report of the Medical Planning Commission set up by your Association, when finally settled, and no doubt the report to be made by Sir William Beveridge, will bring these issues still more into the forefront; and the matters for discussion will doubtless cover the question of the remuneration of the profession in relation both to general and to hospital practice.

"I do not mention this consideration in any way as suggesting a departure from the promise already given of a fresh basic inquiry when conditions permit, but rather as an indication that circumstances may compel us all to consider a new method of approach. This, apart from anything said above, seems to suggest that in any case the moment is not opportune for raising the present issue now."

6. Being convinced that the Ministry's advisers had failed to appreciate the full effect of wartime conditions on insurance medical practice, an interview was sought and has taken place with Mr. Ernest Brown, the Minister of Health. The Minister has promised to give careful and sympathetic consideration to the views expressed to him, and as soon as his reply is received the Committee will submit to Panel Committees its views on the reply, and the course which the Annual Conference will be recommended to follow.

Consultation between the Government and Profession

7. Arising from the failure of the Government to consult the medical profession before announcing new legislation to introduce a new group into National Health Insurance, it was decided that a satisfactory assurance should be sought from the Minister of Health on the principle involved. The following expression of the Committee's views was conveyed to the Minister of Health:

"1. The action of the Minister of Health in announcing the Government's decision to increase the N.H.I. income limit, after consultation with other bodies but without prior consultation with the body representative of insurance practitioners, has been bitterly resented by panel committees and insurance practitioners throughout the country.

"2. The Committee seeks from the Minister a specific assurance that he will return to the precedent established in 1916 and consult the Insurance Acts Committee before any change in the N.H.I. Acts or the Regulations thereunder is introduced into Parliament"—

to which the following reply was received:

"The Minister has noted the two resolutions set out in your letter of February 19 and is prepared to give the assurance asked for in so far as any proposed changes in the National Health Insurance Acts or Regulations thereunder affect insurance medical practitioners. As you are no doubt aware, such changes are proposed from time to time which in no way affect medical practice."

Organization of Insurance Practitioners

8. The Committee is engaged in examining the machinery for the organization of insurance practitioners, and has appointed a special subcommittee with instructions to pay particular attention to the machinery for co-ordination between insurance practitioners and the Committee. The investigation will include a re-examination of the scheme for collective bargaining which has been in existence since 1917. Similar action is being taken in Scotland.

Group Organization

9. Great importance is attached to the formation of Group Standing Committees. Some Groups have had Standing Committees for many years, and have found them a helpful means of exchange of views between neighbouring Panel Committees. A Group Standing Committee gives the direct representative of the Group on the Insurance Acts Committee an opportunity of meeting representatives of his constituent committees and hearing their views on current matters of interest to insurance practitioners. The Insurance Acts Committee urges the Panel Committees in any Group in which a Group Standing Committee is not functioning to take immediate steps to form such a committee.

Propaganda

10. Panel Committees are aware of the Committee's association with the comprehensive scheme of propaganda undertaken by the B.M.A., which was gathering momentum when war was declared and which had for one of its principal objects the enlightenment of the public on the work being done by insurance practitioners. The scheme was terminated for various reasons associated with the war, and while a revival of propaganda on a large scale is impracticable until war ceases, the Committee is exploring the possibility of an early resumption of publicity on a modified scale.

Medical Planning Commission

11. The Interim Report of the Medical Planning Commission was referred to Local Medical and Panel Committees for their consideration and observations as an initial step towards the presentation to the Commission of the views of insurance practitioners generally. The Insurance Acts Committee has considered carefully the observations of the 64 Panel Committees which have replied. The recommendations to the Conference set out below represent substantially the majority views of these Committees, and with these views the Insurance Acts Committee is in agreement.

Recommendation B.—That the Conference accepts the broad definition of the objects of medical service:

(*a*) To provide a system of medical service directed towards the achievement of positive health, the prevention of disease, and the relief of sickness; and

(*b*) To render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional.

Recommendation C.—That free choice of doctor and patient should be an essential feature of any future service.

Recommendation D.—That the Conference is of opinion that group practice in some form is deserving of favourable consideration by the Medical Planning Commission.

Recommendation E. — That provision should be made by the Government only for persons compulsorily insured under the N.H.I. Acts, the dependants of such persons, and others of a like economic status.

12. The Committee is opposed to the establishment of a whole-time salaried

Government medical service, but at the same time it feels that something more than the mere extension of National Health Insurance to the dependants of wage-earners and others of like economic status, coupled with the enlargement of its scope by the inclusion of consultant and specialist services, should form the basis of the co-ordination and integration of health services of the future. The Committee has considered the plan in broad outline set out in the Medical Planning Commission's report and submits the following recommendations thereon:

Recommendation F.—That the Conference approves the general principle of the establishment of health centres.

Recommendation G.—That the Conference considers that all registered medical practitioners should have the right to take part in the service and, so far as possible, a choice of the area in which they will serve.

Recommendation H.—That the Conference is not in possession of sufficient information to enable it to express an opinion on the method of remunerating general practitioners for their services under the Commission's plan, and that the Medical Planning Commission be requested to give it further consideration.

Recommendation I.—That the Conference considers that the question of the method of remunerating consultants is a matter for the consultants to arrange.

Recommendation J.—That, subject to the foregoing decisions, the Conference is in favour of the co-ordination and integration of health services on the basis of the plan set out in broad outline in the draft interim report of the Medical Planning Commission.

Recommendation K.—That in view of the fact that the full adoption of the plan may be delayed for various reasons, the Conference considers that some interim changes should be made.

Recommendation L.—That the Conference is in favour of the proposals for immediate post-war application—namely: (1) the two-way extension of National Health Insurance to include (*a*) the dependants of wage-earners and others of like economic status within the current N.H.I. income limits, and (*b*) the provision of consultant and specialist services; (2) the establishment of experimental co-operative practice in some areas; (3) the creation of Regional Hospitals Councils with executive or advisory functions.

Limitation of Doctors' Lists

13. The Special Conference in July, 1941, expressed the view that in the event of the new class of entrants into insurance bringing the number on a doctor's list above the number allowed, such new entrants should not be taken into consideration in deciding whether the maximum had been reached. The Ministry of Health has issued an instruction to insurance committees which gives effect to the Conference's view.

Central Mileage Fund

14. The Central Mileage Fund is being increased by an amount which will take account of the entry into insurance of the new group of non-manual workers. The Ministry's first statement indicated that the increase would affect only the ordinary portion of the Fund, no mention being made of the reserved and special expenses portions. Eventually, however, the Ministry agreed to apply the increase to the entire Fund.

Dependants of Service Men

15. Despite repeated representations by the Association, the Government has persistently declined to provide medical benefit for the dependants of men in the armed Forces. It is the view of the Service Departments that the pay and allowances of serving men and their families are sufficient to provide medical treatment for dependants without Government assistance. The matter is being pressed upon the Government again.

Medical Records of Ex-Service Men

16. The Committee has noted for discussion with the Ministry of Health the present unsatisfactory position in regard to the availability of medical records of men discharged from the armed Forces on medical grounds.

Medical Benefit for War Workers in Hostels

17. In consultation with representatives of Panel Committees in the areas concerned, a plan was worked out for the provision of medical benefit for war workers in hostels situated in districts where the normal arrangements would be impracticable because of the distance between the hostel and the nearest doctors. The arrangements have included the appointment of a local doctor as a hostel medical adviser, with supervision of the sick-bay as a principal duty.

Election of Panel Committees

18. The Ministry of Health and Department of Health for Scotland were asked to make provision for the resumption of the election of the Panel Committee in any area in which an election was desired by the Panel Committee, and gave an undertaking that sympathetic consideration would be given to any such application by a Panel Committee.

Medical Benefit for Juveniles

19. The Committee has raised with the Ministry of Health the position of juveniles who, while still at school, are employed during the school holidays and thus become insured as juvenile contributors and remain entitled to medical benefit until they are 16½ years of age (if still at school) or until they become adult insured persons at 16. The Ministry states that legislation would be required to exclude them from insurance, and there are certain difficulties which preclude the possibility of introducing such legislation. It is stated that the liability of an employer to pay contributions in respect of an employee must necessarily be capable of being determined week by week during the course of the employment, and that it would be extremely difficult, if not impossible, to determine with precision whether a juvenile would in fact leave the labour market and return to school at the end of the holiday period. The position in regard to payments into the Central Practitioners Fund for these juveniles is somewhat obscure, and the Committee is seeking further information.

National War Formulary

20. The *National War Formulary*, compiled by a special committee (including representatives of the Insurance Acts Committee) appointed by the Minister of Health, came into operation for National Health Insurance purposes on December 1, 1941. Insurance practitioners are asked to use this new *Formulary* and to refrain from using the peacetime *National Formulary*.

Medical Benefit for Seamen

21. A seaman on coastal service sometimes experiences difficulty when he requires treatment at a port of call because it has been necessary for him to leave his medical card with a doctor when obtaining treatment at a previous port of call. It has been suggested to the Ministry of Health that the difficulty would be overcome by the issue of "travellers' vouchers."

Application for Medical Card

22. It was suggested to the Ministry of Health that it would be helpful to the clerk to an insurance committee in identifying an application for a medical card if the form of application (Form Med 50) contained a space for the name of the employer. Ultimately it was agreed that the Committee's object would be secured by extending Note 1 at the foot of the form by the addition of the words: "Otherwise enclose your current contribution card or a certificate of employment from your employer or other evidence of insurable employment when sending this application to the insurance committee."

Pension and Insurance Scheme

23. In 1932 the Insurance Acts Committee negotiated with three insurance companies the "Pension and Insurance Scheme for Insurance Practitioners." The agreement with the companies, which was for a period of 10 years expiring on December 8, 1942, did not exclude war risks. Directly after the outbreak of war the companies pressed for the insertion of a war clause in the policies providing that in the event of the death of the assured being due directly or indirectly to enemy action the amount payable would be limited to a sum representing the surrender option of the policy. The companies' proposal was resisted, and after prolonged negotiations agreement was reached on the special conditions to be included in the new policies. The conditions provide that all practitioners who are killed by enemy action while serving in H.M. Forces, excluding members of the Home Guard as at present constituted, shall be excluded from the full benefits of the scheme: and that all other practitioners (including members of the Home Guard) who are killed by enemy action in the United Kingdom shall be covered by the full benefits of the scheme. The Committee again draws attention to the attractive nature of this scheme and the exceptional terms available only until the present agreement expires on December 8, 1942.

National Insurance Defence Trust

24. The Balance Sheet and Statement of Expenditure and Income of the Trust for the year ending December 31, 1941, is being sent to every Panel Committee.

25. Two of the five practitioners receiving financial assistance from the Trust under the terms of Minute 30 of the 1938 Annual Conference have died. The Trustees decided, as from January 1, 1942, to increase by £40 per annum the existing grant of £200 per annum to each of the remaining three annuitants, to meet increased costs due to wartime conditions.

SCOTLAND

This particular section deals with matters which are of a purely domestic Scottish nature and which have not been referred to in the preceding paragraphs, or upon which action in England and Wales differs from that taken in Scotland

Chairman and Deputy Chairman

26. Dr. J. F. Lambie (Glasgow) and Dr. A. F. Wilkie Millar (Edinburgh) were reappointed Chairman and Deputy Chairman for the session 1941-2.

Meetings of the Subcommittee

27. Three meetings of the Subcommittee and one meeting of the Rural Practitioners' Subcommittee have been held.

Scottish Representation on I.A.C.

28. It has been agreed that direct representation of Scotland on the parent Committee shall be on a territorial basis, and that Scotland as a whole shall have 4 direct representatives instead of 3. Scotland has been divided into 4 subgroups: (1) South-East Scotland (including Fife, Clackmannan, and Kinross); (2) North of the Tay; (3) City of Glasgow; (4) South-West Scotland.

Scottish Mileage Fund

29. Agreement with the Department of Health for Scotland has been reached on an increase in the Fund from £44,675 to £49,366, plus an additional sum in respect of the new group of non-manual workers. The latter increase is provisionally assessed at 2%.

Temporary Residents from Clydebank

30. A satisfactory settlement has been reached in regard to the abnormal temporary resident payments for Clydebank insured persons following the severe air raids in that area in 1941.

Services for War Workers

31. Following the receipt of reports of the value of the experimental scheme in the area of the Clyde basin, which affords facilities for the early diagnosis and treatment of illness or unfitness occurring in war workers, doctors are being advised to ensure that their patients receive the full benefits of the scheme.

PROCEEDINGS OF COUNCIL

The first meeting of the new Council of the British Medical Association was held at the conclusion of the Annual Representative Meeting on Sept. 10. Dr. Peter Macdonald proposed the re-election of Mr. H. S. Souttar to the chair for one year, and this was seconded by Mr. McAdam Eccles and carried unanimously and with acclamation. The Chairman thanked the members for their confidence and referred to the large amount of quiet work in the background which had been taking place during the past three years. He also welcomed to the Council the new members, of whom there were an unusual number.

The Council proceeded to the election of committees. The Secretary announced that conversations had taken place with the British Council concerning the allocation of a certain part of the Association's premises for the use of medical members of the Allied Forces at present in this country. A proposal has been made that the Garden Court Wing, not yet completed, should be used for this purpose. The Office Committee had considered this proposal and had made an offer to the British Council that if they could obtain authority for the wing to be completed its use would be given, free of charge, for the purpose requested. The premises were in a convenient situation, they were attached to the House of the Association, and the visitors would have the facilities of the Association library and possibly the lounge. Before the plans came to fruition a meeting of the medical heads of the Allied Forces would take place in order that their wishes might be considered. It was a gesture which the Association would like to make. The Treasurer expressed his agreement with the proposal, though he thought the ultimate cost would be about £5,000. The proposal was cordially approved by the Council.

Other routine business was transacted.

PROPOSED NORTH BEDFORDSHIRE AND SOUTH BEDFORDSHIRE DIVISIONS

Notice is hereby given by the Council of the Association to all concerned of the following proposal made by the Council of the Bedfordshire Branch, that the area of the Branch be divided into two Divisions to be known respectively as the North Bedfordshire and South Bedfordshire Divisions, with areas as follows:

North Bedfordshire: Municipal Borough of Bedford; Urban Districts of Ampthill, Biggleswade, Kempston, and Sandy; Rural Districts of Ampthill, Bedford, and Biggleswade.

South Bedfordshire: Municipal Boroughs of Dunstable and Luton; Urban District of Leighton Buzzard; Rural District of Luton.

Any member affected by the proposal and objecting thereto is requested to write to me by October 31, 1942, stating the objection and the ground therefor.

G. C. Anderson,
Secretary.

Sept 24, 1942.

Branch and Division Meetings to be Held

Shropshire and Mid-Wales Branch —At Royal Salop Infirmary, Tues., Oct. 6, 3 30 p m. Annual general meeting All medical practitioners in area of Branch are invited to attend.

All "R" practitioners in "A" posts at Oct 1 who have held those posts for 3 months or longer are to be recruited immediately, but no hospital is to be asked to give up more than 50% of its holders of such posts. This decision, which follows a recommendation of the Medical Personnel (Priority) Committee, has been conveyed to hospitals by the Ministry of Health in Circular 2692. Preliminary recruitment notices are being sent by the Central Medical War Committee to all doctors affected who have not been rejected by the R.A.M.C., but if the number receiving notices at any one hospital exceeds 50% of the total "A" posts occupied then the hospital should notify the Central Medical War Committee at once of those doctors it wishes to retain. In view of the urgent Service demands holders of "A" posts may not make representations to the Central Medical War Committee, although they retain their right of appeal on grounds of hardship or conscience. The circular also states that the committee will not be able to consider any increases in establishment or any up-grading within an establishment until further notice. "R" practitioners not affected by these latest arrangements will continue to be recruited at the end of 6 months in their present posts as set out in Circular 2660.

H.M. Forces Appointments

ARMY

The following Consultants, Temp Cols (local Brigs.), have been granted the local rank of Major-Gen.: A. W. Stott and C. M Page, D S.O

Col. E. B Allnutt, M C, late R.A M.C, having attained the age for retirement, is retained on the Active List supernumerary to the establishment.

Lieut-Col. (Temp. Col)- F. G. Flood, M C, from R.A.M.C., to be Col.

Lieut.-Col T J Mitchell, D S O, R A.M C, retired pay, is granted the rank of Col on ceasing to be employed.

ROYAL ARMY MEDICAL CORPS

Major T E. B Beatty to be Lieut -Col

TERRITORIAL ARMY

Royal Army Medical Corps

War Subs Capt. M. K Mellett has relinquished his commission on account of ill-health, and is granted the rank of Capt

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POSTGRADUATE NEWS

A course of lectures, open to all medical practitioners without fee, begins to-day (Friday, Oct. 2), at 4 p m, at the Royal National Throat, Nose and Ear Hospital, Gray's Inn Road, W C, when Mr. G H Howells speaks on "Ethmoiditis" The course will be continued at the same time on Oct 16 and 30, Nov 13 and 27, Dec. 11, Jan 8 and 22, Feb 5 and 19, and March 5 and 19 - Details will appear in the postgraduate diary column of the *Supplement* of the appropriate weeks.

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W —*Daily,* 10 a m to 4 p m, Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations *Daily,* 1 30 p m, Post-mortems. *Mon*, Course on Surgical Care of the Soldier in Training begins *Tues.,* 10 a m, Paediatric Clinic; 11 a m, Gynaecological Clinic. *Wed*, 11 30 a.m, Medical Conference; 2 p.m., Carbohydrate Metabolism and Diabetes *Thurs*, 2 p m, Dermatological Clinics *Fri.* 12 15 p m, Surgical Conference; 2 p m, Gynaecological Conference; 2 p m, Sterility Clinic

Fellowship of Medicine, 1, Wimpole Street, W — *Royal Cancer Hospital* 3 p.m. and 4 30 p m, Anaesthetic course Lectures, practical demonstrations at various London Hospitals. *London Homoeopathic Hospital:* Wed, Final F.R.C S. Clinical Surgery Instruction. *Wimpole Street, W.* · Mon and Thurs 8 p m, The Theory of Physiology Lectures suitable for F R C.S, M R.C.P., and D A. candidates *National Hospital for Diseases of the Heart*. Tues and Wed., 10 a m Out-patient clinics

London School of Dermatology, 5, Lisle Street, W C —*Tues* 4 30 p m Dr R T Brain. Ringworm Infections. *Thurs*, 4.30 p m. Dr J. E M Wigley: General Principles of Treatment

DIARY OF SOCIETIES & LECTURES

Royal College of Surgeons of England, Lincoln's Inn Fields, W C —*Thurs.*, 3 30 p.m Dr R J Ludford. Malignant Growth in Tissue Cultures

Chadwick Trust —At 26, Portland Place, W, *Tues*, 2 30 p m Sir Leonard Hill, F R S · The Interrelation of Clothing and Shortage of Fuel in Matters of Health

Socialist Medical Association.—At Conway Hall, Red Lion Square, W C, *Wed*, 5 30 p m Prof J. A. Ryle · Social Medicine

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BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

BIRTHS

Morse —On Sept 19, 1942, at Pendean Nursing Home, Midhurst, to Hilda (*née* Morgan), wife of Dr. Philip W Morse, M R C P., a son.

Reid —On Sept 23, 1942, at the Seabourne Nursing Home, Bournemouth, to Joan (*née* Jefferson), wife of R. Hall Reid, Esq., M B, Ch.B, a daughter (stillborn)

MARRIAGE

Hyde—Cox.—On Sept. 18, 1942, at Milverton, Somerset, Ernest William Hyde, M B., B Chir., M.R.C.S, L R.C P., to Vera May Cox.

DEATH

McCully —On Sept. 17, 1942, at 51, New North Road, Huddersfield, Andrew Lowry McCully, M B., Ch.B.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY OCTOBER 10 1942

ANNUAL REPRESENTATIVE MEETING

Wednesday, Sept. 9 (*continued*)

REPORT OF MEDICAL PLANNING COMMISSION

Following upon the debate in which the Representative Body approved in broad outline the proposals relating to health centres in the draft report of the Medical Planning Commission, several other matters which came under Question 6 were briefly discussed. A motion by Fife that the proposals for the unification of hospitals under a regional body be approved, providing unification was confined to general hospitals and that special hospitals were excluded, was opposed by several members. Mr. H. J. McCurrich (Brighton) said that to leave the special hospitals in splendid isolation was against the whole tendency of the measures already approved. Dr. F. M. Bodman (Bristol) said that such a proviso would undo work already done. In his area a divisional council had been set up on which all hospitals, general and special, were represented. The Fife motion was rejected.

Appointment and Pay of G.P.s

Dr. W. Yeoman (Harrogate) moved non-approval of the proposals in the report relating to the appointment of practitioners to a national service. The proposals seemed to envisage some central body which would allocate practitioners, so that all freedom of choice as to where he would live and work would be lost to the individual. This amendment was withdrawn in favour of a different form of words moved by Dr. O. C. Carter (Bournemouth): "That all registered medical practitioners should have the right to take part in the service, and as far as possible should have the choice of area in which they would serve," and this was carried.

Dr. J. C. Arthur (Gateshead) moved disapproval of the proposals relating to remuneration of general practitioners. His constituents felt that payment should be on a *per caput* basis pure and simple. The proposal favoured the lazy doctor. At the same time he agreed that in some areas, such as the western islands of Scotland, the capitation basis would not be a fair one. Dr. S. Wand (Birmingham) said that the practitioner would be required to attend at the centre quite apart from whether he had anyone on his list or not. Certain local health authority work to be done by the practitioners at the centre was also in view. Dr. A. T. Rogers (Bromley) said that a purely capitation basis of payment would be grossly unfair to doctors in scattered rural areas, though the basic salary, he thought, should vary considerably throughout the country. The Gateshead amendment was altered to read " . . . be referred back to the Commission," instead of " be not approved," and in this form it was carried.

Dr. J. A. Pridham (Dorset) moved that agreement to any scheme for the regulation of medical practice should be subject to equitable pay being obtained and also to an adequate and agreed compensation being given for the capital value of practices. He hoped that some such resolution as this would be put up every time until a satisfactory scheme came into existence. Prof. Picken suggested that this condition would apply to the whole scheme and was more properly covered by a later motion by Cardiff that any resolutions agreed to were subject to the conditions of service and system of management being satisfactory to the profession. The Dorset motion was carried.

Remuneration of Consultants

Dr. Arthur moved non-approval of the proposals relating to the remuneration of consultants—namely, that consultants should work on a salaried basis. Senior consultants, at any rate, should be in a position to undertake private work on the basis of payment for services. The Chairman said that the proposals in the report were arrived at by a committee consisting almost entirely of consultants. Mr. McCurrich said that consulting services would be very difficult to work entirely on a capitation basis. A basic salary was thought to be an advantage; the more senior members should be allowed to do private consulting practice. Dr. E. Bertram Smith (Notts) said that in discussions in his area the inclusion of a part-time consulting and specialist service had been recommended, with payment for the domiciliary part of the service on an itemized basis. Dr. C. W. Somerville (Lothians) said that in the country consultants spent a long time and saw few patients. A man might have to travel from 10 to 50 miles to see one patient. A salary basis was therefore the more acceptable. Mr. Mark Fraser (Cumberland) said that it was generally agreed by the consultants in his area that a salary basis for the younger consultants should be allowed if the best type of man was to be obtained. Dr. H. E. Offord (Reigate) said that a part-time salaried basis, such as many of them had been working on in the E.M.S. during the last two years, was preferable. The Chairman thought it a little early in the development of medical services to lay down hard-and-fast lines.

It was agreed that the proposals relating to payment of consultants be referred back to the Commission.

An amendment that complete indemnification of every general practitioner for the loss of his practice should be arranged was moved by Dr. D. J. Wilkie (Lancaster), who said that doctors in his area felt that any loss of capital which had been sunk in their practice should be completely repaid to them and made available immediately. Indemnification was more useful on many occasions than the prospect of a pension either for oneself or one's dependants. The amendment was carried, as was another by Aberdeen, that in the plan as set out in the report adequate financial provision should be made for research, and one by West Suffolk, that dental and ancillary services should be included in the plan.

Character of Central Administration

The Chairman said that it would be useful to have a brief debate on the character of the central administration of the proposed services, whether it should be a Government Department or a corporate body, but he anticipated that at the end the meeting would refer back this part of the report to the Commission for further elaboration.

Dr. J. H. Stephen (Aberdeen) moved: "That the central machinery of the medical service should be a Government Department." The introduction of a corporation would be difficult and seemed to entail something like a totalitarian system. Dr. C. I. Schiff (City of London) said it was easy to see how, in the belief that democratic procedure was inadequate to cope with the problems involved, corporations might be set up to deal with matters medical, with matters legal, and indeed with various sides of professional and social life. Certain problems would be common to all these corporations, which would interlink to form central bodies, and in a comparatively short time the authority of Parliament would be superseded. The method of government by corporate bodies was alien to the tradition of this country, undemocratic, and based on a weak-kneed imitation of Italian models. Dr. D. F. Whitaker (Guildford) could see no reason why a corporate body should be undemocratic. The medical profession was registered by a corporate body, formed by the appointment of suitable members. The work of co-ordinating the health of the nation was a matter primarily for medical people, although, as some of the money must come from public sources, the Government must be represented. Dr. H. S. Pasmore (Kensington) said that his Division considered a Government Department the method of choice, assisted by a central medical services board with executive functions and having adequate medical representation The work done by various corporate bodies such as the B.B.C. and the L.P.T.B. was recognized, but such a body would not be ideal for the administration of medical services for three reasons: (1) the approved societies would be entitled to full representation on the controlling board; (2) the powers of such a board would be strictly limited by charter owing to the monopolistic rights granted to it, and a new charter would be needed for any developments outside the scope of the original, a necessity which might hinder the development of medical services, particularly into the fields of education and housing; (3) the public would be unable to exert any large influence on the corporation's decisions.

Dr. F. E. Gould (Birmingham) said that his Division, while not quite clear what it wanted, knew that it did not want the Ministry of Health as at present constituted. Dr. R. W. Rae (North Staffs) said that the point of importance was not a corporate body versus some other form, but to ensure adequate medical representation in the control. Dr. R. W. McConnel (Bucks) suggested that control should be centred in a National Board of Health consisting of laymen appointed by Parliament or the Privy Council and elected members who would be chairmen of consultative councils consisting of members of the medical profession elected by their fellows for a term of years.

Dr. Alan Wigfield (East Herts) said that his Division would welcome the establishment of a central board with executive functions, to which should be transferred the health functions now discharged by all Government Departments. The board should be indirectly elected—i.e., by nomination of the Prime Minister—it should not be large, and its members should be appointed for a term of years. All policy on medical matters must be long-term and pursued despite changes of Government. But to formulate policy was not enough, there must be driving force; therefore a purely advisory body might, through lack of responsibility for action, become negative and cynical through frustration. The body must be better informed than any politically elected body could be. Its members should be men of the first quality; membership should be a comparatively rare distinction and therefore likely to attract the best people. A substantial proportion of the members should be medical men; this would follow from an unrestricted choice of the most suitable persons, and therefore his Division did not think it desirable to press for a statutory proportion of medical members. Dr. F. M. Grant (South Shields) said that the Ministry of Health had not been conspicuously successful in administering national health insurance, at least from the point of view of the medical profession, and to continue to work an even larger scheme under the same authority seemed to him folly.

The motion that the central machinery of the medical service should be a Government Department was rejected by a majority of about three or four to one, and a further motion by Aldershot that the machinery should take the form of a corporate body was carried in about the same proportion. After some discussion as to procedure the following further motion was carried:

> That this meeting, having strongly expressed its preference for the administration to be carried out by a corporate body, refers the matter for further consideration to the Commission.

On the question of local machinery a motion that the local machinery should take the form of regional councils was met by an amendment by Tunbridge Wells, which was carried, as follows:

> That whatever body is set up to deal with decentralized health administration should be required by statute to delegate the administration of hospitals and other medical, health, and ancillary services to a committee or committees, such committees to be composed of (1) non-medical members of knowledge and experience in health matters and nominated on a non-party political basis, and (2) medical men in adequate numbers, such medical men to be elected by and from the medical men in the area.

It was also agreed that the medical advisory machinery should contain adequate general practitioner representation, and that any medical scheme should be divorced from the control of the approved societies.

Interim Changes

The meeting then turned to discuss possible interim changes which might be made in view of the likelihood that the adoption of the entire plan would be delayed. Dr. Wilkie moved that no changes be made until a complete scheme could be introduced. Changed conditions might force changes upon them, but it should be made clear that these must be part of and in accordance with the general plan; any which did not harmonize completely with the plan should be resisted, and if they were required to submit to them they should do so only under protest, with a clear intimation that when conditions changed they would scrap them without hesitation if they hampered the services they wanted to undertake. Mr. McCurrich also held that the whole scheme should be approved before any part of it could be brought into operation, though he did not want to see purely experimental schemes excluded.

Dr. E. C. Dawson (Derby) said that the meeting would be defeating its own objects by passing such a motion. They had already agreed that medical administration should proceed by evolution. It would be a pity if they were bound not to take any step forward in the right direction until the complete scheme was available. Dr. Farquharson (Bucks) thought that experimental co-operative practice might be accepted in some areas immediately. It would afford an excellent protection to absent members. By amalgamation of practices their interests would be preserved in a much better way than under the Protection of Practices Scheme. Dr. J. B. Miller said that all that the meeting was being asked now to approve in the form of immediate proposals was the "General Medical Service Scheme for the Nation" which the Association had reaffirmed in 1938. This proposed the extension of medical benefit to insured persons' dependants and others of like economic status and the enlargement of the scope of the service to include consultant and specialist provision.

Prof. R. M. F. Picken moved as an amendment:

> That before it is possible to bring the complete plan into operation some interim changes may have to be made, but these should be so designed as to fit into the plan as now evolving

He said that it might be essential, if the war went on long enough, to carry out some rather serious reorganization of all forms of medical practice before the end of hostilities, and his amendment would enable the Association in emergency to deal with the situation if it did arise. The amendment was carried.

Two-way Extension of National Health Insurance

The Chairman moved formally: "That proposals for immediate post-war application should include the two-way extension of National Health Insurance—namely, to include dependants and others of like economic status (within the current N.H.I. income limits) and the provision of consultant and specialist services." To this there was an amendment by Cleveland to substitute for the reference to current income limits the words "within the income limit of £250 per annum." The Chairman, after replying to questions, said he had discovered that the income limit of £250 was definitely mentioned in the "General Medical Service for the Nation," which was Association policy, and therefore he allowed Cleveland to move the amendment. Eventually it was agreed to proceed to the next business, which meant, said the Chairman, that the policy of the Association remained just where it was.

Experimental Co-operative Practice

The next motion, in the name of 22 Divisions, was that the proposals for immediate post-war application should include the establishment of experimental co-operative practice in some areas. Dr W. A. Kirkpatrick (Cleveland) was anxious that the word "voluntary" should be inserted here. The Chairman said that the Commission had voluntary arrangements in mind in framing the question.

Dr. R. Prosper Liston (Tunbridge Wells) moved as an amendment:

> That the establishment of experimental co-operative practice in some areas should be attempted, with certain financial safeguards, for those willing to make the experiment. Such safeguards should cover two eventualities: (1) if any drop in income occurs as a result of the experiment, and (2) if co-operative practice becomes a national feature, then any loss of income or initial expenses should be reimbursed by the body asking the doctors to undertake this experiment.

Dr. J. A. Brown (Birmingham) said that in a proposal which was taking effect in his city for experimental co-operative practice, both the safeguards mentioned had been taken into account. The Tunbridge Wells amendment was carried.

The last of the questions set out in Section V was answered by the passing of a resolution, without discussion, that the proposals for immediate post-war application should include the creation of regional hospital councils with executive or advisory functions. The Chairman said that the Commission thought it too early to say whether the functions should be the one or the other, and he hoped the meeting would not insist on a decision on that point.

Thursday, Sept. 10

The Chairman (Dr. Dain) said that there remained a large number of other motions sent in by Divisions and relating to various matters which it was desired to bring to the Commission's attention.

Health Legislation

Sir Kaye Le Fleming (Bournemouth), before moving the first of these, said how much they all appreciated the labours of the Commission. He spoke as one who knew what such labours meant. He also commented on the excellent draughtsmanship of the report. The Association should be proud of having a staff which, while heavily overworked in other ways, was capable of producing such a document. (Applause.) He then went on to ask the meeting to express the opinion that further consideration and criticism should be given to the machinery for introducing health legislation, a matter not mentioned in the report. The health legislation contemplated in these proposals would be introduced by the Minister of Health, and a new Minister of Health made his appearance, on the average, every eighteen months or two years. He came into office knowing nothing whatever about health matters; his appointment was made largely on political grounds. Politics and medicine did not go very well together. If the Minister was ambitious to introduce health legislation he must take advice, probably that of the Chief Medical Officer of the Ministry. The Ministry was a very useful but overworked body, largely concerned with administrative and preventive medicine and entirely out of touch with medicine on its practising side. Legislation then had to pass through the House of Commons, which had never shown any great fondness for the medical profession. There were medical M.P.s, but, in the nature of things, they represented constituencies, not the members of their profession. The whole machine for health legislation was cumbersome and ill adapted for its purpose.

The CHAIRMAN OF COUNCIL (Mr. Souttar) said that those who had any knowledge or experience of health legislation must agree with what Sir Kaye Le Fleming had said. The improvement of the position would be most carefully considered by the Commission when it came to the point at which they wanted to get something done; up to now they had been considering what the views of the medical profession should be. He believed that the present Minister of Health (Mr. Ernest Brown) took a great personal interest in the future development of medical practice, apart altogether from the political aspect, and he had reason to suppose that he was likely to appoint a really important and experienced body of medical men to advise him on what should be done with the future report of the Commission. Dr. J. B. MILLER said that the same applied to the Secretary of State for Scotland (Mr. T. Johnston), who was responsible for health affairs north of the Tweed. He was carrying through by his own forceful personality a scheme for the early detection of pulmonary tuberculosis among munition workers aged 15 to 25 in the West of Scotland. He would not say that Mr. Johnston was more sympathetic towards the medical profession than other Ministers, but he certainly had a knowledge of health affairs. The speaker also drew attention to paras. 52 and 53 of the interim report, in which the suggestion was made that whatever the form of central administration a central medical advisory committee should be appointed on a statutory basis. Dr. W. S. MACDONALD (Leeds) said that the problem the profession had to face was unity in itself. which unity was of great bargaining power when dealing with the Government.

The meeting adopted the motion asking the Commission to give further consideration and criticism to the machinery for introducing health legislation.

Consultation with the Profession

The CHAIRMAN said that a number of motions under this heading were put forward under a misapprehension. The report now before the Representative Body was not one under which any action or change could take place; it was an interim one which, having been considered, would now be the subject of further consideration by the Commission. His personal view was that this was not the time to say when the changes should or should not take place; at the moment no changes were agreed. In reply to a representative he said that he could give complete assurance that the opportunity would be given for considering more complete proposals.

The CHAIRMAN OF COUNCIL said that the Commission had no authority to bring about any changes. Its job was to set out an ordered account of what it thought might be accepted by the various sections of the profession. The findings of the Representative Body and of other bodies connected with the Commission would be considered at the next meeting. The Commission would then take a long time to formulate what he hoped would be a fairly complete report, which would again be placed before the Representative Body. The whole object of this procedure was that the medical profession should be enabled to make up its mind as to what it wanted. When that was done the Minister would probably ask for the appointment of a Royal Commission to investigate the whole matter. Many others besides medical men were concerned; indeed, the entire public. There need be no fear that anything would be done without full consultation.

Two representatives complained that extracts of the report were published in the lay press on June 19 before members had received the *Journal* dated June 20 in which the report appeared. The CHAIRMAN explained the circumstances in which the *Journal* was available for quotation by the lay press immediately on its publication. This country had a free Press, which the Association invited to its meetings, leaving to the judgment of the journalists the selection of matters of interest to their readers.

Conditions of Service

Motions by Cardiff insisting that the conditions of service should be the same for men and women, with equal opportunity of promotion or of gaining experience (which the Chairman said was already the policy of the Association), and that any resolutions agreed to were subject to the conditions of service and system of management being satisfactory to the profession, were carried, as was also a motion by West Suffolk, that provision should be made in the scheme to secure that the control of practices by outside financial interests was impossible.

Dr. E. H. RICHARDS (N. Staffordshire) had a long motion calling for the preservation of freedom in clinical medicine, resistance to restriction by financial interest and lay control, and the holding of executive posts in the Ministry of Health by medical practitioners (the present administration of the Ministry by laymen was described as "pernicious"). In the same resolution the friendly societies were declared to have outlived their usefulness, and it was stated that their multiplicity was wasteful and their administration of National Health Insurance funds was extravagant and not uniform. The mover said that his Division considered that the restriction of medical practice by financial interests was the main root cause of the present troubles. The word "pernicious" in regard to the present administration of the Ministry of Health was used deliberately by his Division, and he wondered whether anyone having heard Sir Kaye Le Fleming that morning would quarrel with that word. So far as the approved societies were concerned, figures could be easily given to show that their multiplicity was wasteful. There were 6,000 approved societies throughout the country. Two of them alone (the Prudential and the National Amalgamated) had almost 6 million insured persons as members, but 440 societies had fewer than 1,000 members and 34 had fewer than 100. In Glasgow among the societies functioning in the city 98 had only 1 member each. In a works in the South-West of England there were 337 employees who between them were administered by 36 societies. Was that an ideal state of affairs? The administration of the societies must be extravagant under such conditions. Moreover, the administration was not uniform. A few of the societies supplied all the optional benefits, some of them certain selected benefits, others again provided the benefits in some years and not in others, and certain societies did not provide benefits at all. His Division also urged as a general principle that every medical service should be controlled and administered by a committee or other similar body containing at least a 50% medical membership, and that a new branch of medicine—namely, an administrative branch—should be established.

Sir KAYE LE FLEMING wished to dissociate himself from the use of the word "pernicious" in relation to the present administration of the Ministry of Health. He had nothing but the highest respect for the Ministry and its medical officers. The work they were doing was excellent, and the criticism he had made earlier in regard to health legislation in no way reflected upon the work which the officers of the Ministry of Health were doing. The motion by North Staffordshire seemed to him "a prime collection of what-nots," and how the meeting was going to deal with it passed his imagination. He suggested that the proper course was to proceed to the next business, and this was agreed to.

A motion from Tunbridge Wells, "That those coming within the plan must be eligible for equal benefits, and that whatever financial scheme is evolved must ensure that all moneys are collected and distributed by the State without the intervention of private interests (either on a profit or non-profit basis) in medical or sickness benefit," was carried.

Doctors and Membership of Local Authorities

Dr. H. D. McILROY (Greenwich and Deptford) had a resolution declaring it to be essential that the existing law be amended to permit practitioners to act as members of local authorities while participating in medical services. The CHAIRMAN asked whether it was seriously argued that the medical profession should be given a privilege of this sort which was not extended to other members of the community. At all events such a proposal should be postponed until the later and more concrete report of the Commission was before them. It was moved, and agreed to, that the meeting proceed to the next business.

Hospital Services

Dr. J. A. BROWN (Birmingham) moved:

> That this meeting is in agreement in principle that committees of the senior medical staff should be set up in all hospitals. The medical superintendent, however, should be the chairman of this committee, and the resolutions of the committee shall be trans-

mitted to the Hospital Management Committee through him, otherwise it will be impossible for the medical superintendent to carry out his duties as chief administrative officer. It is also desirable that committees of other members of the hospital staff should be appointed and their resolutions conveyed to the Committee of Management in a similar way if relating to matters that cannot be adjusted by internal administration.

The **Chairman** suggested that this be referred to the Commission for consideration by its Hospitals Committee, and this course was agreed to.

Access of G.P.s to Hospitals

Dr. W. **Arnott** (Oxford) moved:

> That an essential part of any comprehensive scheme of medical organization should be the provision of beds (*a*) for patients who require nursing and medical attendance within the competence of the general practitioner, but do not require specialist investigation or treatment, and (*b*) for normal confinements. The beds under (*a*) and (*b*) should be under the effective charge of the patient's own medical attendant—provision for such beds being made either in a cottage hospital, or in a sick bay related to a health centre, or in a general practitioner hospital, or in a general hospital.

He said that general practitioner beds were an essential part in the development of medical science. They were needed alike for the help and relief of the sick person and the help and relief of the nurses. Many cases of bronchopneumonia were sent into hospital on account of inadequacy of nursing at home. In the same way the maternity hospitals could be greatly relieved by the provision of beds for normal confinements. Finally, the beds would be of great help to the general practitioner in the pursuit of his work.

Dr. **George McFeat** (Lanark) said that health centres were unsuitable for country districts. Cottage hospitals would prove a useful substitute. Country doctors were isolated and unable to co-operate adequately so that their needs and desires received insufficient publicity. Their minority position in the profession and the difficulty of meeting to develop a common policy had prevented a much-needed improvement in the rural medical service. But in spite of their difficulties they maintained for the most part a high standard. They had to carry greater responsibility than their urban colleagues, who had hospital and consultant facilities at hand, and therefore they developed the initiative and self-reliance which had given to country doctors an honourable place in the medical service. To make rural practice attractive to the best type of doctor mileage allowances should be increased and many other improvements effected, one of them in particular being the establishment of cottage hospitals in country areas.

Dr. A. **Staveley Gough** (W. Hertfordshire) said that the time had come when the contact between general practitioners and hospitals could be implemented. The possibility of the unification of hospitals should open up extra accommodation. The present economic and domestic position was driving into hospital many patients who would normally be treated at home, and there was a danger that the average doctor would find that all his interesting cases which were reasonably within his competence would pass into a hospital. Certain hospital accommodation should now be set aside for general practitioners so that they might continue to look after their cases while in hospital, subject only to the requirement that the patient might have to be handed over for specialist treatment.

Dr. **Peter Macdonald** (Deputy Chairman) said that some representatives might be aware that he had long held the view that it was desirable for general practitioners to have, wherever possible, access to patients in hospital. This had not been achieved on account of the acute shortage of hospital beds, at least in the voluntary hospitals, the number of beds being no greater than was needed by the consultant and specialist services. It was always more important that a bed should be available for a perforating appendix than for a case of bronchitis, even acute bronchitis. It was a defect in the interim report of the Commission that it was nowhere stated that a greater number of hospital beds was needed in this country, especially for general practitioner cases. Dr. Macdonald added that he had discussed this matter on previous occasions, especially in the Hospitals Committee of the Association, and he had met with opposition, mainly from consultants. The burden of the opposition was that the difficulties of allowing general practitioners to follow their cases into hospital were too great. In the report of the Voluntary Hospitals Commission, in connexion with the payment of staffs of such hospitals, it was stated that if the principle behind this arrangement was sound and payment should justly be made, the difficulties should be faced and in time overcome. The access of general practitioners to the hospitals would do more to advance the science and art of medicine in this country than anything else except co-operation between general practitioners themselves, a principle which that meeting had already approved.

The **Chairman**, speaking for the General Practice Committee of the Commission, stated that this subject had not been forgotten, but the Committee had not yet reached the point in its deliberations at which it was able to deal with this problem. It looked upon the problem of the admission of general practitioners to the hospital service as one of the first things to be dealt with when the present meeting was over.

Dr. A. **Beauchamp** (Birmingham) objected to the use of the word "normal" in front of "confinements" in the motion. It rather implied that general practitioners were not capable of attending abnormal confinements. The mover agreed to the omission of the word "normal," and the motion in this form was carried without dissent.

Selection of Hospital Staffs

Mr. **Donald Watson** (Bradford) moved that in regionalization the university with its medical school would be the centre of education, but that in the election of candidates for hospital and other appointments within the region, the influence of the university should be limited in order to allow freedom of competition and the safeguarding of opportunity to candidates from outside the region. He thought that this was a very important safeguard, and that in order to maintain a high level of medical education the competitive spirit should be encouraged.

The **Chairman** said that the interim report expressed this point less crudely when it said:

> The selection of consultants and specialists for appointment to the staff of hospitals, or groups of hospitals, in the region or to the region as a whole should be made on the advice of a medical appointments panel specially appointed by the regional council or authority. The panel should include representatives of the university or universities in the region and, for certain senior appointments, assessors from outside the region.

The Bradford motion was carried.

Vote of Congratulation

Dr. J. A. **Pridham** said that he did not think that the Representative Body should pass from this part of the Agenda without expressing its congratulations to the Chairman of the Commission and to the Secretariat for this excellent interim report. It had astonished him that so complex and controversial a subject could be condensed into a few pages. He read a letter from a Surgeon Commander on active service, a former secretary of his Division, who said, "I think that the B.M.A. has gained tremendous kudos in this war, both as a result of the work of the Emergency Committee and the work of the Medical Planning Commission." Dr. C. M. **Stevenson** seconded the proposition, which was carried by acclamation.

The **Chairman of Council** said that he was grateful for this compliment, but he added that the work was very thoroughly divided up among the different Committees, each of which put a great amount of time and energy into the investigation of the subject allotted to it. But without the splendid work of the Secretariat it could never have been brought to a coherent conclusion. Dr. G. C. **Anderson** said that he could not let this occasion go by without stating who was mainly responsible for drafting the interim report. It was his colleague, Dr. Charles Hill, with the assistance of Miss Saxby. (Applause).

The meeting then turned to the remaining business on its Agenda; a report of which will appear next week.

Correction.—Dr. J. Vaughan Jones asks us to correct an obvious error in the report of his remarks at the Annual Representative Meeting, with reference to the Bromley resolution on whole-time salaried service (*Supplement*, Sept. 26, p. 34, col. ii). "The soul-destroying effect of democracy" should read, "the soul-destroying effect of bureaucracy, etc."

MEDICAL PENSION SCHEMES

One of the most effective methods of assisting the national effort at the present time is some form of regular saving. The individual will thus be curtailing his spending power, which is precisely what the national savings drive and the extension of rationing are intended to secure. Further, such saving means that the individual will have additional capital or income to spend when the war is over, and the need for it will be acute for the creation of employment. Restriction of spending power now is imperative if inflation with its devastating consequences is to be avoided.

Any national health insurance practitioner or member of the B.M.A., provided he is not over 64 years of age, *no matter what his state of health may be,* has an opportunity in the next few months to assist the national effort by taking a savings policy under his own pension scheme and with very profitable results to himself. But the present terms are to be withdrawn at the end of the year, after which time no applications for entry on the same terms will be considered.

The financial advantage to the practitioner himself of using his own scheme as a method of regular saving may be illustrated best by comparing the results he will obtain with those he might get (at least in theory) by the alternative method of periodical purchase of some form of Government loan. If it is assumed that he sets aside a sum of £50 per annum in this way and could ensure the investment of the interest thereon annually (to secure the benefit of compound interest) all at a rate of 3% per annum (though many people might regard this as too optimistic), his money would, of course, actually be earning, after payment of income tax at 10s. in the £, a rate of 1½% per annum net.

The following table will show how his savings made in this way would accumulate as compared with the result of investing the same net sum of £50 per annum (allowing for the income tax rebate to which he would be entitled on his contributions) in his own scheme.

If Withdrawal at End of Year	Result from an Investment of £50 per Annum	
	In Securities yielding 3% per annum less Income Tax at 10s. in the £ and assuming all Interest is Reinvested annually at the Same Rate	Paid as a Contribution to the Medical Pension Scheme, allowing for the Income Tax Rebate of 3s. 6d. in the £, subject to Statutory Limitations
5	£262	£331
10	£543	£715
15	£846	£1,161
20	£1,174	£1,677
25	£1,525	£2,276

Thus, for example, for a practitioner aged 50 who continued his investment till age 65—namely, for 15 years—the scheme shows a net profit over the ordinary 3% investment of £315 (entirely free of tax) or the equivalent of over 6 years' contributions. In the case of a practitioner starting at age 40 and continuing until age 65—namely, for 25 years—the scheme shows a profit of £750, or the equivalent of 15 years' contributions.

The following conditions and advantages are secured by a practitioner who contributes for what is called the pension benefit under the scheme: (1) In the event of withdrawal at any time or of death the whole of the contributions he has made will be returned plus 3% per annum compound interest. As this 3% is free of tax it is, of course, equivalent to 6% if earned in ordinary investments with income tax at 10s. in the £. (2) Subject to statutory limitations he will be entitled to an income tax allowance on each contribution he makes, and this is now at the rate of 3s. 6d. in the £, and amounts to exactly the same thing as an immediate dividend at the rate of 17½% free of tax. (3) If he remains in the scheme until he is between the ages of 55 and 65 he will then be entitled to take a pension for the remainder of his lifetime (or a pension jointly for himself and his wife) and guaranteed for a minimum of 5 years on terms which are far superior to any that can now be obtained in the open market.

Every facility has been arranged for the payment of contributions under the scheme direct to the Medical Insurance Agency or automatically by the practitioner's bank under a banker's order form. Normally contributions will be accepted quarterly.

So far reference has been made only to the pension or savings policy which can be taken separately under the scheme without any evidence of health. There is also a family provision benefit which can be taken separately or in combination with the savings policy, but subject to some evidence of health. For a quarterly contribution of £3 (on which income tax allowance may be claimed) at any age up to 64, a practitioner secures that in the event of his death his beneficiaries will receive an income of £100 per annum free of tax until he would have reached age 65 if he had lived. An income of from £50 to £250 per annum may be insured in this way. Civilian war risks within the United Kingdom are included.

As to the security of savings invested under these schemes, the benefits are guaranteed by any one of the three life assurance societies which may be chosen. An eminent mathematician said many years ago: "There is nothing in the commercial world that approaches even remotely the security of a well-established life office." The Legal and General Assurance Society, which is one of the three offices issuing policies under these schemes, and has issued by far the largest amount of the three offices concerned, has been established 106 years. Its accumulated assets exceed £50,000,000. It has just distributed profits to its policyholders at the full pre-war rate—a rate which it has now maintained for more than 50 years.

While the urgent need for individual saving at the present time may have made it desirable to emphasize the value of these schemes from a saving fund or investment point of view, it should be borne in mind that the primary object for which they were instituted was to enable a practitioner to secure for himself, or for himself and his wife jointly, a pension for life on retirement. It is hoped that in their own and the national interests doctors will now make every effort to join these schemes with whatever contribution they can afford, and secure the present exceptional terms while they have the opportunity of doing so. Any inquiries should be addressed to: The Medical Insurance Agency, B.M.A. House, Tavistock Square, W.C.1, and it will save time if an inquirer will state the date and year of birth, and the amount he may be prepared to invest by way of quarterly or annual contribution.

Correspondence

A Certification Problem

SIR,—Owing to pressure of work, shorthandedness, and the need for conserving petrol and tyres, a difficulty has arisen in this country practice the solution of which should be of interest to practitioners similarly placed.

The various villages here are visited on certain days of the week. On the whole, both panel and private patients limit their requests for visits to these days except when the matter is urgent. The difficulty is best presented by a concrete example. One afternoon the mother of an insured patient rang up to say that her son had been sent home with mumps. Since I had been in the village that morning and since the boy did not seem at all ill she thought that the visit could wait until I was next in the village. Should she cycle to the surgery and get a certificate? The village in question was 7 miles away. I put the difficulty to the local clerk to the committee and he in turn put it up to the Ministry, and almost by return a helpful reply was received. I append it with the permission of the Ministry:

"I am directed by the Minister of Health to refer to your letter of August 7 and the enclosure thereto on the subject of the insertion of the date of examination on a National Health Insurance medical certificate and to say that, as the Committee are aware, the ante-dating of a certificate would be a breach of Rule 7 (1) and (2) of the Medical Certification Rules, but that if the doctor is satisfied at the time of examination that the patient was incapacitated from the day preceding the date of examination the Minister thinks that the doctor might explain in the 'remarks' space on the official certificate or in a separate note his reason for not signing on the earlier date and for being satisfied that the patient was incapable of work from that date, and the Approved Societies would then have the proper evidence before them to enable them to consider the question of the payment of benefit."—I am, etc.,

C. M. DOUGLAS.

Market Deeping, Peterborough

Aid for the Overworked G.P.

SIR,—Under the above heading Dr. Kinnear Brown (*Supplement*, Sept. 12, p. 27) contributes a most interesting letter. A perusal of this letter only serves to show how far wrong one may go, even with the very best of intentions. Panel practice is quite simple and easy. As soon as the patient is seated, or before if possible, one starts to write out for him a first certificate, a certificate for his employer, a certificate to excuse him from fire-watching, a certificate for extra milk, one for an extra supply of eggs, one for replacement of his truss, ditto for his attenuated elastic stocking, two for his private clubs, four signatures upon his mother-in-law's pension book, and a prescription for some medicine. If anything is left out he will tell you. If there is a difficulty in the diagnosis he will resolve it for you. It then only remains to bid him good morning, telling him at the same time when he must attend again for a further supply of certificates; this last is the essential part of the service, and it is a part which many forget, to their cost. What the N.H.I. needs is bigger, better, brighter, and bulkier certificates.

Dr. Kinnear Brown has some remarks to make about "energy for clinical work." I am loath to interfere here. All that can be said is that if the doctor does not know better at this time of day than to make reference, even in a small way, to clinical medicine then he has missed entirely the whole crux of the matter. From such wrong thinking proceed all our bottle-necks; upon such uncertain foundations are placed our cross-sections and blue prints, our vested interests and scheme-making authorities. Dr. Brown must pull himself together and make a pincers movement; go all solid for fluidity: get social and dig for victory. I must send him a copy of my book "The Certificate in Peace and War: a Social Study of Interdynamic Prepotentialities," second edition, 9½ × 6¼ in., pp. 137 + vii, with four blue prints and seventeen cross-sections, 1939, London and New York: Pretty Press (15s. 6d.).—I am, etc.,

Selby, Yorks. J. C. GILLIES.

H.M. Forces Appointments

## ARMY

The following Consultants have been granted the local rank of Brig: Cols. (acting) D E. Bedford, R A M C, and H. C Edwards, R A M C; Lieut.-Col. (temp. Col) A. H Whyte, D S O, R A.M C., T A.

Col. A L. Stevenson, late R A M C., retired pay, has reverted to the rank of Major at his own request whilst employed during the present emergency.

Lieut-Col. W H S Burney, R A.M.C, retired pay, has reverted to the rank of Major at his own request whilst employed during the present emergency.

ROYAL ARMY MEDICAL GORPS

Lieut-Col. R A Flood, M C., having attained the age for retirement, is retained on the Active List supernumerary to the establishment

Major (temp. Lieut.-Col) D. Crellin, M.C, to be Lieut-Col.

Temporary Commission—War Subs Capt W M Hamer has relinquished his commission and is granted the rank of Capt.

TERRITORIAL ARMY, R.A M.C.

Capt R H Barnes has relinquished his commission on account of ill-health and is granted the rank of Major.

Supern. for Service with Queen's Univ, Belfast, Senior Training Corps (Medical Unit).—J. W Millen to be Lieut.

LAND FORCES EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs. Capts. R. S Nixon, A. S. Hoseason, and T R Hill have relinquished their commissions on account of ill-health, and are granted the rank of Major

War Subs. Capts A E H. Reid, G. Apthomas, J A. Barrie, T. Gadian, M Golding, J B C. Madge, D G Robinson, and A P. Egerton have relinquished their commissions on account of ill-health and are granted the rank of Capt

Lieuts G. A. W Angus and C. Exell have relinquished their commissions on account of ill-health and retain their rank.

To be Lieuts: R F Ashwin, W J Atkinson, J Boyle, W E R Branch, J. G. Craig, D O Davies, T. S. Donovan, E L. Edmondson, J. A Fernandez, J H Gifford, N M. Green, G. M. Greig, E S Harverson, C. Harris, J Hemphill, S H Kissen, M Lessnoff, N A Lewtas, L. Lipetz, M Makin, S A Mason, L. W C Massey, R. C. McLaren, P H Nash, C. G Patel, W. Paterson, C B Picken, M J. Pivawer, R. I Randall, J. H. Rees, R. S Russell-Smith, S. M Sangster, A C J Saudek, J T. Speidel, R. Strang, H. D. S Vellacott, C. W. Walton, E T. Manley, J K McCollum, J. G Atherton, J. H. Bennett, R. E B. Carter, A. M Brown, J K Brown, E D Cullen, J S Clark, S. W Croome, G. A. Dolman, J. A Donnellan, E S Goller, G. H A Graetz, A. F W. Hall, C. L. Hall, G J Hardaker, H. E Harding, K H. C. Hester, S J Hinds, C. K Hirson. W G. R. Hore, W J Jones, J Lavelle, M N Laybourne, D Lee, B. Lees, J. Lomas, S. N Lytle, J A. Mann, W F McClemont, J A V McCrea, J McMaster, E. W. McMechan, B Messer, T W Miller, W H Morgan, A S. Morrison, A. W Paterson, F Pygott, M. U Quazi, R. G Reid, J. Scott, C D Shapland, W. C. Smallwood, A B Stewart, J. C Tainsh, H Taylor, R. T. Thin, E. Walker, J R A. White, G L. Whitmore, N. Williams, I. C Allen, M E. C. Balmer, W. F. D Benton, J. V Broad, C. G. Bryan, G A. Coggin, C O. Crawford, H. G. Estcourt, P. G Griffiths, A. Hollinrake, J A. Lorimer, R. S Merrifield, W. R Playfair, W. H. Poole, A H Rea, R. B L. Ridge, C. A Ridley, H D. Rossiter, S. R Saunders, P Thwaites, E G. Turner, K. O A Vickery, D. P Walther, R. A. Wilmhurst, I. B. Appleby, D G. Bisset, H W. Booth, W. H F Boyd, S Cameron, A S Crockett, C. Cronin, A. Currie, S Fink, F S A. Forbes, M C Hannon, J. Innes, J. M. E Jewers, T. L. Kelly, W King, W. J G Meldrum, F J W. Miller, D A Milne, J. N Milnes, D. McAuliffe, W K Smiley, R. Stewart, G. E. Swinney, R. A. S. Watt, F. J. Y. Wood.

ROYAL AIR FORCE

Lillian G. Bullick and Jean I. Gordon to be M.O.s (Emergency) with the relative rank of Flying Officer for employment with the R A.F.

AUXILIARY AIR FORCE

Fl. Lieut. T G Rennie has resigned his commission and retains the rank of Squad. Ldr.

ROYAL AIR FORCE VOLUNTEER RESERVE

J. C. Scott to be Squad Ldr. (Emergency).

To be Fl. Lieuts (Emergency): H. N Bradbrooke, F. R. Gusterson, H A. Leggett, E A. G. Goldie, H E Hobbs, and P J W Mills

Flying Officers C Midwinter-Jones M S Rowley, D. Y. L. Smith, E. Jones, E T O'Sullivan, W E Coates, A. L. Bell, D H Meldrum, H B. O. Cardew, G. C. Smith, R B. Wykle, J. B Lowe, H D. Ross, G A C Summers, J M Wood, B Donelly, C. O. Ribeiro, J. Gordon, F. Riley, J. P. Dodd, C. J. P Seccombe, R. J. Campbell (correction), A R. Norton, and S P. Millar to be War Subs. Fl. Lieuts

To be Flying Officers (Emergency): H. J. S. Brown P. O. Leggat, R. Childs, W. G Cross, W. J. Dempster, W. L. Robinson, J McA Taggart, and A L. Wallis

DENTAL BRANCH

Flying Officer T G. Ward, L.R.C.S, L R C.P, to be War Subs. Fl Lieut.

INDIAN MEDICAL SERVICE

EMERGENCY COMMISSIONS

Lieuts C M Burnie, J R Davidson, A L. Sutherland, H. B. T Holland, W. Donkin, W G Anderson, R. A. Johnson, A. E Stevens, J. D Hardy, E L Lloyd, F Lake, A. D Iliff, L. J Michael, R. H. Neeve, H. C Duncan, H. W T. Martin, E. T Harrington, G D. Lehmann, E. Dunsby, H Flack, J H Arthur, A B. Gilroy, B. A Lamprell, O J S Macdonald, C F. S. Aiken, T B. M Sloan, and R. M. Vanreenan to be Capts

Lieuts G Henderson, J. O Gordon, and S F. Thomas to be Capts. (on probation).

Lieuts. (on probation) A. D. Wilson, M B Klein, P A L Roberts, E L Jones, P S Clarke, T D. Brown, D G Horan, R. T. Hinde, W. Thomson, P N. Swift, W N. O George, D S. M. E. Mooney, K J L. Scott, A D Dyson, W. M Jones D. C Logan, G. V. Faulkner, H R. S Harley, A C Mackenzie, J B David, N J. MacQueen, J E. M Melville, F. A. Whitlock, G. E. Spear, D A Maclean, W F. J. M. Thom, P Jacobs, A J Sinclair, D MacAulay, E. D Macworth, O. Clarke, R. M. Gilchrist, E J. Currant, J. Cameron, J. Mockler, A. Maples, M. A. Fawkes, J. T Millar, N W. Gill, P. H Blackiston, and H Williams to be Capts. (on probation)

To be Lieut. Jean M. Drury-White.

B.M.A. LIBRARY

The following books were added to the Library during June and July:

Aptekar, H. H.: Basic Concepts in Social Case Work 1941.
Bailey, H.: Surgery in Modern Warfare. Vol. 1. 2nd edition 1942
Bartley, S. H: Vision: A Study of its Basis 1941
Boas, E. P: Treatment of the Patient Past Fifty. 1941.
Bowman, A K.: Life and Teachings of Sir William Macewen 1942
Bramwell, C., and King, J T: The Principles and Practice of Cardiology 1942
Browne, F J.: Antenatal and Postnatal Care Fourth edition. 1942
Burrows, H: Surgical Instruments and Appliances Used in Operations Eleventh edition 1942.
Cohen, M. B., and June, B: Your Allergy and What to Do About It 1942
Crawford, A. Muir. Materia Medica for Nurses. Fifth edition. 1942.
Culbertson, J T: Immunity Against Animal Parasites 1941.
Dalbiez, R.: Psychoanalytical Method and the Doctrine of Freud, 2 vols 1941
Dampier, Sir Wm. C: A History of Science Third edition 1942.
Dandy, W E.: Orbital Tumors 1942
East, W. Norwood: The Adolescent Criminal 1942.
Eckhoff, N L.: Aids to Osteology Fourth edition 1942.
Ellery, R S: Schizophrenia, the Cinderella of Psychiatry 1941.
Engelbreth-Holm, J.: Spontaneous and Experimental Leukaemia in Animals 1942
Gregg, A: The Furtherance of Medical Research 1941.
Grimer, C C: A Study of the Blood in Cancer. 1942
Hammett, J. E: Abdominal Surgery. 1941
Harley, G W.: Native African Medicine. 1941.
Harvey, W. C., and Hill, H: Insect Pests. 1940
Ilgenfritz, H C, and Penick, R M: Synopsis of the Preparation and Aftercare of Surgical Patients. 1942
Jacobi, J: The Psychology of C. G Jung 1939.
Jamieson, E B: Companion to Manuals of Practical Anatomy. Fifth edition 1942
Johnstone, R. T.: Occupational Diseases. 1941.
Kilduffe, R. A., and De Bakey, M: The Blood Bank and the Technique and Therapeutics of Transfusions 1942.
Kraines, S H: Therapy of the Neuroses and Psychoses. 1941
Lester, C. W.: Thoracic Surgery 1941
Lewis, Sir T.: Diseases of the Heart Third edition 1942.
Mackie, T J, and McCartney, J. E: Handbook of Practical Bacteriology Sixth edition. 1942.
McQuillan, A. S.: Surgery of the Head and Neck. 1941.
Marriott, W. McK.: Infant Nutrition Third edition 1942.
Mettler, F A.: Neuroanatomy. 1942
Nonidez, J. F.: Histology and Embryology. 1941.
Parsons, Sir John H: Diseases of the Eye. Tenth edition. 1942.
Pulay, E: Nutrition and Victory 1941.
Raven, R. W. The Treatment of Shock 1942.
Robertson, J K.: Radiology Physics. 1941.
Rolleston, Sir Humphry, and Moncrieff, A.: Disorders of Blood Pressure. By Various Authors. 1942.
Silverman, M.: War Against Disease. 1942.
Sollmann, T.: A Manual of Pharmacology and its Application to Therapeutics Sixth edition. 1942
Tournier, P: Médecine de la Personne. Fifth edition. 1941.
Walker, G F: Handbook of Medicine for Final Year Students. Second edition. 1942.
Youmans, J. B.: Nutritional Deficiencies: Diagnosis and Treatment. 1941.

PETROL FOR MEETINGS

Inquiries received show that there is some doubt as to the propriety of travelling by car to attend scientific meetings, including meetings of local Divisions of the B.M.A Medical practitioners, in common with other car users, are prohibited from using petrol for such a purpose. The Loca Medical War Committees, however, are in a special position as they are engaged in essential war work, and there is no objection to members travelling by car to meetings of these committees when other means of transport are not reasonably practicable.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducan Road, W—*Daily*, 10 a m. to 4 p m., Medica Clinics, Surgical Clinics and Operations, Obstet rics and Gynaecological Clinics and Operations *Daily*, 1.30 p m, Post-mortems *Tues*, 10 a m Paediatric Clinic; 11 a.m, Gynaecological Clinic *Wed*, 11 30 a m., Medical Conference; 2 p m Carbohydrate Metabolism and Diabetes (2), b Capt. E Bensley *Thurs.*, 2 p.m, Dermatologi cal Clinic. *Fri.*, 12 15 p m., Surgical Conference 2 p m, Gynaecological Conference; 2 p.m. Sterility Clinic

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W— *Royal Cancer Hospital:* 3 p.m and 4.30 p m Anaesthetic course, lectures, practical demonstra tions at various London hospitals. *Londo Homoeopathic Hospital*: Wed., Final F R.C S clinical class. *Wimpole Street*, W 1: Mon an Thurs, 8 p.m, Theory of Physiology. Lecture *National Heart Hospital:* Tues. and Wed., 1 a m, Out-patient clinics.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street W.C—*Tues*, 4.30 p m. Dr. A. D. Porter Eczema.

DIARY OF SOCIETIES & LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln' Inn Fields, W C.—*Mon*, 4 p m Arnott Demon stration by Prof. A J E. Cave: The Olfactor Parts of the Brain *Tues.*, 4 p.m Erasmus Wilso Demonstration by Mr L E C. Norbury Specimens illustrating Some Forms of Intestin Obstruction *Wed.*, 4 p m Arnott Demonstra tion by Prof. Cave: The Visual Parts of th Brain *Thurs.*, 4 p m Erasmus Wilson Demon stration by Mr. C. E Shattock: Diseases o the Testis *Fri*, 4 p m Arnott Demonstratio by Prof Cave The Mid-brain and Basal Gangli

NUTRITION SOCIETY.—At London School of Hygien and Tropical Medicine, Keppel Street, W., *Sa* (Oct. 17), 11 a m. Discussion: "Trace Element in Relation to Health" (see p. 437 of this week' *Journal*).

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL Gray's Inn Road, W C—*Fri*, 4 p.m Mr. I Colledge: The Complications of Middle E Suppuration.

B.M.A.: Branch and Division Meeting to be held

NORTH OF ENGLAND BRANCH—Joint meeting wit Newcastle-upon-Tyne and Northern Counties Medi cal Society at Royal Victoria Infirmary, Newcastle upon-Tyne, Thurs, Oct 15, 2 15 p m, Clinica demonstration, 3 45 p m., Prof J R Learmonth Diagnosis and Treatment of Peripheral Vascula Disease All members of H.M. Forces statione in area are invited to attend

BIRTHS, MARRIAGES, & DEATH

The charge for inserting announcements under thi head is 10s. 6d This amount should be forwarde with the notice, authenticated with the name an address of the sender, and should reach the Adver tisement Manager not later than first post Monda morning to ensure insertion in the current issue.

DEATH

MURISON—On Sept. 20, 1942, at Wrington, Somerset, Cecil Charles Murison, Colonel, I.M. (ret.), after a long illness bravely borne. (Age 68 years)

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY OCTOBER 17 1942

ANNUAL REPRESENTATIVE MEETING

Thursday, Sept. 10 (*concluded*)

On the last day of its meeting, with Dr. H. G. Dain in the chair, the Representative Body dealt with the remainder of the Annual Report of Council (the first part of the report having been dealt with on the first day) and the miscellaneous motions from Divisions. Two further motions under "National Health Insurance" were agreed to, the first, by North Staffordshire, asking the Council to exercise all vigilance to prevent a repetition of events whereby recently those up to an income limit of £420 were included within the Acts, and the other, by Hendon, urging that the approved societies should be compelled to accept all insured patients irrespective of their state of health.

PUBLIC HEALTH

Prof. R. M. F. Picken, on behalf of the Public Health Committee, accepted for consideration a motion by Cardiff that, if the Council could not obtain a satisfactory solution of the question of compensation for medical officers injured in air raids, the alternative procedure of medical officers being enrolled as volunteers under the local authority for national service, using Form E.D.60, should be investigated.

A motion by the City of London expressing satisfaction at the campaign which the Minister of Health is conducting to extend immunization against diphtheria, and offering him the Association's full support, was agreed to, as was a further motion expressing grave concern at the increased incidence and death rate of pulmonary tuberculosis. This latter motion urged that wider powers should be available for providing financial aid so that no person should be deterred from accepting a full course of treatment, and that there should be more adequate institutional accommodation. It declared that long hours of work were bound to have a deleterious effect upon the general health and the resistance to the disease among workers. Dr. J. A. Brown (Birmingham) said that the insistence upon long working hours, often spent in bad conditions as to ventilation, was a cause of much minor illness and absenteeism.

THE ASSOCIATION IN SCOTLAND

The report under "Scotland" was presented by Dr. T. Fraser, chairman of the Scottish Committee. He mentioned that schemes under the Maternity Services Act were now coming along more favourably. A motion by the Lothians asking Council to consider the desirability of the chairman of the Scottish Committee being, *ex officio*, a member of the Council during his tenure of office, was carried.

"BRITISH MEDICAL JOURNAL"

Dr. J. C. Matthews, acting chairman of the Journal Board, presented the report under this heading on behalf of Col. R. G. Gordon, who is on foreign service. He complimented the editorial and business staff of the *Journal* on the way in which they had surmounted many wartime difficulties.

INDUSTRIAL HEALTH

Sir Kaye Le Fleming introduced the report under "Industrial Health" and mentioned the useful special report which the Industrial Health Committee published in November, 1941. Dr. Mona Macnaughton mentioned some friction between general practitioners and industrial medical officers. Dr. T. Craig spoke to the same effect: the main troubles arose out of certification and the fact of treatment given at the works. Dr. J. W. Bone said that some time ago the Association established a code of rules and thought at first that the service was being conducted in an excellent way, with careful observance of the code, but in recent months the code had been flouted. Dr. S. Wand said that it was not the whole-time industrial medical officers who were responsible for the difficulty, but the part-time officers, who were their own colleagues in general practice. He suggested that the Divisions should take up this matter in the same way as they took up any other ethical question. Mr. J. Livingston (Barrow-in-Furness) confirmed the fact of trouble arising between industrial medical officers and men in general practice. Dr. I. D. Grant (Glasgow) said that under their terms of service part-time officers were not permitted in any way to treat sick persons; they attended factory accidents and looked after factory welfare.

Dr. P. Inwald moved: "That in view of the importance of the health of the worker in the war general practitioners be appointed on a part-time basis to all factories not employing whole-time medical officers, and further co-operation between factory medical officers and general practitioners be facilitated." A system should be devised for an interchange of relevant knowledge between the patient's doctor and the factory medical officer. Dr. Wand said that this matter was under the consideration of the Industrial Medical Service Subcommittee. The medical man-power question was now acute in many areas, but encouragement of this interchange had been the policy of the Association for some time past. The motion was adopted.

OPHTHALMIC SERVICES

Mr. Bishop Harman, in moving the report under this heading, said that the past year had been a record one for the National Eye Service. The number of ophthalmic practitioners on the list was close upon 1,000. He described the negotiations for an increase of fees, which, having regard to the expenses of consulting practice, were too low. The approved societies had met his committee and opened up the difficulties of their own position. They had agreed, however, to a certain proposition, which the Ophthalmic Committee would meet to consider. They had pointed out that any distinction between insured persons on the basis of income—that is, between those with less than £250 and those between £250 and £420—would be impossible for the societies to carry out administratively. That, again, was a matter for further exploration.

Dr. Lucas Young (Eastbourne) moved an amendment to a motion by Plymouth. The motion was one disapproving of the inclusion in the National Eye Service of all persons and their dependants with incomes over £250 per annum, and to this he moved to add "unless a higher fee is payable by this group of patients." He said that the majority of those in the N.O.T.B. would not object to the inclusion of the £250-£420 persons in the National Eye Service if a fee of one guinea was paid, but to include these persons for the very nominal fee of half a guinea would be an unwarrantable intrusion into the preserves of what was now private practice. Dr. C. M. Stevenson (Cambridge) urged that this proposal be not adopted as it would tie the hands of the Ophthalmic Committee and cause administrative difficulties. Dr. Peter Macdonald suggested that both motion and amendment be referred to the Council, and this was agreed to.

THE ASSOCIATION OVER-SEAS

The Chairman of Council said that it was customary at Annual Representative Meetings to hear messages from oversea representatives, but on this occasion for obvious reasons this was not possible. He felt that the Representative Body would like to send a message of remembrance and sympathy to their brethren in all the oversea Branches. The message was sent with the utmost cordiality. On the suggestion of Dr. John Clayre (Southampton) the Channel Islands were included.

CENTRAL MEDICAL WAR COMMITTEE

The Chairman of Council presented the Annual Report under "Central Medical War Committee" and gave some account of the work of the committee and of its subcommittees. The demands made for medical men for the Forces were enormous and increasing. It had been hoped that by the end of September a certain peak would have been reached and they might relax their efforts. These hopes had been disappointed, and further demands would have to be made upon the medical profession. Practically the whole of the young men entering the profession were recruited to the Forces, and did not go to replace wastage in civil practice. In addition to compulsory requirements very large numbers of medical men had voluntarily given their services. It was not through the hardness of heart of the Central Committee that further demands were being made. It had been suggested that the distribution of men as between the civil population and the Forces was not fair, and that the Forces were making too great demands. To examine that subject the

Minister appointed a Priority Committee to decide priorities between the civil population and the Forces and between the different components of the Forces. The Forces had put forward their difficulties in the most open manner, giving information that could not be publicly disclosed, and they had satisfied the committee that now, after a certain amount of pressure, they had come down to the absolute minimum of demand. Members of the profession might be absolutely sure that the C.M.W.C. never asked for a medical man unless satisfied that his service was essential to the progress of the war. On the other hand, owing to the splendid work of the local medical war committees, it had been possible so far to meet the enormous demands that had been placed upon them. The profession in this country had been gravely depleted, and its members were having to work twice as hard as they would work in normal times. Many of them had to go on working after they would normally have retired. He concluded by expressing the gratitude of the Central Committee to the local committees for the way in which they had responded to their demands. "We work on a very solid basis. Our demands are on the basis of real necessity." (Applause.)

Correlation of Medical Services

Dr. T. M. Fripp (North-East Essex) moved:

> That this meeting notes with concern the present wastage of medical personnel and suggests that the Council should approach H.M. Government with a view to correlating the medical services of the Navy, Army, Air Force, and Civil Defence under one head.

He said that, as now constituted, four or five medical services—the Navy, the Army, the Air Force, and the Emergency Medical Service, as well as civilian general practitioners—were in watertight compartments, and each was practically independent of the others. The whole of the medical services should be organized under one head. The supply of doctors was not inexhaustible, and it was better to look ahead and work out a plan of redistribution of medical man-power. Dr. J. A. Brown said that this question had been considered by the Priority Committee. The suggestion was an impracticable one, but the committee was satisfied that a great deal of the overlapping and some of the wastage that came into existence before the Priority Committee was set up had now been rectified. The motion was lost.

Secretariat of the C.M.W.C.

Mr. H. J. McCurrich (Brighton) moved:

> That, as one of the functions of the Secretariat of the B.M.A. is to advise and assist the members of the Association, this meeting is of the opinion that it and the Secretariat of the Central Medical War Committee should not consist of the same men.

He was anxious to point out that this was not a criticism of the committee or of the secretariat. No one had a higher regard for Dr. Anderson and his staff than he had himself, and Dr. Anderson had combined the two functions more ably than any man alive could have done. It was entirely a matter of principle. There had been in many quarters a feeling of dissatisfaction that the rank and file had no longer a free and independent Association to safeguard their interests. Whether that feeling was right or wrong was not now under discussion; the point was that it should not have been possible for such a feeling to arise. At times a member might feel that in the matter of recruitment for the Forces he had not been treated quite fairly, but that the officials of the Association to whom he would ordinarily go for guidance were not free people, because they constituted also the secretariat of the body which had decided against him. Dr. W. D. H. Waddington (West Sussex) supported the motion.

Dr. C. M. Stevenson, as chairman of a local medical war committee, appealed to the meeting not to take away the present secretariat. It had worked perfectly. If a new one were appointed a clash would be almost inevitable. Dr. R. W. McConnel (Bucks) also said that it would be a disaster to separate the two secretariats. Dr. J. A. Brown said that there might be some disadvantages in having as the secretariat of the C.M.W.C. the same people as constituted the secretariat of the B.M.A. But he was not really aware what the disadvantages were, and he was conscious of many advantages. He hoped that instead of pressing this motion the meeting would pay a tribute to the magnificent work done by Dr. Anderson and Dr. Hill. Had it not been for their work the recruitment of medical men would have been in an "absolute mess." Mr. McCurrich protested that he had tried to make it plain in moving the resolution that this was no question of personal attack, but purely a matter of principle.

The motion was put to the meeting and was lost by a very large majority.

Dr. Anderson, speaking as Secretary of the C.M.W.C., made a private statement on the recruitment of medical men for the Army. After making the statement he said that his object was simply to impress those present with the seriousness of the situation and to ask the members of local medical war committees to revise their lists and, if short of the quota, to make an effort at once to give the number of men they had been asked to give. With regard to the motion by West Sussex and Brighton, he fully understood that the intention of the movers was not to make any personal attack upon himself or his colleagues, but to attack the principle whereby a double office was held by the same individuals.

Medical Posts for Civil Defence

Dr. D. O. Twining (Plymouth) moved that the selection of medical officers for Civil Defence, Observer Corps, and similar appointments should be made only in consultation with and by approval of local medical war committees. He said that certain instances had occurred in his district which had led to this motion being framed. Such appointments must be made through local medical war committees if the medical personnel in the various areas was to be put to the best use. The motion was carried.

Dr. Anderson said that care must be taken not to put forward any plea that the profession should make nominations for routine appointments by local authorities. The motion just carried was, he thought, intended to refer to wartime allocations in connexion with Civil Defence, and in that field the meeting could quite well agree to it.

Mutual Help Committees

Dr. C. I. Schiff (City of London) moved a recommendation to Divisions to set up *ad hoc* committees for the purpose of securing mutual help among local practitioners—e.g., rotas for night and emergency work to meet the increasing strain as more and more doctors were drafted into the Services. The isolation in which general practitioners had worked would be to some extent mitigated by such a measure, and it might be found that in a year or two a good many of the objections raised against a State Medical Service would be largely overcome as a result of demonstrating that some such form of co-operation was already in existence. The Chairman suggested that the motion should be made less mandatory and Divisions should be left to take any necessary steps in their own way. Dr. C. F. T. Scott (Willesden) said that many local medical war committees had already moved in this direction. The Secretary said he believed that the action contemplated in the City motion might be better undertaken by the local medical war committee than by the Division, because the former was thoroughly familiar with the work the men were doing and knew the allocation of work among the men on the Register. This alteration was accepted by the mover, and in that form the motion was carried.

Dr. R. W. McConnel moved that a hearty vote of thanks be accorded to Dr Anderson, Dr. Hill, Dr. Macrae, Dr Craig, and their staffs for their work as the Secretariat of the Central Medical War Committee and the Scottish Medical War Committee, and for the great help they give to local secretaries. He had special reason to compliment Dr. Anderson and his staff for their patience in answering questions, the more so as many of the questions, while important from the local point of view, must appear trivial when viewed centrally. The motion was carried by acclamation. Dr. Anderson thanked the meeting on his own behalf and on that of his colleagues and staff. He said that none of them could have any idea of the work which the staff had put in. He had the most loyal staff anyone could have.

METHOD OF ELECTION OF COUNCIL

Dr. S. W. Swindells (Grimsby) moved to amend the by-law relating to the election of Council by groups of Branches and Divisions, so that the voting papers should contain no particulars regarding the candidates other than their addresses. Dr. S. Wray (Lincoln) said that his voting group comprised five counties, and it was impossible for a candidate to make himself known to all the members; probably 70% of the electors never saw a candidate for the Council. If the candidate's age could be given on the voting paper it would furnish some indication of his outlook. Dr. J. C. Matthews, as chairman of the Organization Committee, while expressing no views on the merits of the proposal, pointed out the unwisdom of altering by-laws without the help of the solicitor. Dr. N. E. Waterfield hoped the meeting would not pass this motion. He agreed that a long list of appointments appearing on the voting papers was not worth the paper it was written on, but one qualification might appear. Dr. D. T Whitaker (Guildford) said that he had never heard before of an electoral procedure in which the qualification for election was that the constituency should know nothing about the candidate. any candidate had done service for the Association that should be mentioned the voting paper. Sir Kaye Le Fleming said that there was nothing the Association needed more than for young men to come along and prove their worth. There was no desire of the "Old Guard" to sit in office and keep other people out.

The mover consented to amend his motion so as to include the candidate's age as well as his address on the proposed voting paper, but the motion was lost.

ORGANIZATION OF GENERAL PRACTITIONERS

Dr. D. L. S. Johnston (Halifax) moving: "That the Association shall promote and recognize the organization of general practitioners under the auspices of the Association, and that this body shall be controlled by general practitioners," said that this was put forward to safeguard the future. There were still a large number of doctors outside the Association, possibly because of apathy or from a sense of frustration. In Halifax an organization of general practitioners had been formed, and a unity had been brought about among them, together with a realization that the B.M.A. offered the only way in which their position could be maintained. Dr. Wand said that the General Practice Committee was composed almost entirely of general practitioners, and in order that it might more adequately represent that side of the profession its constitution was altered not many years ago. If some arrangement at the periphery was wanted he saw no objection to the setting up in the Divisions of local general practitioner groups. Dr. J. G. McCutcheon (Glasgow) thought it would be detrimental to the Association to set up another organization of this kind. The Secretary reminded the meeting that the Council had set up a committee to go into the whole question of the organization of the Association, and he suggested that the best plan would be to refer the motion to that committee. This course was approved.

MISCELLANEOUS MOTIONS

Dr. T. Craig (Newcastle) had a long motion on the continued marketing of proprietary remedies of no proved therapeutic value, recommending that action be taken by the Association to protect the public from such exploitation. Such action would aim at the withdrawal of preparations not proved to be therapeutically active, the substitution of statements on the pharmacological action of preparations for the names of diseases which it was claimed that they relieved, the publication of the formulae of all such medicines, with the detailed composition, including excipient, of a single dose stated on every package, and the use of the terminology of the *B.P.* for the naming of official, and of the English language for unofficial, ingredients. The motion was referred to the Council, with a view to consideration by the Science Committee.

Dr. C. M. Scott (Barnet) moved a resolution of protest at the fees payable under the proposed Hospital Service Plan for London to the patient's own doctor. While he approved the Plan in general he deplored the fact that the Association should have agreed to such totally inadequate professional fees. Dr. F. H. Bodman (Bristol) said that if the Plan was analogous to schemes in the Provinces, the meeting should be aware that the fees set out under the scheme were reduced fees. Radiologists and others were accepting one-third or one-half their customary scale. He felt that the Association had acted wisely in supporting the scheme in view of the needs of people with from £250 to £700 a year. The Deputy Secretary said that this scheme of the King's Fund, which applied to Greater London, was intended to provide on an insurance basis for persons within stated income limits consultant and specialist services in the private wards of a hospital or in a nursing home. It was not intended to be an insurance scheme for general practitioner services. But it was pointed out that in small hospitals without a resident the attending general practitioner would in fact be rendering service for which he should be paid, and accordingly this one general practitioner provision was made. But any practitioner who undertook specialist work would receive the specialist fees. The scheme, however, had now been postponed until after the war and had been replaced by a scheme on a grant-in-aid basis in which there were grants to practitioners who attended their patients, whether as specialists or not, in private wards or nursing homes. The mover expressed his satisfaction, and the motion was withdrawn.

Dr. G. C. Barron (Sheffield) moved to instruct the Council to engage the whole-time services of a barrister of repute to make a close study of medical law and economics so as to be prepared to give advice in the preparation and presentation of the Association's case in any future negotiations. Dr. W. E. Dornan said that the idea which Sheffield had in mind was that counsel of repute might be employed at a salary of £5,000 a year. ("Oh!") Business organizations in his part of the country paid as much as that. The Chairman of Council said that the motion was an entire misconception of the manner in which negotiations were carried on. They did not approach the Ministry of Health, for example, as a body attacking it by some legal process; they went to discuss matters in a spirit of friendly argument. Moreover, the Association had in its service one of the ablest solicitors in the country, who was expert in its affairs and was backed by counsel fully alive to its requirements. The motion was lost by a large majority. A further motion by West Sussex—that in negotiations with the Ministry of Health there should be a unification of presentation of medical opinion, and a drawing together of the several bodies now existing for that purpose—was also lost.

Dr. J. Beck (Glasgow) asked for an examination of the feasibility of an "all-in" compulsory Association, with disciplinary powers, embracing doctors, dentists, and nurses, so that it could speak with a united voice in all matters affecting the health of the community. Dr. W. D. Anderson said that Glasgow felt that the Association's methods of negotiation were not adequate to the new situation, and that the profession should put its house in order. They also felt that the General Medical Council failed to exercise a proper discipline. Dr. E. A. Gregg said he was very much in sympathy with the ideas behind the resolution, but how was this compulsion to be exercised? The motion was lost by a large majority.

Dr. P. S. Marshall (West Norfolk) moved that a new scale of minimum fees be laid down for all part-time work for public authorities, Government Departments, and societies, the negotiations to be carried out by the Association on a national basis. The motion was referred to Council. A motion by Plymouth, that all medical appointments made during the war should be for the duration of hostilities only, was carried; it was, said the Chairman, the policy of the Association. Dr. Barbara Abercrombie (Liverpool) asked the meeting to condemn the practice whereby manufacturers of oxygen withheld the supply of commercial oxygen at retail commercial prices to the medical profession. It was agreed to refer this matter also to the Council.

Dr. D. T. Whitaker (Guildford) had down a motion asking the Council to take steps to make available to civilian practitioners the medical history of men or women discharged from the Services for medical reasons. Dr. J. A. Brown pointed out that what was desired was to have the reasons for the discharge made accessible—the machinery could easily be arranged—so that the information became available automatically to the patient's doctor. He could not understand why the Ministry of Pensions placed any difficulty in the way. The Chairman said that he himself was in the process of trying to find from somebody the medical record of a patient who had come under his care, and so far he had failed. He thought the Council might try to set up some method whereby the reason for a patient's discharge from the Services, when the reason was a medical one, could reach his doctor. The motion was carried.

Sheffield asked the Council to encourage investigation into the possible danger from respiratory obstruction due to displacement of the epiglottis under anaesthesia, and also in asphyxia neonatorum. This was accepted for reference to the Science Committee.

Dr. W. E. Dornan, in proposing a vote of thanks to the Chairman, Dr. Dain, said that no eulogy could be high enough for the way in which he had steered that meeting through 250 motions and amendments. The motion was carried unanimously and with applause. Dr. Dain, in acknowledging it, "passed the bouquet" on to the representatives. In two and a half days not more than two or three speakers had wanted to exceed their time limit. The conduct of an extremely difficult meeting had only been possible by an occasional trespass by the Chair on the rules of procedure and by the never-failing kindness of the meeting.

The Representative Body sat for 4½ hours on the first day, 7½ hours on the second day, and 5½ hours on the third.

We have received from the Hon. Secretary (Dr. C. W. H. van der Post) of the Natal Coastal Branch, Medical Association of South Africa (B.M.A.), a full report of the Branch's activities for 1941, which reflects the difficulties, due to the war, with which oversea members have to contend. Sixty doctors, including some of the Branch's most energetic supporters, are on active service, and this depletion meant unfortunately less time for Branch meetings for those who must stay behind and carry on. Nevertheless the Branch Council has been busy, and its 12 meetings, at which a wide variety of business was transacted, were well attended. Four Branch meetings, one of them a clinical gathering, were held. The Natal Coastal Medical War Fund was started in May, 1941, with the gratifying initial response of £1,079.

Correspondence

Medical Certification

SIR,—Through Government regulations, orders, circulars, etc., the life of a general practitioner has been turned into Insanity Fair. The English, in spite of constant experience to the contrary, preserve a touching faith in Acts of Parliament and in departmental legislation. If the B.M.A. has been "pressing the Government Departments concerned" for many months I have not yet observed or felt any relief from the intolerable burdens created by demands for certificates for every conceivable reason. There is an old story of a medical practice in Yorkshire which was run on three stock mixtures, so that when any patient trundled in he was met with the question, "What's yours: black, white, or brown?" We have made progress. To-day one has to ask each succeeding entrant, "What kind of certificate do you want?" It is no exaggeration to say that more than half of the committee which waits upon me twice daily is after some kind of medical certificate. Valuable time is wasted in investigating dubious claims and often in furious arguments with applicants who have no case at all, while those who have need of real medical attention have to be rushed.

As each Government Department intervenes with its rules and regulations it creates additional burdens for the medical profession. There are forms for milk, eggs, soap, pensions, clothing coupons for expectant mothers; forms for the Navy, Army, and Air Force, the A.T.C. and G.T.C., medical boards, the Panel (of various sorts, sizes, and colours), educational authorities, fire-guard exemption; forms for glasses and teeth, compensation, absence from work (accident and illness, factual or alleged), petrol allowances, and sick societies; and, if that were not enough—the list is by no means exhausted—the pharmaceutical chemists join in and decline to sell to their customers glucose, olive oil, rubber hot-water bottles, Horlick's milk, ovaltine, etc., without a medical certificate. And the corsetières, God bless them all, must have their forms for customers suffering from complaints not to be found in any textbook of surgery.

To all this a new racket is added. Every pretext and excuse is being trotted out to obtain an extra supply of coal in cases of illness, so that, when winter comes, we shall be inundated with applications for certificates to satisfy the local fuel officer. Meanwhile voluntary absenteeism among coal-miners is rapidly increasing; output of coal per man shift goes down, and no one seems able to offer any remedy for this appalling state of affairs. The medical profession must bear its share of blame in this matter. It is now over 21 years since I came to practise in this coal-mining district. Taking them by and large, the coal-miners are a decent, hard-working body of men. There are some very fine men among them—none better. But there is a section which uses every opportunity or occasion to play the absentee game. The trouble began when the Essential Works Order came into operation. Then a bonus was paid for putting in a full week's work, but if there was any absence from work even for a day a medical certificate was demanded. The scheme was a "flop." Wages were raised, and then a rise has been propounded based on an increase in regional output. For every day a man is off work he must produce a medical certificate, otherwise he is penalized by a fine. But the colliery managements are handicapped in their dealings with defaulters. If they are too stiff with them the men can transfer to other colliery companies, just as they can transfer their patronage to any other doctor who would perhaps be more obliging to them if their own does not please them.

For various reasons my surgery is filled daily with men who are seeking certificates for one reason or another: some with accidents which are genuine enough, some with genuine illness, a good many with dubious illness such as vague headache, "bad back," fatigue, "feeling nervous," and diarrhoea. It is astonishing how common diarrhoea has become and how rare it is in any other member of the family. In many of these "the plain evidence of facts is superior to all declaration." And then there are those—by no means an insignificant minority—who, having taken a varying period of absence from work, frankly demand a certificate to cover them for the back period without having in any way consulted the doctor. These are not isolated instances: they are a daily occurrence. I can only say in such instances that "I am informed" or that "A. B. states he has been unable to work on account of. . . ." This sort of certificate, which is no certificate at all, apparently satisfies the colliery manager or the pit production committee. Managers profess themselves hopeless and helpless to put a stop to this sort of thing. I have protested time and again about it, but the abuse gathers momentum instead of diminishing; meanwhile one's clinical work is handicapped, temper is torn to rags and tatters, and one is tempted sorely to take a cynic's way out—the line of least resistance.—I am, etc.,

Heanor, nr Nottingham. PHILIP TURTON, M.D.

State Medical Service

SIR,—Now that the idea of a full-time State Medical Service has been rejected by a 90% vote and our new president has so well expressed the feeling of the profession in his address, is it not time to give this subject a well-earned rest? Such a lot of thought and energy are diverted from the realms of pure medicine and science where medical interest would be better focused.

So many advocates of a State Medical Service adopt an attitude and use arguments more suited to Nazi swashbucklers than to members of a learned profession in a land which is fighting for democracy. The recent words of Gen. Smuts to a youth congress could very well apply to us: "Cling to what you have, uphold the freedom which has already been won, and guard against new slogans which have dragged so many countries in the old world to ruin." The war has yet got to be won if we are to have any future at all. For those State Medical Service enthusiasts there are the Services (R.A.M.C., etc.) crying out for men.

Little more remains to be said. We have had the matter discussed in your columns *ad nauseam*. The time has come to drop the matter and use your valuable space for more interesting and erudite subjects.—I am, etc.,

London, S E 1. W. B. J. PEMBERTON.

National Hospitals Board

SIR,—A meeting of the board of the Westmorland County Hospital was recently held to discuss the future of the hospital services. The following resolution was passed unanimously: "That this meeting is in favour of the establishment of a national board responsible to the Ministry of Health to administer all hospital services, such board to be formed of representatives of the different sections of the community and of the various interests involved, executive power being delegated to regional and local committees, none of them being under the control of local government bodies: the financing of such a scheme to be covered by an addition to the national health contribution rather than by an extension of the present voluntary contributory schemes."

The Westmorland County Hospital, with its affiliated maternity block, controls over 100 beds, and has been successfully operating for many years. Such a resolution, coming from a board one would expect to be conservative in outlook, is, I think, remarkable, and worthy of thoughtful consideration by all interested in future developments. I trust you will give it publicity for that reason.—I am, etc.,

Kendal. C. M. CRAIG.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W—*London Homoeopathic Hospital*: Wed, and Sat (Oct 24), Final F.R.C.S clinical classes *Wimpole Street:* Mon. and Thurs, 7 30 p.m Theory of Physiology Lectures *National Hospital for Diseases of the Heart*: Tues and Wed, 10 a m. Out-patient Clinics.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C—*Tues*, 4 30 p m Dr G Duckworth. Seborrhoeic Dermatitis and Psoriasis

DIARY OF SOCIETIES & LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W C.—*Mon.*, 4 p.m. Arnott Demonstration by Prof. A. J E. Cave: Epidermal Structures *Tues.*, 4 p m Erasmus Wilson Demonstration by Mr. R Davies-Colley. Bone Tumours. *Wed*, 4 p m Arnott Demonstration by Prof. Cave: Mesenteries, Folds and Peritoneal Ligaments. *Thurs*, 4 p m, Erasmus Wilson Demonstration by Mr C. E. Shattock: Diseases of the Breast *Fri*, 4 p m. Arnott Demonstration by Prof. Cave: Unspecialized Mesodermal Derivatives.

ROYAL SOCIETY OF MEDICINE—*Tues*, 2 30 p m Section of Orthopaedics; 5 p.m General Meeting of Fellows *Wed.*, 2 30 p m. Section of Comparative Medicine *Thurs.*, 3 45 p m, Section of Urology. *Fri*, 2.30 p m Section of Disease in Children.

B.M.A.: Branch and Division Meetings to be held

NORTH OF ENGLAND BRANCH—Joint meeting with Newcastle-upon-Tyne and Northern Counties Medical Society at Royal Victoria Infirmary, Newcastle-upon-Tyne, Thurs., Oct 22, 7 15. p.m Clinical demonstration; 8.45 p.m. Prof E Farquhar Murray: Present-day Attitude towards Certain Gynaecological Problems. All members of H M Forces stationed in area are invited to attend

NORTHERN IRELAND BRANCH—Joint meeting with Ulster Medical Society at Whitla Medical Institute, College Square North, Thurs, Oct 22, 4.30 p m. Dr. R. L Kelham and Capt A R Maxwell: Amputation Sites and Artificial Limbs

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

DEATH

KELLETT-SMITH.—On Sept 23, at a nursing home, Cheltenham, Joseph Stanley Kellett-Smith, F R C S.Eng., D M.R E, of 1, Lypiatt Terrace, Cheltenham, after a few days' illness (aged 72 yrs).

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY OCTOBER 24 1942

INSURANCE ACTS COMMITTEE

Application for War Bonus for Practitioners

The progress of recent endeavours to obtain a war bonus for insurance practitioners was reported to a meeting of the Insurance Acts Committee on Sept. 24. The chairman (Dr. E. A. Gregg) said that, following the last meeting of the Committee, an appointed deputation met representatives of the Ministry of Health, and later a reply was received from Sir John Maude, secretary to the Ministry, contesting the arguments which had been advanced. Thereupon an interview was sought with the Minister himself, which took place on Sept. 22, two days before the present meeting. Mr. Ernest Brown had replied that there was no money available in the pool for this purpose, and that he could take action only in one of two ways—either by going to Parliament to obtain quite fresh arrangements, or by a special war grant, which was against general Government policy. He also hesitated to commit himself in view of the immediate issue of the report of the Beveridge Committee, which might make recommendations recasting the whole of the arrangements. At the same time he promised careful consideration of the points which the deputation had advanced.

The report of the Minister's remarks was conveyed to the Committee, together with the cogent arguments advanced by Dr. Gregg, Dr. J. A. Brown, and other members of the deputation. It was agreed that the Committee should hold a further meeting before the Panel Conference in order to frame its recommendations following upon the receipt of the considered reply of the Minister.

(The I.A.C. is meeting on Oct. 22 to consider the Minister's reply.)

Insurance Practitioners and Medical Planning

The other principal subject which occupied the Committee was the replies received from Local Medical and Panel Committees to the questions posed in the interim report of the Medical Planning Commission. The definition of objects of medical service as set out in the draft report was generally accepted, and the principle of free choice of doctor and patient as an essential feature of the service was agreed to almost without qualification by the committees which had replied. Group practice in some form was also favourably considered by the majority of the committees, and the I.A.C. endorsed this view.

Longer debate took place on the question whether the provision, whatever its character, should be made by the Government for the whole of the community or for part of it only. The question of the 10% or 5% of the population remaining after insured persons and their dependants and others of like economic status had been dealt with was variously answered by the committees, but the I.A.C., by 17 votes to 6, adopted a similar resolution to one carried by the County of Ayr Panel Committee, that provision should be made only for persons compulsorily insured, their dependants, and others of like economic status. Other conclusions of the Committee, after considering the views of Panel Committees, were against the establishment of a whole-time salaried Government medical service, in favour of the two-way extension of National Health Insurance (to include dependants and others and to bring in consultant and specialist services), and, by a majoritv, in favour of the general principle of health centres; but a resolution of the Annual Representative Meeting was also passed by the Committee, that all registered practitioners should have a right to take part in the service and, so far as possible, a choice of the area in which they would serve. On the question of the method of remuneration of practitioners—that is, whether by a basic salarv plus a capitation fee or by some other method—the Committee expressed no opinion in the absence as yet of sufficient data.

Financial Assistance for Aged and Infirm Practitioners

With the Committee sitting as the National Insurance Defence Trust a discussion arose on the objectives of the allocations from the interest of the Fund for the purpose of enabling aged and infirm insurance practitioners to retire from practice. The Treasurer (Dr. Bone) reminded the Committee that this arrangement was instituted a few years ago in order to keep the service from the disrepute into which it might fall if practitioners by reason of age or infirmity continued to do insurance work when no longer capable of properly carrying out their obligations. It was intended to deal with those cases under which action under the Medical Benefit Regulations was contemplated or was likely to arise, but applications were now being made under the assumption, apparently, that the end in view was purely benevolent or charitable. Two applications had come before the subcommittee that day and had been adjourned because they had been made on behalf of practitioners who were ill and in poor circumstances, but against whom there was no suggestion that a complaint had been or was likely to be preferred. So far as the charitable motive was concerned, the B.M.A. had its own Charities Fund and there was also the Royal Medical Benevolent Fund, and the proper course would be for Panel Committees to subscribe to those. The Trust gave its opinion that the matter was one which should be clarified, and it is likely to be raised in one form or another at the Conference.

NATIONAL EYE SERVICE

Fee for Ophthalmic Medical Examination

The last meeting of the Ophthalmic Group Committee, held on Sept. 22, with Mr. Bishop Harman presiding, considered the report of a conference which recently took place between members of the National Ophthalmic Treatment Board and representatives of approved societies on the subject of the fee for ophthalmic medical examination. At that conference the approved societies' representatives, while not unwilling to discuss some increase in the fee charged to insured persons entitled to optical benefit, were unanimous in their opposition to any differentiation on grounds of income as between different classes of insured persons. The proposal of the Group Committee had been to make no change in the fee payable for insured persons and others in receipt of an income of less than £250 a year, but to charge an increased fee for the persons with higher incomes, including those with incomes up to £420 newly brought into National Health Insurance. The approved societies declared that such discrimination or means test would be administratively impossible, quite irrespective of the financial aspect. On the question of the amount of the increase, the societies also said that their funds could not possibly allow an increase to 15s. 6d., the figure originally approved by the Group Committee; they declared that the amount available for additional treatment benefits was fixed for them, not by them, after their quinquennial valuations.

The Group Committee agreed that a report of the conference should be circulated to their constituents, together with a further document, prepared by their chairman, showing the yield in total amounts which would be forthcoming under various proposed arrangements One member suggested that in the elections of the new Group Committee. which are to take place immediately, members should seek a clear mandate on this issue, but as against this it was pointed out that members were elected for a number of years and on many other issues. It was eventually agreed that a plebiscite should be taken forthwith, the position being clearly set out to the ophthalmic medical practitioners of the country, and that any action to be taken on the result of the plebiscite should be left to the new Group Committee.

National Eye Service after the War

A memorandum on a scheme for a National Eye Service after the war was submitted by a special subcommittee. It was considered useful to have such a document in existence in case at any moment in the various movements for planning and reconstruction occasion should arise for its presentation in authoritative quarters. The object of the scheme was described as the co-ordination of the ophthalmic services of the nation in order to provide the whole community with an efficient, economic, and accessible eye service, and its essential requirements were that examination of the eyes and treatment of eye diseases and defects should be carried out by those properly trained and experienced, that the scheme should be easy to administer and economically sound, and that its benefits should be accessible to all. The three units under the scheme were described as the ophthalmic medical practitioner—the only person competent to decide whether the case is one for correction of an error of refraction or other treatment—the refractionist, and the dispensing optician. The position and status of the refractionist were considered at length. Until some determined date the refractionist would be either a medical practitioner who wished to do refraction work or a sight-testing optician whose right to practise refraction must be regularized by legislation. After the determined date the non-medical refractionist would belong to an ancillary branch of the profession with a duly regularized training, qualification, examination, and discipline. The part to be played by the refractionist and the way in which his work should be controlled were duly set out. The document was very critically examined by the Group Committee and some portions of it were recast. It was agreed that the redrafted document should be submitted to the first meeting of the new Group Committee.

Industrial Subcommittee

It was announced that the N.O.T.B. was proposing to set up a small industrial subcommittee, with two members appointed by the Group Committee and two by the committee of the Guild of British Dispensing Opticians, with a view to arranging for the "servicing" of factories, not only examining the eyes of workers but advising on lighting and similar matters. The two members appointed for this purpose by the Group Committee were Mr. Bishop Harman and Mr. E. F. Preston.

Correspondence

National Eye Service

Sir,—Members on the B.M.A. list of ophthalmic medical practitioners will shortly receive a report drawn up in accordance with the conclusions of the last meeting of the Ophthalmic Group Committee. This report will deal with the possibility of attaining agreement with the approved societies on the fees for eye service to insured persons through the National Eye Service. Each member will be asked to put down his opinion on the questions set out before him. The summary of all these answers will be directions to the new Ophthalmic Group Committee (to be elected this month) in their work of negotiation.

There is one point I feel I must put before my colleagues in medical eye work. There can be no doubt that at the end of the present world crisis there will be changes in the arrangements of medical practice of all kinds, and no doubt including changes in medical eye work. When such changes are being considered by the medical profession and by Parliament our position as ophthalmic medical practitioners will be greatly influenced by the position at that time of the National Eye Service. If it is then working well, as it has been in the ten years before the war and particularly during the war, then it is certain that the position of ophthalmic practitioners will be weighty. Therefore I suggest to my colleagues that in answering the questions of the plebiscite they should think of the future even more than of the present. What we do now may have a great effect upon the future of efficient medical care of precious human eyesight.—I am, etc.,

N. Bishop Harman.

H.M. Forces Appointments

ROYAL NAVY

Surg Capt. H St C. Colson, C.B E., to be Surg. Rear-Admiral.

Surg Capt G. R McCowen, O B E., has been placed on the Retired List.

Surg Lieuts R McM. Latta, W. Wilson, B W. Walford, and J P T. Wellwood to be Surg Lieut -Cmdrs

Surg. Lieut. R E. Lauder has been transferred to the Emergency List.

G G Wallis to be Surg Lieut

Royal Naval Volunteer Reserve

Acting Surg Lieut -Cmdr. J Ronald to be Surg Lieut -Cmdr.

Prob Temp Surg Lieuts. R. Wadia, D W. Bain, J. W. M. Humble, and S C. F. Stephenson to be Temp. Surg Lieuts.

ROYAL ARMY MEDICAL CORPS

Lieut -Col. R D Davy, M C, having attained the age for retirement, is retained on the Active List supernumerary to the establishment.

Major (Temp. Lieut -Col.) T. P Buist to be Lieut -Col

Capt. (Temp. Major) R. St. J. Lyburn to be Major

Short Service Commission—Capt A H. T F. Fullerton has been placed on the half-pay list on account of ill-health

REGULAR ARMY RESERVE OF OFFICERS

Major-Gen J. W West, C.B., C M.G., C B.E, late R A.M.C, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

Col. G. B. Edwards, D S.O, late R A M.C, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

Royal Army Medical Corps

Lieut -Col. L F K Way, D S.O, has reverted to the rank of Major at his own request whilst employed during the present emergency

Capt (Temp Major) R. N Porritt to be Brevet Major under the provisions of Article 168, Royal Warrant for Pay and Promotion, 1940.

Capt and Brevet Major (temp. Major) L J Sheil, M C, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

War Subs. Capt (Temp Major) J B. Lloyd, from temp commission, to be War Subs. Capt. and Temp. Major, retaining his present seniority.

TERRITORIAL ARMY, R A M.C

Lieut -Col. W C. Gunn, T D, having attained the age limit, has relinquished his commission and is granted the rank of Col

Capt. C. H. G. Price has relinquished his commission on account of ill-health and is granted the rank of Major.

War Subs. Capt G C. Babington has been placed on the half-pay list on account of ill-health.

War Subs Lieut R. C Connoly from R. Sussex R., T A, to be Lieut.

2nd Lieut. J. S M. Pollock from supern. for Service with Glasgow Univ. Contingent, Senior Training Corps (Artillery Unit), to be Lieut

LAND FORCES: EMERGENCY COMMISSIONS

Royal Army Medical Corps

The initials of War Subs. Capt. A A F. Shepherd are as now shown and not as stated in a *Supplement* to the *London Gazette* dated Sept. 15, 1942.

War Subs. Capt J. B. Murray has relinquished his commission on account of ill-health and is granted the rank of Major.

War Subs. Capts. G. R H. Wrangham and J. Howard have relinquished their commissions on account of ill-health and are granted the rank of Capt.

Lieuts. R Collins and B. Press have relinquished their commissions on account of ill-health and retain their rank

To be Lieuts: G. P Goodwin, R. S. Lawrie, G C. Acres, E. Bacon, J. Birch, A B Black, R B. Body, T. Brady, C. O. S. B. Brooke, F M. Brook, N. J. Brown, R J. Buxton, D. Caddy, K. B Chakravarti, A D Chisholm, G. Clarke, P B. Counsell, T. Culloty, P. G. S Davis, D. G Dixon, A. P. Douglas-Jones, R I. T Dunnachie, A H Dunnett, J. Foley, J. G. Gant, F. C. Garrow, J Halstead, J. Hilton, F E Hobbs, M. W Hutchings, S Hyman, R. J. Keating, R. G Lilly, C R Lowe, L. E. Lucas, P W. McLaughlan, M. J. McSwiney, P. F. Malim, P J. Mulcahy, W T. North, G Ormiston, D S Orr, A Paterson, E Petrie, D. V. Phillips, D. D. L Rees, A C Rogers, G K T Roche, G. M Ross, D. W. Seth-Smith, P. E Steele-Perkins, F. V Squires, B J Stephens, W. P Stevens, S D Stock, J W. Tweddle, C. R. Veall, P M. Vicary, R. L Wynne, E. J. Williams, J J. Lineham, L H J W. Worth, A. T. Aylmer, G H Ball, L. C Beadle, H. J M Browne, A Cheyne, H Copeman, W. T. Donovan, R. H Dummett, R. R. Fells, J C. Gilbert, R Gould, W S. Gross, E. N. Halley, C J Hodson, D Holland, F. G Jenkins, B Joseph, R. J Kernohan, L. P. McBrien, S. C. Mitra, R. H. A. Parker, J. McD Paterson, F. B Pilkington, R. N Rutherfurd, G J. Shanklin, W. R. McL. Stevenson, L. A Wilson, J. Witherow, B M. Wright, P Zimmerman, A. L Woolf (*correction*)

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W.—*Daily*, 10 a m to 4 p m, Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations *Daily*, 1 30 p m, Post-mortems. *Tues*, 10 a m, Paediatric Clinic; 11 a m, Gynaecological Clinic *Wed.*, 11 30 a m, Medical Conference; 2 p m, Deficiencies in Wartime, Dr. M. Pyke *Thurs*, 2 p m., Dermatological Clinic. *Fri*, 12 15 p m, Surgical Conference; 2 p m., Gynaecological Conference; 2 p m, Sterility Clinic

DIARY OF SOCIETIES & LECTURES

Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.—*Demonstrations: Mon*, 4 p m. Prof. A. J E. Cave: Certain Neuro-osseous Relations. *Tues.*, 4 p m Surg. R/A. C. P. G. Wakeley: Injuries of the Skull and Brain *Wed.*, 4 p m Prof. Cave: Articulations of the Axial Skeleton. *Thurs*, 4 p m. Surg R/A. Wakeley. Injuries of the Skull and Brain. *Fri*, 4 p m. Prof. Cave: Anatomy of the Shoulder-girdle

Royal Society of Medicine—*Mon.*, 2 30 p m Section of Odontology *Tues*, 5 p m. Joint meeting of Sections of Medicine and of Epidemiology and State Medicine

Chadwick Trust—At Royal Sanitary Institute, 90, Buckingham Palace Road, S W.; *Tues.*, 2.30 p m. Mr. W. T. Creswell: Forensic Aspects of Wartime Public Health Legislation

Medical Society of London, 11, Chandos Street, W.—*Mon.*, 5 p m, General Meeting; 5.15 p m, Presidential Address by Dr. A. Hope Gosse: The Health of the Doctor.

Royal Institute of Public Health and Hygiene, 28, Portland Place, W.—Harben Lectures by Prof. J. C. Drummond: *Mon.*, 3 p m Background to the Study of Nutrition in Wartime. *Tues.*, 3 p.m Deficiency Conditions to be Guarded Against in Wartime *Wed.*, 3 p.m Measures taken to Maintain a Good Nutritional Condition of the People in Wartime

Royal National Throat, Nose and Ear Hospital, Gray's Inn Road, W.C—*Fri*, 4 p m Mr. F W. Watkyn-Thomas: Treatment of Deafness

B.M.A.: Diary of Central Meetings

November

5 Thurs. Journal Board, 1 45 p m.

B.M.A.: Branch and Division Meetings to be held

Brighton Division.—At Royal Pavilion, Brighton, Thurs, Oct. 29, 3 p.m. Annual general meeting

North of England Branch—Joint meeting with Newcastle-upon-Tyne and Northern Counties Medical Society at Royal Victoria Infirmary, Newcastle-upon-Tyne, Thurs., Oct. 29, 2 15 p m. Clinical demonstration; 3.45 p m. Dr J. A. Charles: New Fields in Preventive Medicine. All members of H M Forces in area are invited to attend.

Swansea Division—At Mackworth Hotel, Swansea, Thurs, Oct. 29, 1 p.m. Dr. A J. Amor: Medicine and Munitions

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

Gibbons.—On Oct. 10, 1942, at Ripley Court, Ripley, to Ruby, wife of Leslie A. Gibbons, M.R C.S., L R C.P, a daughter—Margaret Ann

DEATH

Robertson.—On Oct. 16, 1942, William Robertson, M C., M.B., Ch B., of Marsh, Huddersfield.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 31 1942

WARTIME INCREASE IN CAPITATION FEES

REFUSAL BY MINISTRY OF INSURANCE PRACTITIONERS' CLAIM

A special meeting of the Insurance Acts Committee was held on Oct. 22 to receive the reply of the Minister of Health to the arguments recently addressed to him by deputation for a wartime increase in the insurance capitation fee in view of the greatly increased work of insurance practitioners and the steeply rising costs. The Minister's reply, in a letter dated Oct. 17, was that, for reasons already set out in an earlier letter from the Secretary of the Ministry, he was not able to accede to the request. The Minister added that he had come to this conclusion with great reluctance as being the only one consonant with the general policy which the Government had adopted in the matter of increased remuneration during the war period, and he assured the Committee that the decision in no way prejudiced future discussions which his Department might have to enter into on wider matters affecting the medical profession.

Dr. E. A. Gregg, the chairman of the committee, who had led the deputation, said that the rejection of the practitioners' just claim would cause grave dissatisfaction throughout the profession. He noted that the Minister said nothing about the merits of the case put up on behalf of the profession, and indeed in all the correspondence which had previously taken place no suggestion was ever made by the Ministry that the claim was not well justified. The Minister took his stand on the impossibility, from his point of view, of going to Parliament for more money. The case for practitioners could not have been put to the Ministry more completely or more strongly than by the deputation on Sept. 22, and the Minister was fully apprised of the feelings of doctors over this matter.

The committee then discussed for more than two hours the form of recommendations which it should make to the Panel Conference to be held on Nov. 5. Every member of the committee present, representing all the regions of the country, including Scotland, contributed his observations. The meeting unanimously rejected any idea of accepting the Minister's refusal, under protest or otherwise, and various suggestions were made for future action. One member said that while any refusal of service was out of the question during the war, a purely wartime measure might be sought in the form of some variation of the terms of contract as from a fixed date so as to afford some reliefs to practitioners. National health insurance patients might be placed on much the same footing as members of Public Medical Services, and the giving of anaesthetics, attendance at miscarriages, and late and night visits might be subject to an extra fee; also a small charge might be made for all certificates issued for sickness benefit.

The likely public reaction to such a measure was discussed, and some objections were stated, as, for example, that by no means all insured persons were better off than before the war, and that the people who needed the services most might not be among those whom the war had made relatively prosperous. There was also a general distaste for any lowering of the standard of service, which has been so painstakingly built up by the profession (even without very much official encouragement), or any limitation of its scope. The plan, however, was not ruled out as an alternative to other measures.

Another proposal which found a good deal of favour was deferred payment in the form of post-war credits, but it was pointed out that this did not meet the immediate difficulty, which was that large numbers of practitioners needed money now to meet their present and increasing liabilities. A proposal that certain expenses of practitioners, as, for example, motor-car taxation, should be the subject of concessions (as it was in certain circumstances in the last war) was noted as a matter for separate representation, not related to the capitation fee. The proposal which found most favour, however, was to make a request for arbitration on the claim in the first instance. The committee by a very large majority, almost unanimously, decided to recommend to the Conference that a request for arbitration be made, but with certain alternatives in the event of the rejection of this request. The forthcoming Conference will have a full opportunity of debating the whole position.

War Damage Insurance.—Doctors should note in their own interests that the procedure of insurance companies acting for the Board of Trade and their agents for the issue of renewal notices under the Commodity, Businesses, and Private Chattels Schemes is not identical with that to which the public are accustomed under the companies' ordinary policies. The issue of notices is not obligatory, and not more than one notice will be sent. As that notice may go astray doctors should enter a precautionary note on their diaries of the date on which the insurance expires, because no liability attaches under a policy if a cheque is not received by the company within the days of grace allowed

Correspondence

The Absentee Doctor's Share

SIR,—I am an absentee practitioner who has closed his house and practice and left it to the care of the B.M.A. Protection of Practices Scheme, and I entirely concur with statements made by Dr. L. B. Liebster (*Supplement*, Sept. 26, p. 37). I would like to make the following suggestions, which could easily be incorporated in the scheme and would help to overcome two of its main difficulties.

(1) All permanent panel lists were closed in Sept., 1939, and all acceptances since then are classed as wartime acceptances. If a proportion of all these wartime capitation fees was deducted and in each area pooled for distribution equally among absentee practitioners, that would, in part, offset the disadvantage of the absentee. The figure I had in mind was 3d. per quarter per head. The amount could be adjusted to avoid any undue hardship and the matter could be dealt with by the local committee.

(2) The problem of the distribution of private fees for the absentee is much more difficult, and here again I think a general percentage scheme would be more practicable. The details would vary naturally with the area, the number of absentees, and their proportion of the number of acting practitioners. But if 1% per quarter of the total private fees per absentee, in a group of 20 was deducted then the absentee would receive 5% of the total of his private fees, which would be a fair share of the work he probably did. I am sure that the acting practitioners would rather do this than have the business of rendering accounts and details to the bureau. It would be much simpler and more satisfactory all round. I must add that where an absentee practitioner has either an assistant, locumtenent, or partner acting on his behalf for the purposes of the second of my suggestions he need not be counted as an absentee.

In view of the high level of taxation the cost of my schemes to the acting practitioner would be negligible, and the help to the absentee considerable. I think that the problem is an important one and the solutions workable.—I am, etc.,

DALTON Y. CARTER.

State Medical Service

SIR,—May I endorse most heartily the letter of Dr. W. B. J. Pemberton (*Supplement*, Oct. 17, p. 52) in which he pleads that the subject of State Medical Service may be given a well-earned rest. Everybody recognizes that the post-war period will bring many problems and difficulties, but have we not become a little unbalanced on the subject of planning? One set of enthusiasts apparently desires to demolish most of London and to replace it by what a correspondent in the

Daily Telegraph aptly describes as "a rectilinear city with miles of uniform buildings." Another set of enthusiasts seems to want to carry out a similar design in the medical profession. Now that we have all had our little outburst (most of which is really due to a minor degree of anxiety neurosis) how about forgetting it for a bit, and settling down to the real job in hand—namely, winning the war?—I am. etc.,

Hove. W. N. Maple.

Misuse of Term "Dermatitis"

Sir,—May I urge practitioners to avoid so far as possible on N.H.I. certificates the term "dermatitis"? I am quite sure that if they realized the trouble and consumption of paper that this causes they would confine its use to cases where it is strictly necessary, and we should no longer have patients with impetigo and a host of other conditions having a batch of forms sent them together with instructions to see an examining surgeon. To an approved society there is only one form of dermatitis, and that is industrial. If the term must be used and the condition is plainly non-industrial, the word "non-industrial" should be added. One frequently comes across cases where doubt as to liability results in unpardonable delay in settlement and injustice to the insured person. The 5s. fee, which often has to be paid quite unnecessarily for the examining surgeon's certificate, is an added irritant.—I am, etc.,

Birmingham. A. H. Driver.

MEDICAL WAR RELIEF FUND

THIRTY-EIGHTH LIST

Amount previously acknowledged £46,310 10s *and* £100 3½% *Conversion Stock, and* £40 3% *Defence Bonds*

Individual Subscriptions

£5 5s.—Dr. David Lamb, Glasgow; Dr R. B. N. Smartt, Chesterfield; Dr A. Benham Stitch, Lamberhurst

£3 3s.—Dr. G. Ll. Jones, Llangefni.

£2 2s.—Capt Elliott, Greenford.

£1 1s.—Major W. Happer, I.M.S., and Mrs. Happer (13th donation); Dr. G. H. Pringle, Nether Stowey.

£1.—Mrs C. L. Martin, Galashiels.

10s. 6d.—Capt. E. A. Ritchie, R.A.M.C.

£170 10s.—Hon. Staff, Leicester Royal Infirmary—per Mr. R. Lodge (amount already sent £38 12s.)

£10 10s.—Bradford Division—per Mr. Donald Watson (amount already sent £600 2s).

£5 5s. 6d.—Mid-Essex L.M.W.C.—per Dr. Whitley (amount already sent £112 9s.) Balance belonging to doctors in area £2 2s. 6d.; Dr. I. Gordon £3 3s. (2nd donation).

£5 5s.—East Herts Division—per Col J. S Dunne (amount already sent £199 3s): Drs Thomson and Wells (2nd donation).

£2 2s.—Lancaster L M W C—per Dr W George (amount already sent £394 7s.): Dr. D. M. McIntyre Glasgow Division (amount already sent £387 16s.): Dr. A. A McManus (2nd donation)

Local Medical and Panel Committees

£44 9s. 3d.—Ayr County (7th donation)

£41 16s. 6d.—Newcastle-upon-Tyne (5th donation)

£32 5s. 5d.—Midlothian (9th donation).

£19 6s. 11d.—Dumbarton County (7th donation).

Total—£46,668 15s. 1d. *and* £100 3½% *Conversion Stock and* £40 3% *Defence Bonds*

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G. C Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1.

The Home Office announces that Charles Dundas Maitland, F.R.C.S., is once more an authorized person for the purposes of the Dangerous Drugs Act.

H.M. Forces Appointments

ROYAL NAVAL VOLUNTEER RESERVE

Prob. Temp Surg. Lieuts. G. F. F. Sinclair, R. I. Milne, and J Kennedy to be Temp. Surg. Lieuts

TERRITORIAL ARMY, R.A.M.C.

Supern. for Service with St. Andrews Univ Contingent, Senior Training Corps (Med. Unit).—Capt G. H Smith to be Lieut., and has relinquished the rank of Capt

LAND FORCES: EMERGENCY COMMISSIONS

Royal Army Medical Corps

War Subs. Capt. L. S Woolf has relinquished his commission on account of ill-health and is granted the rank of Major.

War Subs. Capts. G H C. Taylor, W. R Heylings, W. Gregor, and E. S. Caley have relinquished their commissions on account of ill-health and are granted the rank of Capt.

To be Lieuts: J L. Ashley, R Auld, B. A Bembridge, J Bevan-Jones, J F. Bishop, G L. Bohn, K. E. Bond, B. Brownscombe, W. Campbell, C. J Champ, F. E. Clynick, J. F. Coates, C. H. K. Daly, J. Denfield, J A. Deuchars, E. H. M Foxen, R. B. Franks, L. J. Freedman, S. J. V Gilson, D. S. Gordon, W. Gover, S H Green, V. F. Hall, R. C Hatcher, S. G. Heaton, M. Hershman, H D. G Hetherington, W. B Highet, H. Hutchinson, R. Jenkins, J. D. Johnson, F. R. B H Kennedy, H S. Le Marquand, H L. Lightstone, G. H. T. Lloyd, R. S. MacKenzie, R S. MacKinnon, R. C. MacLeod, L. F Miller, J W. Morgan, R. K. Nandlal, P. O'Malley, M S M. Palmer, A. D. Payne, J. F. P. Quinton, J. D. Ramsay, M. S. M. Rayner, W S Rhodes, P. L. E. Rothschild, A. S D. Russell, J Ryan, J. P Scrivener, C F. Scurr, R. E. Shaw, D. Simpson, L. W. Spratt, E W. Street, G B Tait, L. S. H. Thornton, A. K. Tulloch, P. S Tweedy, J. C. Valentine, J H E. Verdon, C. P. Wallace, W. Waterston, J. G. Whitty, H. L. J. Wilson, I. M. Wilson, D. B. Wiseman.

WOMEN'S FORCES

Employed with the R.A.M.C.

War Subs. Capt. A. W. Black has relinquished her commission.

The following M.O.s have been granted commissions in the rank of Lieut. Gwenllian M Lewis, Helen P. Wainwright, Eileen M. Rix, Helen M Carmichael, Nancy G. Clegg, Barbara H. Fiddian, Margaret D. W. Hamilton, Margaret R. Laws, Beryl M. Smith, Margaret L Taylor, Helen R. Wilson.

ROYAL AIR FORCE

Group Capt. (Temp.) J. D. Leahy, M.C., to be Group Capt

Wing Cmdrs V. S Ewing and J G. Russell to be Group Capts (Temp.).

Wing Cmdrs. (Temp.) P. J. McNally and G H. J Williams to be Wing Cmdrs.

Squad. Ldrs. F. H Peterson, T C Macdonald, A.F.C., J. F. Sandow, and A. M. Weston to be Wing Cmdrs (Temp.).

Squad Ldrs. (Temp) J. L. Walsh, A W Smith, and G. H Morley have been granted the rank of War Subs Squad. Ldrs.

Fl. Lieuts J. St C. Polson, F D. Campbell, E. B. Bright, A.F.C., E C Easson, J. L. W. Walls, and M O. Richardson to be Squad. Ldrs. (Temp.)

Mrs. L T. Thomson, M.O., with the relative rank of Flying Officer, has been promoted to the relative rank of War Subs Fl Lieut.

Reserve of Air Force Officers

Squad. Ldr. E Donovan to be Wing Cmdr.

Squad Ldr. W. J. L. Dean has resigned his commission and retains his rank.

Fl. Lieuts W. P. Griffin, H C. de B Milne, R. S. MacLatchy, and A R C Young to be Squad Ldrs (Temp)

Auxiliary Air Force

Squad Ldr F C. Mogg, G.M., to be Wing Cmdr. (Temp).

Fl. Lieuts. G. A H Norman, B Rothery, and W W. Walker to be Squad Ldrs. (Temp.).

Fl. Lieut G. B Hardman has resigned his commission and retains his rank.

Royal Air Force Volunteer Reserve

Fl Lieuts. J. A Mains, W. Heath, E. G Dermer, F J G Jefferiss, A. J. Owston, B. Haring, C. H Levick, C. F. H. Sergeant, G. F Rees-Jones, R. F. Stubbs, M Pearson, T. Crowley, R. J. Coto, S. K Sledge, R. W. Nichol, M. P. Morel, H. B Hunt, C R. McLaughlin, C. L. Clinton-Thomas, and C. R. E. Freezer to be Squad Ldrs. (Temp.)

A. L. McCurry to be Squad. Ldr. (Emergency)

To be Fl Lieuts. (Emergency): R. H. H Williams and P A. Carrie.

War Subs. Flying Officers J. R. Acfield, T. G. Band, T. B. Binns, G. M. Wilson, J. R. Hughes, G. R Ferguson, F. J. Hallinan, T. N. N. Brennan, T. K. Haran, E. D. Arkell, T A Hale-Monro, H M. Urquhart, W. S. Whitling, J. J. Davies, J Arnott, S. T. Hayes, A. R. Lyons, C. J. K. Orr, and K. W B. Rostron to be War Subs. Fl Lieuts.

To be Flying Officers (Emergency): E. Baldacchino C. R. Deuchar, F. R. C. Manning, E F. Brown, N. K. Farley, W E. Graham, C. W. Kesson, P Legat, and R. K. Phillips.

INDIAN MEDICAL SERVICE

Capts. G. F. Harris, L. Feinhols, J. Edis-Myers R. De Soldenhoff, and E. Parry to be Majors

Emergency Commissions

To be Lieuts: P A. L. Roberts, C. G. Muller C. H Phillips, and M. B. Klein

INDIAN MEDICAL SERVICE

The following appointments are announced D. S. Simon, L.R.C.P.&S., Medical Superintendent, Hendala Leprosy Hospital, Ceylon; R F. Macdonald M.D., Medical Officer, Gold Coast; D L. Cran, M.B., Ch.B., Medical Officer, Zanzibar; N M Maclennan, M.D., Director of Medical Services, Trinidad; C Wilson, M.B., B.Ch. Senior Medical Officer, Nigeria.

MEDICAL PENSION SCHEMES

We have been informed by the Medical Insurance Agency, which did not contribute to the article on this subject published in the *Supplement* of Oct. 10, p. 46, that there are one or two misconceptions in that article. It is proposed to publish a statement in next week's issue which, it is hoped, will explain matters

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrics and Gynaecological Clinics and Operations *Daily*, 1 30 p.m., Post-mortems *Mon*, Course on War Medicine begins. *Tues*, 10 a.m Paediatric Clinic; 11 a.m., Gynaecological Clinic *Wed*, 11 30 a.m., Medical Conference; 2 p.m., Prevention of Communicable Diseases in the Army, Col. N H. Brown *Thurs.*, 2 p.m., Dermatological Clinic. *Fri.*, 12 15 p.m., Surgical Conference; 2 p.m., Gynaecological Conference 2 p.m., Sterility Clinic.

DIARY OF SOCIETIES & LECTURES

Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.—*Wed.*, 3.15 p.m Robert Jones Memorial Lecture by Prof. Harry Platt: Congenital Dislocation of the Hip-joint.

Royal Society of Medicine.—*Tues.*, 4 p.m. General Meeting of Fellows. *Wed.*, 2 30 p.m Section of History of Medicine; 2 30 p.m Section of Surgery. *Fri.*, 10.30 a.m Section of Otology; 2 15 p.m. Section of Laryngology, 2 30 p.m Section of Anaesthetics.

Biochemical Society.—At Department of Organic Chemistry, Imperial College of Science and Technology, South Kensington, S.W., *Sat.* (Nov 7), 11 a.m. Communications

Royal Society of Tropical Medicine and Hygiene.—At 26, Portland Place, W. 4 p.m Paper by Col. N. Hamilton Fairley, F.R.S., A.A.M.C., and Col J. S. K. Boyd, A.M.S.: Bacillary Dysentery and its Modern Treatment with Special Reference to Sulphaguanidine. To be read by Col Fairley.

B.M.A.: Branch and Division Meetings to be held

City Division.—At Metropolitan Hospital, Kingsland Road, E., Oct 31, 2 30 p.m. General Meeting. Report of Representatives at A.R.M., etc.

North of England Branch.—Joint meeting with Newcastle-upon-Tyne and Northern Counties Medical Society at Royal Victoria Infirmary, Newcastle-upon-Tyne, Thurs., Nov. 5, 2.15 p.m. Clinical demonstration: 3.45 p.m Brig. F. A. E. Crew: Contribution of Genetics to Medicine. All members of H.M. Forces stationed in area are invited to attend.

APPOINTMENTS

Langley, G. F., Ch.M., F.R.C.S., Honorary Assistant Surgeon, East Suffolk and Ipswich Hospital.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

DEATH

Moyes.—On Oct. 23, 1942, Robert Esmond Moyes, M.D.Ed., of Broomhill and Warkworth, Northumberland

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY NOVEMBER 7 1942

PLANNING COMMISSION'S REPORT

A DIAGNOSTIC RADIOLOGIST'S OPINION

BY

J. V. SPARKS, M.R.C.S., D.M.R.E.

The frank discussion of the possible alterations in medical practice after the war prompts me to put forward the individual opinion of a diagnostic radiologist. As the development and technical advances of radiology are to a large extent responsible for many of the problems so ably outlined in the report of the Medical Planning Commission, I have no doubt that a number of radiologists will be found willing to co-operate in any scheme which would provide an improved radiological service for the community, provided it helped also to advance the science of radiology and was acceptable to the remainder of the profession, including those at present in the Forces.

Limitations in Existing Services

The medical practitioner would be the first to agree that an *x*-ray examination is not only desirable but, in the large majority of cases, essential to verify a suspected clinical lesion and, in many instances, to exclude disease. To-day such facilities are not so readily available as envisaged in the new proposals. An impartial observer before the war would envy our methods of training technicians and teaching radiologists, but would be amazed at the unsuitable sites and space allotted to departments of radiology and the obsolescent apparatus with which many of them were equipped. Such faults may not have been due so much to lack of vision as to shortage of funds and space and to priority claims for new accommodation, for it may not yet have been realized to what extent diagnosis depends on radiographic interpretation. No closer analogy could be quoted than that of the danger, impotence, and limitations of our Forces on land or at sea without adequate air protection. Radiology has truly altered the practice of medicine and surgery, nor do we lack the reconnaissance and bombing forces which may achieve results in areas or diseases beyond the present-day reach of the physician or surgeon.

The adequacy of radiological services to-day may be estimated by comparing the results of clinical and pathological observations and operative and post-mortem findings with the *x*-ray findings, and such a follow-up will show whether any shortcomings are the result of radiological technique or observation. Fifty years have not yet elapsed since the discovery of the Roentgen ray. Startling as are the advances achieved to date, it is idle to deny that we may have as yet made only a creditable beginning. Any scheme that restricted expenditure on development and research or limited the free choice of apparatus would be a calamity for the future of radiology in this country.

Minimum Requirements of Small Department

Now it is possible that the first *x*-ray examination demanded by the patient's doctor is a most important step to guide him and the patient in the correct channel for subsequent advice and treatment. In the proposals for a Medical Health Centre provision has been made for "a small *x*-ray department." This wording, which may be misleading, suggests to me either (1) that the department would be small, or (2) that it would be equipped with apparatus of small power.

(1) When discussing an ideal it is tempting to put forward more grandiose ideas than may be found to be practicable. I therefore submit the minimum requirements of a small *x*-ray department to be a reception hall, dressing-rooms (including one for a sick patient), an *x*-ray room, a dark room, a viewing or consultation room, a filing room, and an adjacent sluice and lavatory. To what extent such rooms could be merged would depend on their size and on the inconvenience to be suffered in a busy department as a result of such mergence. The capacity of one *x*-ray room is limited and would vary considerably with the type of examination and the speed of the technician; it might be estimated at 5,000 patients a year, and if gastro-intestinal cases were examined daily this capacity would be reduced, and would necessitate the provision of an additional fluoroscopic room. The capacity would also be reduced by including such routine examinations as the setting of fractures, removal of foreign bodies, pyelography, and other cases in which contrast media must be employed. Provision should be made for such capacity to increase yearly by 100% for several years to come.

(2) One of the chief deficiencies of radiological services to-day is the limitations of the *x*-ray machine of small power. While the opinion of radiologists may be divided, and while certain kinds of examination are well suited to this type of plant, I consider it is fair to state that such a machine is less likely to permit accurate interpretation in subjects of heavy build, in lesions of the urinary tract, gall-bladder, chest, and alimentary tract, and in ante-natal work. While it may be argued that these cases are not intended to be investigated in a Health Centre, it is unlikely that this will be heeded in practice, and a journey of 5, 10, 25, or 50 miles would mean a serious limitation of this service for many patients and practitioners. Again, it might be argued that the small-powered plant might give sufficient indication of the need for a further examination, but this might not be true for those cases where the initial findings were negative or presumed to be normal. Many examples could be cited of the dangers of an inadequate or incomplete initial *x*-ray examination.

Terms and Scope of Future Services

It is not my intention to discuss at any length the remuneration of radiologists except to suggest that it would be unethical for a hospital or the State to receive a fee from a patient for any radiological service rendered without transmitting a portion to the radiologist, whether he be employed whole-time or part-time. Neither should such service be included in the "cost of hospital benefit" or "insurance provision of a provident character" without recognized payment.

It seems, however, that some provision must be made to permit the remaining 5% to 10% of the population (however fallacious that figure may prove to be) to be examined in the State centres should they so desire, and, in areas where no radiologist practised in private, this would appear to be the only means of having an *x*-ray examination carried out locally. Facilities must therefore be provided not only to meet such eventualities but also for paying patients attending the larger centres and admitted to their private wards.

It is not necessary for me to enlarge on the part which miniature mass radiography is destined to play in the future in industrial health. This is now being rapidly expanded in the Navy, Army, and Air Force, and will within a few months be available for the examination of the civil population (as recently announced by the Minister of Health); it will provide a new means of detecting chest disease and possibly at an earlier stage. These examinations, which will be repeated at intervals, will be carried out at different centres or in departments separate from those used for other routine *x*-ray examinations.

I cannot conclude without referring to the large increase in the number of radiologists which will be required to undertake the radiological work in the proposed scheme, and it is to be hoped that the Government will take the present opportunity of continuing and extending their scheme of training radiologists for this essential service.

PETROL FOR DOCTORS

The Secretary of the B.M.A. has been informed by the Petroleum Department that doctors will not be called upon to sustain a cut in their petrol allowances for the November-December-January period. The question of petrol for attendance at medical meetings of various kinds is being reconsidered by the Department, and it is hoped to publish a further statement shortly on this subject.

Correspondence

National Eye Service

SIR,—We who are serving under present intolerable conditions are again to be asked to consider a reasonable uniform rate per case as against a two-scale rate (not a sliding scale). It has been and is a recognized principle of medical practice that for the same service a smaller fee may be asked from the less-well-off members of the community. That is all that is being asked for by those who think a two-scale rate the better proposition. We do not ask the societies to institute any means test in their allocations, nor do we dictate what we think such allocations need be. But we do retain the right to refuse our charity to such as are able to pay us at an economic rate.

Though this principle may seem to have been traversed by the N.H.I. Acts, this is not so, as under these Acts there is only one level rate of contribution—taking into account certain differences due to age and sex—and total remuneration is fixed on the basis thereof and on a known number of beneficiaries. For the National Eye Service benefits there is no rate of contribution whatever, and no known number of beneficiaries, hence we are not bound by any N.H.I. precedents. Nor are we instituting a means test, for in that the amount of benefit given—e.g., pensions—varies according to the means. We are to give the same benefit to all beneficiaries, irrespective of their means.

Let the societies therefore allocate their varied benefits as they may determine, the beneficiaries paying the difference, if any, as many do now. With a standard National Eye Service fee of 21s., reduced to 10s. 6d. for all who sign a declaration, as has been done, that their income is below £250, we shall feel that our charity is not being exploited, and we shall continue to give, as we have done, "of our best to the worst"—a not inapt definition of hospital services.—I am, etc.,

Nottingham. A. CHRISTIE REID.

SIR,—In the *Supplement* of Oct. 17 (p. 49) I read that a motion at the Annual Representative Meeting by Plymouth that "the National Eye Service should be limited to persons with an income of £250 or less" was referred to the Council. In the *Supplement* of Oct. 24 (p. 53) there is more news of the National Eye Service, which makes it clear that somebody is determined to bring in people of a higher income limit, and, moreover, that the fee payable will not even be the 15s. 6d. which was at one time suggested. I do hope the Council will stand firm and refuse to be either coerced or jockeyed by the approved societies, and that they will see that the only possible action to take at present is to adopt the Plymouth resolution and instruct the Ophthalmic Group Committee accordingly.

A fee of 10s. 6d. for a careful examination of a patient by a competent oculist is quite inadequate, and could only be accepted on the basis that it is a great concession to the less-well-to-do members of society, and 12s. 6d. or 15s. 6d. to people with £8 a week is stretching charity too far. Because N.H.I. doctors have been forced to accept a new class on their panels is no good reason for foisting them on oculists at cut rates without even the certainty of getting regular payments whether service is given or not. If the approved societies must come into the picture it would be quite simple for them to issue a voucher value 10s. 6d. and allow their members to make their own arrangements.

Mr. Bishop Harman's letter (*Supplement*, Oct. 24), in which he appeals for thought for the future, is a very strong argument for doing nothing at present which will fix the fees for a specialist or consultant at a ridiculously low figure. How do our colleagues the physicians, surgeons, radiologists, etc., fancy the idea of their consultation fees being reduced to 10s. 6d. or 12s. 6d.? I know that the dispensing opticians, who are partners in the N.O.T.B., are making their plans for the future, and they envisage a time when their turnover will be doubled or trebled by a National Eye Service which will cater for everybody, and when they will be able to run the oculists in a really business-like manner.

I have no great personal and financial interest in this question, as I am coming to the sere and yellow leaf, but I do hate to think of what the future of ophthalmology may be and of the poor young oculists who will find the ground cut away from them when they come home from the war.—I am, etc.,

Plymouth CECIL B. F. TIVY.

H.M. Forces Appointments

ARMY

Major G. W. G Hughes, D.S.O., R.A.M.C., ret., has been restored to the rank of Lieut.-Col. on ceasing to be re-employed.

ROYAL ARMY MEDICAL CORPS

Lieut.-Col. (Temp. Col.) N. Cameron, having attained the age for retirement, is retained on the Active List, supernumerary to the establishment.

Major (Temp. Lieut.-Col.) J. A. Crawford to be Lieut.-Col.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

War Subs. Capt. C. W. Simpson, M.C., has ceased to belong to the Reserve of Officers on account of ill-health, and is granted the rank of Major.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs. Capt. J. I. Maran has relinquished his commission on account of ill-health and is granted the rank of Capt.

War Subs. Capt. R. M. Wyllie has resigned his commission.

Capt. A. H. Bean, from W.A.A.M.C., to be Lieut.

Lieuts. A. Dick, B. W. Smith, and T. de L. Walker have relinquished their commissions on acount of ill-health and retain their rank.

WOMEN'S FORCES

EMPLOYED WITH THE R.A.M.C.

The following M.O.s have been granted commissions in the rank of Lieut.: Beatrice L. H. Sergeant, Marie J. McCullagh, Monica H. Niblock, Margaret E. R. Balfour, Margaret Bennett, Margaret D. Hird, Aurora M. L. Isabella, Maria D. Kelleher, Mary E. Larg, Margherita M. Lilley, Marjorie B. Curties, Phoebe N. Harvey, Flora M. Henderson, Frances A. Hepburn, Lilian Hutchinson, Jean E. W. Inglis, Anne E. E. Jordon, Anne W. MacLennan, Madeleine B. Morris, Ena McA. Morrison, Ivy Nicholls, Ann L. Pinson, Beatrice M. Thompson, Hilda Walker, Edith H. Williams.

ROYAL AIR FORCE VOLUNTEER RESERVE

To be Fl. Lieuts. (Emergency): J. M. Barkla and H. L. Duncan.

Flying Officers A. G. Beattie, A. T. Hawthorne, H. Zinober, and T. J. Gordon to be War Subs. Fl. Lieuts.

To be Flying Officers (Emergency): W. G. Alexander, P. H. Beales, B. S. Good, K. W. Horn, A. F. Lang, M. Lees, G. Paterson, F. F. Shore, J. H. Spence.

INDIAN MEDICAL SERVICE

Major J. H. Boultbee has retired on account of ill-health.

B.M.A.: Meetings of Branches and Divisions

NORTHERN IRELAND BRANCH

At the annual general meeting of the Northern Ireland Branch, held at Belfast with Dr. F. P. MONTGOMERY in the chair, the report of council and the statement of accounts by the honorary treasurer were received and adopted unanimously.

The following officers for 1942-3 were elected: *President*, Dr. R. J. Spence. *Vice President*, Mr. C. J. A. Woodside. *President-elect*, Mr. R. J. McConnell. *Honorary Treasurer*, Dr. W. Lyle. *Honorary Secretary*, Dr. F. F. Kane.

On the motion of Dr. S. B. B. CAMPBELL, seconded by Dr. LYLE, the following motion was unanimously approved; and the secretary was directed to forward a copy to each medical member of the Northern Ireland Parliament and to the Ministry of Labour: "That the Northern Ireland Branch of the British Medical Association views with great concern the number of practitioners qualified since 1938 admitted to the National Health Insurance Practitioners List, and consider this is prejudicial to the interests of practitioners on active service in the armed Forces."

Members and visitors from the U.S.A. Army Medical Corps and R.A.M.C. subsequently had lunch in the Grand Central Hotel as guests of the president. There were 79 present. Dr. G. G. LYTTLE proposed, and Mr. H. STEVENSON seconded, a vote of thanks to Dr. MONTGOMERY, who replied expressing the pleasure of the Branch at the presence of so many Service guests. Col. E. C. BRENN. U.S.A., replied.

B.M.A.: Branch and Division Meetings to be held

GLASGOW AND WEST OF SCOTLAND BRANCH.—At Institution of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, Tues., Nov. 10, 3.30 p.m. Prof. J. M. Mackintosh: The Background of Preventive Medicine.

NORTH OF ENGLAND BRANCH.—Joint meeting with Newcastle-upon-Tyne and Northern Counties Medical Society at Royal Victoria Infirmary, Newcastle-upon-Tyne, Thurs., Nov. 12, 2.15 p.m. Demonstration; 3.45 p.m. Prof. J. Le F. Burrow: Problems of Minor Medical Illness: Diagnosis and Treatment. All members of H.M. Forces stationed in the area are invited to attend.

DIARY OF SOCIETIES & LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—*Thurs.*, 3.15 p.m. Bradshaw Lecture by Mr. L. R. Braithwaite: The Role of Bile in Duodenal Regurgitation.

ROYAL SOCIETY OF MEDICINE.—*Tues.*, 2.30 p.m. Section of Psychiatry; 2.30 p.m. Section of Therapeutics and Pharmacology. *Fri.*, 2.15 p.m. Clinical Section; 2.30 p.m. Section of Ophthalmology.

CHADWICK TRUST.—At London School of Hygiene, Keppel Street, W.C., *Tues.*, 2.30 p.m. Miss Jocelyn Adburgham: Land Settlement—Its Sanitary and Architectural Aspects and After-war Possibilities.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn Road, W.C.—*Fri.*, 4 p.m. Mr. A. R. Dingley. Symptoms and Treatment of Frontal Sinusitis.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

BIRTH

BROWN.—On Oct. 26, 1942, to Betty (*née* Matthews), wife of Capt. Alex L. Brown, R.A.M.C., M.E.F., a daughter.

Mr. Noel Waterfield, F.R.C.S., has been elected chairman of the Surrey Insurance Committee, the second medical man to occupy that position since the committee was formed.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY NOVEMBER 14 1942

RECRUITMENT OF DOCTORS FROM NORTHERN IRELAND

Compulsory recruitment to the Services does not apply in Northern Ireland, but notwithstanding this fact the number of practitioners supplied to the Services from Northern Ireland compares most favourably with the number from England, Scotland, and Wales. Not only has Northern Ireland supplied on a voluntary basis its quota of general practitioners and specialists, but it has also contributed a large number of practitioners from its young practitioner pool.

Appeals are sent to Northern Ireland from the Central Medical War Committee from time to time, and these appeals never go unanswered. Although this is only what is to be expected from colleagues in Northern Ireland, tribute should be paid to their loyal and voluntary offers of service to the Central Medical War Committee ever since the outbreak of the war. A special word of thanks is due to the secretary of the committee, Dr. F. M. B. Allen.

PATIENTS ATTENDED UNDER THE E.M.S. SCHEME

Below is a statement by the Ministry of Health regarding the type of patients dealt with under the Emergency Medical Service scheme. This answers a question which some practitioners have been asking.

"Although designed primarily for air-raid casualties, the scheme made provision from the outset for such Service sick and casualties as could not be conveniently accommodated in Service hospitals, and for civil defence personnel injured on duty, together with civilian patients who had to be transferred from hospitals in the inner parts of large towns to outer hospitals because of the reduction of facilities at the inner hospitals, and unaccompanied evacuated children.

"When it appeared that air-raid casualties would not come up to expectations, much of the accommodation which had been drastically cleared of patients and reserved at the onset of the emergency was at once released for normal hospital purposes, and the organization of the scheme came to be utilized for various new types of war needs, namely: (1) Evacuees. Apart from the unaccompanied child, the scheme was extended to all those coming under any Government evacuation scheme, and later to all unofficial evacuees who made their own arrangements for temporary residence away from evacuation areas owing to the war. (2) War workers transferred from their homes to other areas and living in billets or lodgings. (3) Merchant seamen requiring hospital treatment away from home or injured on duty. (4) Fracture cases among war workers anywhere, whether transferred or in their home areas. (5) Civil defence whole-time workers transferred away from their home areas—whether for war service injury or not. (6) Women's Land Army, Home Guard, Air Training Cadets, and other miscellaneous groups

"In the result air-raid casualties now form only a small proportion of the patients provided for under the scheme, and most of the day-to-day work is unaffected by the absence of air raids."

FIRE PREVENTION DUTIES

Standard of Fitness

For the guidance of all concerned the Ministry of Home Security has defined fire prevention duties. It has also devised a form of certificate for use by the medical referees appointed by the Ministry of Labour and National Service. The essential details are given here for the information of doctors generally.

Fire prevention duties are defined as the duty of (*a*) keeping a watch for the fall of incendiary bombs and for any outbreak of fire occurring as a result of hostile attack; (*b*) taking such steps as are immediately practicable to combat such a fire; (*c*) summoning such assistance as may be necessary; (*d*) being in readiness to perform any of the above duties. To combat such a fire a team of three persons is normally required, one of whom works a stirrup pump, another carries water to the pumper and acts as a relief pumper when required, and the third holds the nozzle of the hose of the stirrup pump and directs water from the nozzle towards the fire. Fires caused by incendiary attack usually occur on the upper floor of a building and sometimes in the roof and roof spaces.

The operations of working a stirrup pump, carrying water, and climbing stairs are those which the vast majority of persons who undertake fire prevention duties would be required to perform, and the standard as regards these items would be the same for men and women. In a relatively small proportion of instances persons may be asked to operate trailer pumps, to climb ladders, or to clamber over roofs; but for these more arduous activities volunteers from among the persons on duty are normally used. It is, of course, difficult to fix a standard, but if the normal standard were that required for the most arduous activities the result might be that very large numbers of persons who were fully capable of all fire prevention duties normally required of stirrup pump teams would be totally exempted from these duties.

The certificate to be used by medical referees is as follows:

I have to-day examined ....
and I hereby certify that in my opinion he/she is suffering from ....
....
that he/she
has/has not fair sight;
has/has not fair hearing;
is fit/unfit to work a stirrup pump;
is fit/unfit to carry a bucket of water for 25 yards on level ground;
is fit/unfit to climb two flights of stairs at a reasonable pace without distress;
and should be re-examined in..........months.

The standards indicated in this certificate should be borne in mind by doctors generally when they are asked to certify unfitness for fire prevention duties.

LAID-UP CARS

The B.M.A. has represented to the Ministry of War Transport the special claims of doctors in connexion with the proposed requisitioning of cars and tyres. In particular, the position of doctors in the Forces whose cars are temporarily laid-up and of doctors in civil practice who keep a spare car for use in emergencies has been explained. The matter is being examined by the authorities concerned, and all that can be stated at present is that when the requisitioning of private cars becomes necessary, consideration will be given to laid-up cars in the hands of members of the medical profession. A fuller statement will be published as soon as possible.

Correspondence

State Medical Service

SIR,—I deplore most earnestly the attitudes of Dr. W. B. J. Pemberton (*Supplement*, Oct. 17, p. 52) and Dr. W. N. Maple (*Supplement*, Oct. 31, p. 55) that the subject of State Medical Service be given a well-deserved rest. Are they content to sit back while the Ministry foists some fantastic bureaucratic scheme of medical service on to the medical profession and the public? It is this state of apathetic indifference evinced by the medical profession in general that permits the Ministry to take an unremitting advantage whenever it is convenient to do so. Indifference is an indefensible manner to assume and gives the Ministry greater scope to use its power, which is infinitely more authoritative during stress of war.

Already we have been told that the medical services of the country are so rotten that drastic changes have to be made. This is paradoxical when one knows that the health of the community has improved vastly during the past 20 years. Any ill-health or deficiencies in medical services that exist are mainly due to economic conditions, sanitation, housing, etc., and these are the direct concern of the Ministry, the public health officials, and the school medical service, and are not within the scope of the medical profession as a whole. This is corroborated by the fact that, since the beginning of this war, tuberculosis and contagious diseases have shown a disturbing increase.

One must whole-heartedly agree with Drs. Pemberton and Maple that the real job at the moment is winning this war, but, surely, meetings and discussions among the profession are not going to interfere with that. One must not forget that we are fighting for democracy.—I am, etc.,

Halifax. DONALD G. S. MACKAY.

Future of Medical Practice

SIR,—One wonders if some of your correspondents are aware of the implications of the recommendations of the Medical Planning Commission, the Insurance Acts Committee, and the Annual

Representative Meeting. These recommendations, it seems, can be summarized simply: (1) rejection of a full-time salaried medical service; (2) the extension to the dependants of insured patients of all the benefits of the National Health Insurance scheme. The adoption of the latter would, I am informed, bring 90% of the population within its scope. This means the end of private practice.

It would seem, then, that we should have a State service with all the disadvantages of the *ad hoc* scheme and none of its advantages—viz., an assured income and compensation for present-day practice values. Much though many of us dislike all that a full-time State service implies, it would seem preferable to the other. It is again the question of whether a bird in the hand is worth two in the bush. One looks to you, Sir, for a lead in such matters. Is this not the time to make the situation clear, not to the profession alone but to the Government? Memories are short, and so one may perhaps be permitted to remind your readers that despite the fact that the profession turned down the original National Health Insurance terms of service, nevertheless they became law. Recent correspondence with the Ministry, as reported in your columns, does not suggest that matters will be any different when the new terms of service are considered unless we act now.—I am, etc.,

Highgate, N.6 W. LEES TEMPLETON.

BRITISH MEDICAL ASSOCIATION

FORMATION OF NORTH BEDFORDSHIRE AND SOUTH BEDFORDSHIRE DIVISIONS

Notice is hereby given by the Council that from the date of this notice the Bedfordshire Branch will consist of two Divisions, whose designations and areas are as follows:

North Bedfordshire: Municipal Borough of Bedford; Urban Districts of Ampthill, Biggleswade, Kempston, and Sandy; Rural Districts of Ampthill, Bedford, and Biggleswade.

South Bedfordshire: Municipal Boroughs of Dunstable and Luton; Urban District of Leighton Buzzard; Rural District of Luton.

G. C. ANDERSON,
Nov. 6, 1942. *Secretary.*

Meetings of Branches and Divisions

NORTHERN IRELAND BRANCH: NORTH-EAST ULSTER DIVISION

A meeting of the North-East Ulster Division was held at Garvagh with Dr. T. ADAMS in the chair. Dr. F. P. Montgomery, president of the Branch, Dr. F. M. B. Allen, and other members from Belfast were also present. The interim report of the Medical Planning Commission was discussed, and it was agreed that the best form of medical service for the nation after the war would be a very liberal extension of the present panel system as set out in the report. The meeting was very decidedly against a complete State Medical Service. Dr. J. C. LYLE emphasized that the pensions of dispensary doctors must be safeguarded in any future medical service.

Branch and Division Meetings to be Held

NORTH OF ENGLAND BRANCH.—Joint meeting with Newcastle-upon-Tyne and Northern Counties Medical Society at Royal Victoria Infirmary, Newcastle-upon-Tyne, Thurs., Nov. 19, 7.15 p.m. Clinical demonstration: 8.45 p.m. Prof. F. C. Pybus: Recent Advances in Cancer Research. All members of H.M. Forces stationed in the area are invited to attend.

WESTMINSTER AND HOLBORN DIVISION.—At Westminster City Hall, Charing Cross Road, W.C. Thurs., Nov. 19, 8.15 p.m. Lieut. D. Moyer, U.S.A.M.C.: General Practice in America. All practitioners in area of Division are invited to attend.

B.M.A. LIBRARY

The following books were added to the Library during August and Sept., 1942:

Angyal, A.: Foundations for a Science of Personality. 1941.
Atkins, H. J. B.: After-treatment. 1942.
Bailey, H.: Demonstrations of Physical Signs in Clinical Surgery. Eighth edition. 1942.
Barber, C. H.: Tropical and Sub-tropical Diseases. 1942.
Beaumont, G. E.: Medicine. Fourth edition. 1942.
Bourne, A. W., and Williams, L. H.: Recent Advances in Obstetrics and Gynaecology. Fifth edition. 1942.
Brend, W. A.: Handbook of Medical Jurisprudence and Toxicology. Eighth edition. 1941.
Clapesattle, H. B.: The Doctors Mayo. 1941.
Clark, P. F., and Clark, A. S.: Memorable Days in Medicine. 1942.
Clay, H. H.: Sanitary Inspector's Handbook. Fifth edition. 1942.
Dahlberg, G.: Race, Reason and Rubbish. 1942.
De Gouveia, V.: Missao Médica ou Profissao Médica. 1942.
Ford, E. B.: Genetics for Medical Students. 1942.
Goldthwait, J. E., *et al.*: Body Mechanics in Health and Disease. Eighth edition. 1942.
Hadfield, G., and Garrod, L. P.: Recent Advances in Pathology. Fourth edition. 1942.
Haldane, J. B. S.: New Paths in Genetics. 1941.
Hanfmann, E., and Kasanin, J.: Conceptual Thinking in Schizophrenia. 1942.
Hinsie, L. E.: Visual Outline of Psychiatry. 1941.
Hume, E. E.: Ornithologists of the United States Army Medical Corps. 1942.
Jessner, L., and Ryan, V. G.: Shock Treatment in Psychiatry. 1942.
Katz, L. N.: Electrocardiography. 1941.
Katz, L. N.: Exercises in Electrocardiographic Interpretation. 1941.
Kracke, R. R.: Diseases of the Blood. Second edition. 1941.
Langdale-Kelham, R. D., and Perkins, G.: Amputations and Artificial Limbs. 1942.
Langstaff, J. B.: Doctor Bard of Hyde Park. 1942.
Lewis, G. G.: Ophthalmic Formulary. 1942.
Maximow, A. A., and Bloom, W.: Textbook of Histology. Fourth edition. 1942.
Piney, A., and Wyard, S.: Clinical Atlas of Blood Diseases. Fifth edition. 1942.
Read, G. D.: Revelation of Childbirth. 1942.
Sigerist, H. E. (Editor): Four Treatises of Theophrastus von Hohenheim called Paracelsus. 1941.
Ten Teachers: Diseases of Women. Seventh edition. 1942.
Thompson, C. J. S.: History and Evolution of Surgical Instruments. 1942.
Ustvedt, H. J.: Pulmonary Tuberculosis. 1942.
Vaughan, W. T.: Allergy: Strangest of All Maladies. 1942.
Wilkinson, M. C.: Non-pulmonary Tuberculosis. 1942.
Wright, Sir A. E.: Pathology and Treatment of War Wounds. 1942.

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieut. B. Ridgway to be Surg. Lieut.-Cmdr.

ROYAL NAVAL VOLUNTEER RESERVE

Acting Surg. Lieut.-Cmdr. J. L. M. Wood to be Surg. Lieut.-Cmdr.

Prob. Temp. Surg. Lieuts. I. D. Leitch, A. M. Barnett, T. G. Paxon, A. B. Kennedy, J. P. Dewsbery, C. C. Evans, W. J. C. Markby, H. H. Nixon, J. E. Cursley, and A. R. Wear to be Temp. Surg. Lieuts.

ARMY

Col. F. R. B. Skrimshire, late R.A.M.C., having completed 4 years in the rank, is retained on the Active List supernumerary to the establishment.

Lieut.-Col. (temp. Col.) R. H. Alexander, M.C., from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Major (War Subs. Lieut.-Col.) (temp. Col.) G. T. Garraway to be Lieut.-Col.

TERRITORIAL ARMY, R.A.M.C.

War Subs. Capt. G. C. Babington, from half-pay list, to be restored to full pay, retaining his present seniority.

Supern. for Service with Birmingham Univ. Senior Training Corps (Med. Unit).—H. P. Gilding to be Lieut.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs. Capt. J. M. Lawrie has been placed on the half-pay list on account of ill-health.

War Subs. Capts. G. R. Anderson and F. K. B. Quanbrough have relinquished their commissions on account of ill-health and are granted the rank of Capt.

Lieuts. N. Levy and A. R. V. Patel have relinquished their commissions on account of ill-health and retain their rank.

To be Lieuts.: T. T. Ferguson, P. B. De Mare, H. E. Thackray, R. T. Campbell, E. R. L. Gregson, H. D. McCall, J. de Swiet, J. Anderson, N. S. Barnett, A. C. Barthels, W. M. Burgess, V. C. Benson, N. P. Bruce, S. R. M. Bushby, B. S. Cardell, R. Y. Carter, M. Caturani, H. D. Cockburn, D. C. Coull, J. W. A. Crabtree, J. Craig, D. H. Cutler, H. L. De Waal, J. O. W. Dick, I. G. B. Drybrough-Smith, B. L. Eames, B. K. Ellenbogen, A. W. G. Elliott, A. Elliot Smith, M. M. A. El Mishad, D. R. Evans, W. Forster, B. Gaunt, C. J. Glass, J. L. T. Graham, D. Granet, H. Grenville, J. E. H. Griffiths, R. B. Halford, M. Hall, W. H. Harris, J. H. Hilditch, J. B. Jayne, W. Johnson, S. R. Kaye, M. J. Keating, G. Kelham, B. Kelion, T. Kramer, G. L. Lambert, J. C. Leask, H. Lipman, D. C. Little, C. J. Livingstone, K. G. Lowe, B. S. Lush, R. MacG. McGowan, W. McKellar, J. H. MacLaughlin, D. H. Mackay, J. S. Mackay, P. L. F. Mortimer, S. W. K. Norris, E. R. Nurse, J. T. J. O'Reilly, R. F. G. Ormrod, G. E. Parker, H. C. Percy-Hughes, R. J. F. H. Pinsent, I. D. Riley, J. S. Rix, M. Rosten, J. O. Schofield, D. R. Seaton, J. Slorach, J. R. Smith, L. Smulian, G. O. Storey, D. A. Vyrnwy-Jones, R. H. Watson.

WOMEN'S FORCES

EMPLOYED WITH THE R.A.M.C.

War Subs. Capt. M. J. Thornton has relinquished her commission.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: Brompton Hospital, M.R.C.P. clinical course, Mon. and Thurs., 4.30 p.m., from Nov. 17 to Dec. 10, on diseases of the chest; London Chest Hospital, M.R.C.P. clinical course, Mon., 10 a.m., and Fri., 2.30 p.m., Nov. 23 to Dec. 18, on diseases of the chest and heart.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m., Post-mortems. *Mon.*, 2 p.m., Ear, Nose, and Throat Clinic. *Tues.*, 10 a.m., Paediatric Clinic; 11 a.m., Gynaecological Clinic; 2 p.m., Genito-urinary Clinic. *Wed.*, 11.30 a.m., Medical Conference; 2 p.m., Calcium Deficiency Diseases—II, by Dr. Donald Hunter. *Thurs.*, 2 p.m., Dermatological Clinic; 2.15 p.m., X-ray demonstration, Diseases of Bone (Inflammatory and Dystrophic), by Dr. E. J. E. Topham. *Fri.*, 12.15 p.m., Surgical Conference; 2 p.m., Gynaecological Conference; 2 p.m., Sterility Clinic.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*Brompton Hospital:* Tues. and Thurs., 4.30 p.m., M.R.C.P. clinical course.

DIARY OF SOCIETIES & LECTURES

ROYAL SOCIETY OF MEDICINE.—*Tues.*, 3.30 p.m. Section of Pathology. *Thurs.*, 2 p.m. Section of Dermatology; 2.30 p.m. Section of Neurology. *Fri.*, 3.30 p.m. Section of Obstetrics and Gynaecology; 4.45 p.m. Section of Radiology. *Sat.*, 11.15 a.m. Section of Physical Medicine.

SOCIALIST MEDICAL ASSOCIATION.—At Conway Hall, Red Lion Square, W.C., *Sat.* (Nov. 21), 2.30 p.m. Mr. W. C. W. Nixon: Nutrition.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue.

DEATHS

PRICE.—On Nov. 3, 1942, after a long illness, Lawrence Edwin Price, M.R.C.S., L.R.C.P., aged 63 years, dearly loved husband of Mary (*née* Hooson), late of "Red Roofs," Nuneaton, and of "Greenways," Crabbs Park, Paignton. Mayor of Nuneaton 1928-1930.

MARTIN.—On November 1, at Bath, Somerset, H. Meredith Martin, F.R.C.S., following a short illness.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY NOVEMBER 21 1942

ANNUAL PANEL CONFERENCE

CLAIM FOR WARTIME INCREASE IN REMUNERATION

ACTION ON MINISTER'S REFUSAL

The Annual Conference of Representatives of Local Medical and Panel Committees was held in the Great Hall of the British Medical Association House in London on Thursday, November 12. Almost every insurance area in Great Britain was represented, and the attendance numbered nearly 200. The chair was taken by Dr. D. G. Greenfield, who was supported by Dr. E. A. Gregg, chairman of the Insurance Acts Committee.

Tribute was paid at the beginning of the Conference to the memory of Sir Henry Brackenbury and Dr. E. R. Fothergill, who had given so many years of conspicuous service to insurance practitioners, and to two members of the Insurance Acts Committee who had died during the year, Dr. R. Boyd and Dr. J. C. Davies.

On a motion by the representative of Bristol, the following resolution was unanimously carried:

> "That this Conference, representing all insurance practitioners in Great Britain, sends a congratulatory message to the Director of Medical Services, 8th Army, expressing profound admiration at the part played by the medical services in the Battle of Egypt and wishing him and the officers and men serving under him good fortune and continued prosperity in the future."

An alteration of standing orders to admit of the election of 6 additional members of the Insurance Acts Committee by the general body of representatives was agreed to. Dr. Gregg mentioned that with these additions the committee would number 47 members, of whom 44 would be general practitioners. This election of six members took place in the course of the Conference. The following were chosen: Dr. A. Beauchamp (Birmingham), Dr. Elkington (Shropshire), Dr. D. G. Greenfield (Northamptonshire), Dr. I. G. Innes (Hull), Dr. J. A. Pridham (Dorset), and Dr. F. M. Rose (Preston). A contested election for the chairmanship of the Conference resulted in the return of Dr. J. A. Brown (Birmingham).

"Grave Dissatisfaction"

Dr. Gregg next moved, on behalf of the Insurance Acts Committee, the first of several motions regarding the position which has arisen on the Minister's rejection of the claim of insurance practitioners for a wartime increase in their remuneration. He reminded the Conference that on the last occasion on which it met it was faced with the offer of the Minister of an additional ninepence to cover increased practice expenses. Discussions had continued since then. Just before the war some useful statistics had been collected regarding the services rendered by insurance practitioners, and good use would have been made of these had the war not broken out. It presently became evident, however, that a strong case could be made out for a wartime increase on two other grounds—namely, the increased cost of living and the increased obligations to which practitioners were subject consequent upon enlargement of insurance risk. As a result of the war a very large number of healthy lives had been withdrawn from their insurance lists; some of them had returned, but not as healthy lives, having been broken and disabled by war. In addition there had been admitted to insurance large numbers of women and middle-aged men, many of them not hitherto engaged in insurable employment, who were now undertaking unaccustomed work in conditions for which many of them were not properly equipped, and their health reflected the character of the burden they were carrying.

These and many other facts had been pointed out to the Minister. It was explained to him that the medical profession was doing something for its members on service such as no other section of the community was doing. In Government and local government circles and in large businesses and approved societies the remuneration of those who had gone into the Services was made up to the level of what they had been receiving in civil life. But the medical profession, through the operation of the Protection of Practices Scheme, had voluntarily arranged that the absent doctor should receive 50% of the remuneration which he would receive from his practice if he were at home. The profession had received no help from anybody; it was doing it by itself and was proud and glad to do it. But if moneys from the Central Insurance Fund were being used on the approved society side for the purpose of raising incomes to those received in civil employment, it seemed reasonable to include what doctors were doing among the other items in the case.

Dr. Gregg went on to describe the way in which the committee's representations had been received by the Ministry. After receiving an unfavourable reply from the Secretary to the Ministry, Sir John Maude, a deputation from the committee waited on the Minister himself, and a verbatim report of the interview was in the hands of representatives. He reiterated the arguments which were placed before the Minister. He himself had had an idea that the present Minister of Health was more favourably disposed towards the position of insurance practitioners than his predecessors, and this seemed to be borne out by the delay which ensued before his reply was received—a delay which incidentally caused a postponement of the Conference to a later date than the one originally fixed. It was evident that the Minister consulted his colleagues, but the reply when it came was a reluctant refusal. The reply was one which would cause general dissatisfaction and confirm the feeling of resentment and frustration which those representing insurance practitioners had felt in their relations with the Ministry. "We have not finished with this yet, and we have no intention of being finished with it. (Applause.) We mean to pursue it in such ways as we can. We may have to pause, but if we pause it will only be to go forward again in the way that opportunity shapes." He moved:

> "That this Conference of Local Medical and Panel Committees is gravely dissatisfied with the Minister's rejection of the just claim of insurance practitioners for a wartime increase in remuneration."

Publicity

It was moved at this stage by Dr. A Owen (Lancashire) that in view of the serious nature of the Conference discussions the lay Press be excluded. This was supported by Dr. J. P. Quinn, another Lancashire representative. Dr A. Beauchamp (Birmingham) said that this was a retrograde step. There were grumbles among practitioners that not enough publicity was given to their case, that they did not have sufficient "press." The motion to exclude the Press was decisively rejected.

Dr. G. de Swiet (London) said that it was well known that civil servants and school teachers and others had had increases sanctioned by the Government. According to the interview which the deputation had with him, the Minister was concerned about the vicious spiral. but that spiral received its initial impetus from the action of the Government itself in instituting various increases in prices over which it had control.

A Plea for Further Waiting

Dr. N. Stevens (West Suffolk) moved an amendment in which the Minister's rejection of the claim for a war bonus was noted and the Insurance Acts Committee was instructed to renew its claim to a cost-of-living increase if and when such increase was given to comparable sections of the community. The mover agreed that the capitation fee was inadequate, and that the Minister had treated them badly. But the Conference had agreed last year to let this matter rest until after the war, when the whole question of the capitation fee would be explored. He considered it doubtful whether they had any right to a war increase at all, but there was no excuse for going back on the resolution of last year. A sense of patriotism should make them content with some lower scale of living. It was true that there were some areas where a war bonus was urgently needed, such as the eastern and south-eastern district, where practitioners had suffered badly through the departure of their patients following upon raids, but to grant a war increase over the whole country would be inequitable because it would benefit practitioners who in reception and munition areas had benefited already. It was most unbecoming for doctors to keep up this cry, and their attitude was playing into the hands of those who sought to turn them into a State Medical Service.

Dr. H. B. Pollard (Bedfordshire) spoke to the same effect. Like the rest of them, he was dissatisfied with the capitation fee, but he felt that at this time they ought not to be fighting for another sixpence or shilling. Dr. C. M. Stevenson (Cambridgeshire) said that that was also the feeling in his committee.

Counter-arguments

Dr. J. A. Brown (Birmingham) supported Dr. Gregg's resolution. They had asked the Minister for an increased premium to cover an increased risk. He endorsed what Dr. Gregg had said about the removal of healthy insured persons and the substitution of older people, many of them in indifferent health, who were being subjected to long hours and considerable strain.

Dr. A. S. Winstanley (Lancashire) said that national health insurance practice had never at any time been a sound business proposition except in so far as it had been subsidized by private practice and private fees of various sorts. This subsidy varied considerably according to the area of the practice, but even in an industrial area where private practice consisted almost entirely of the treatment of dependants and others of like economic status it had not been inconsiderable. But the value of the subsidy was disappearing owing to the inroads made by Government and local government services and by the inclusion of new groups of persons in insurance. He did not believe that they would incur the opprobrium of the public if they went further with their demands. The public must be made to understand the significance of the insurance practitioner's remuneration. Three or four years ago it was worked out that the capitation fee was equivalent to 2s. 3d. for a visit and 1s. 7½d. for an attendance.

Dr. S. Wand (Birmingham) declared that the medical profession was just as much responsible for armaments as the people in the factories, perhaps even more so. If it was the policy of the Government to limit the remuneration of the people in the factories, including the manufacturers themselves, without regard to the amount of work they put in or the work involved in the making of a particular article, then they would accept the position, but that was not the case at all. The Government was not taking that line, but quite the contrary, with manufacturers and employers of labour. He declared the amendment of West Suffolk to be defeatist. There was no more patriotic section of the community than the doctors, and they did not have to be told which was the right and proper time to apply for an increase in their remuneration.

Dr. P. V. Anderson (Durham) asked those representatives who had not increased their private fees to non-insured persons to put up their hands, and a number did so, but he declared it to be an obvious minority. It seemed clear to him that they should go forward in the endeavour to have their fees for National Health Insurance work increased.

No Breach of Faith

Dr. Gregg said that he had listened with interest to the case put by West Suffolk. It was suggested by the proposer that the Conference would be going back on some resolution previously adopted. That was not true. They did wring from the Minister an undertaking that at the end of the war the whole question of remuneration would be gone into from the foundation without any relation whatever to previous figures, and what was now being dealt with was not the basic remuneration. It was a short-sighted view that because the remuneration was basically inadequate there was no sufficient reason for claiming a wartime increase. On the question of doctors' incomes in general, the committee had had voluntary statements from all parts of the country regarding the decrease in income which doctors had sustained. It was true that there might be here and there isolated instances of people who were not suffering such decrease, just as there were isolated instances of people who were making money out of the war. But that was not true of the vast majority, and the information available showed that there had been a general reduction of the income of doctors by at least 33⅓%.

The West Suffolk amendment to postpone the renewal of the claim for a cost-of-living increase was lost. There appeared to be only about half a dozen hands raised in its favour. The motion of the Insurance Acts Committee expressing grave dissatisfaction with the Minister's rejection was carried by an overwhelming majority. A motion by Somerset was also carried urging the Insurance Acts Committee to press the matter to its utmost limits. Dr. C. R. F. Killick, the mover, said that the dissatisfaction over the question of the war bonus was increased by the fact that the basic payment was so inadequate. Practitioners were at call for 24 hours a day and seven days a week, and for their services to insured patients they received just over 2d. per capita per week. He did not suppose that this was realized by the general public.

Proposal to Ask for Arbitration

Having expressed its grave dissatisfaction, the Conference proceeded to the consideration of a number of motions and amendments—amounting to over 30—on the agenda proposing various courses of action. Dr. Gregg, on behalf of the Insurance Acts Committee, proposed that the committee be instructed to request the Minister to submit its claim for a wartime increase in the capitation fee to arbitration. He pointed out that various alternatives were mentioned in the resolutions. There was the alternative of resignation from the service—which he did not think many would contemplate—the alternative of a revision of the terms of service, and the alternative of the method of deferred payment. But it was felt by the majority of the committee that arbitration should be the next step, although the associated difficulties were fully recognized.

A very long debate then took place. An amendment by Lancashire instructing the committee to apply to the Minister for a wartime capitation fee of 14s. per head per annum, and, failing satisfaction, to call for the giving of the requisite notices of withdrawal from panel lists by all panel practitioners, was rejected by a very large majority. Eventually an amendment by Cumberland instructing the committee to press for reconsideration by the Minister, failing which the committee would reserve the right to take any action which it considered necessary, even to the extent of recommending practitioners to withdraw from the service, was carried by 85 votes against 67, and became the substantive motion. A large number of other amendments were then referred to the committee for consideration as possible methods of implementing the Cumberland motion.

A summary of these discussions will appear in a later issue.

THE B.M.A. AT WORK

MEDICAL ATTENDANCE ON SERVICE PERSONNEL

In view of the requests received by the B.M.A. from civilian practitioners for guidance on the regulations governing medical attendance on members of H.M. Forces who are taken ill when on leave, the following comprehensive memorandum has been obtained from the Service Departments.

1. *N.C.O.s, Men, and Women of the Army, Air Force, and Women's Auxiliary Services on Leave, Furlough, or Pass.*

(*a*) When N.C.O.s, men, and women auxiliaries proceed on pass they have instructions that should they require medical attention they should report, if practicable, to the nearest naval, military, or air force medical establishment. This instruction has been amplified to include civil hospitals under the Emergency Medical Service Schemes of England, Wales, Scotland, and Northern Ireland in the lists of medical establishments to which they should report.

(*b*) Personnel residing within 2 miles of a Service medical establishment and unable, owing to their condition, to report in person, are required to notify the Service medical establishment, which will be responsible for arranging medical attendance

(*c*) Service personnel residing more than 2 miles from a Service medical establishment may call in a civilian medical practitioner at the public expense if, because of their condition, they are unable to attend at any E.M.S. hospital which may be within the 2-mile radius.

(*d*) Having called in a civilian medical practitioner it is incumbent on them to notify their commanding officer at once, enclosing a medical certificate from the civilian medical practitioner. This certificate should state clearly whether or not the individual is fit to travel, as on the expiration of leave anyone fit to travel is required to return to his or her unit, where any further treatment can be arranged.

(*e*) If a civilian medical practitioner is called in when it is practicable for the individual to apply to the medical officer of a Service medical establishment or to attend at an E.M.S. civil hospital that individual may, after investigation by the appropriate Service authorities, be held liable for the expenses incurred. If the civilian medical practitioner is aware that although local Service facilities are available the man or woman has called him in, it will be in the best interests of all concerned if he communicates with the local Service medical establishment in order that any necessary medical attendance may be provided by that establishment.

(*f*) Claims for payment rendered by a civilian medical practitioner in respect of medical attendance or treatment afforded to personnel should be accepted as charges against public funds unless it has been established that the civilian medical practitioner was required to attend in contravention of the foregoing, when the individual concerned will be informed that payment is his or her liability.

(*g*) To obtain payment a civilian medical practitioner must procure and fill in Army Form O1667 (which is the same form as R.A.F. Form 1667). This form is obtainable from the officer commanding the patient's unit and from clerks to national health insurance committees. It sets out clearly the instructions for completing the form and the scale of charges allowed, and it should be completed according to the instructions and submitted immediately on conclusion of attendance to the officer commanding the patient's unit.

(*h*) In all cases the fees payable from public funds to civilian medical practitioners in respect of treatment cover any medicines required. The practitioner is therefore responsible for ensuring that the patient is supplied free of charge with such medicines as he or she may require.

2. *Royal Navy and W.R.N.S. Ratings and Royal Marine other Ranks on Leave*

(*a*) All personnel have instructions to apply for medical aid personally, if possible, to the nearest Service or civil hospital, or to a naval surgeon and agent. If, however, the case is extremely urgent and none of these facilities are readily available they should apply to the nearest medical practitioner.

(*b*) The "leave ticket" should be produced to the doctor, and for any services which are rendered the doctor will be paid in accordance with the scale shown in the claim form (Admiralty Form S.26). The scale fees include any necessary certificates and medicines. Payment in excess of the scale will be allowed at the discretion of the Admiralty if the case needs more than ordinary attention.

(*c*) (i) The claim form will be forwarded to the doctor by the patient's commanding officer on receipt from the patient of the first certificate, which should be forwarded immediately the person falls sick. (ii) Further certificates must be forwarded by the patient weekly so long as he or she remains sick on shore. (iii) A final certificate is to be taken by the patient to his commanding officer as soon as he or she is well enough to travel.

(*d*) It is essential that personnel should not remain sick at home longer than is absolutely necessary. Neither should the individual's residence be used as a sick quarters unless the patient is too ill to be moved or the distance to a Service, etc., hospital is too far.

(*e*) Personnel should be discharged to their units as soon as fit to travel; adequate facilities exist for further treatment on return, so they must not be kept under treatment on leave because they are unfit for duty.

(*f*) Payment for fees should be claimed on Admiralty Form S.26, which will be supplied to the doctor by the patient's commanding officer, as explained in para. 2 (*c*) above. Army and air force forms should not be used.

Other Circumstances in which a Civilian Medical Practitioner may be required to give Attendance to Troops

3. Men or women quartered in barracks or camps will normally have no occasion to apply to a civilian medical practitioner for treatment as there will be a Service medical officer in medical charge of the personnel there.

4. Men or women who, during training or attachment to a headquarters or formation in this country, are accommodated in billets or at their own homes should apply, if medical attendance is required, to the medical officer attached to their unit. (Cases under this heading, as well as those referred to at para. 3, should only require the services of a civilian medical practitioner in emergency when the Service medical officer is not available. Claims for fees in respect of such attendances should be submitted on Army Form O1667 (R.A.F. Form 1667), as described at para. 1 (*g*) above.

5. In certain instances a civilian medical practitioner may be asked to give regular attendance on a detached body of Service personnel for whom no Service medical officer is available. Such attendance will be arranged between the officer commanding the unit or detachment, the appropriate Service medical authority, and the civilian medical practitioner. Payment in such cases will not be on the basis of Army Form O1667 but at agreed rates, which are based on the number of personnel involved and the work to be done, and take into account distance to be travelled by the civilian medical practitioner and any other special circumstances involved.

PETROL FOR MEETINGS

As a result of further strong representations made by the B.M.A. to the Petroleum Department, it has been decided that, when other means of transport are not reasonably practicable, petrol granted to doctors for professional purposes may be used for journeys made to attend statutory committees (and subcommittees), such as panel and insurance committees and committees of local authorities; executive committees of public medical services; committees administering the Protection of Practices Scheme; and, subject to a limit of 20 miles, scientific meetings of medical societies on subjects directly related to wartime medical or surgical practice. As has previously been announced, journeys to meetings of Local Medical War Committees are permitted also. It is thought that doctors serving on medical committees or management committees of hospitals and other medical institutions will not normally need to make journeys for the sole purpose of attending such committees, but, should this need occur, the regional petroleum officers will consider applications on their merits, in consultation, if necessary, with the medical liaison officers. Finally, members of central committees of the B.M.A. who are resident in the Metropolitan Police area may attend meetings of these committees by car when other methods of travel are not reasonably practicable.

The London County Council has agreed that the surgeon engaged to carry out pre-frontal leucotomy at its hospitals and institutions shall be paid a fee of £6 6s. a session of approximately 2½ hours' duration. Hitherto the operative work in connexion with this new method of treatment has been performed by a whole-time E.M.S. surgeon, whose services have been lent to the Council free of charge. This surgeon is now engaged only for part-time in the E.M.S., and any services rendered by him to the Council in respect of pre-frontal leucotomy will be part of his private practice, for which he is entitled to receive fees. It is desired by the Council to retain his services. The number of sessions estimated to be required is not more than 20 a year at present.

Correspondence

National Eye Service

SIR,—I am sorry to disagree with Mr. Bishop Harman regarding some of the statements he has made in his letter (*Supplement*, Oct. 24, p. 54). The National Eye Service has not been working well. 10 years before the war. If it had been, the formation of the Association of British Ophthalmologists would not have been necessary. We are extremely anxious about the provision now and in the future of an efficient eye service for the nation—a truly national medical ophthalmic service.

The questionary will not bring us one whit nearer our goal. It is useless for us to debate the matter with the approved societies until we set our own house in order. The contributions made by the approved societies together with the payments made by their members are sufficient to meet the case if the remunerations for labour were justly allocated. The price of glasses to the insured patient should be the wholesale price plus the ophthalmic practitioner's fee plus the dispenser's fee plus the clerical fee minus the grant from the approved society. The relative value of the ophthalmologist's fee and the dispenser's fee should receive very careful attention.

When it comes to a consideration of insured patients whose earning power is above £250 per annum no doubt the approved societies will exercise the means test and the weekly contribution will be increased according to the worker's earning power. The ophthalmic medical practitioner's fee and the dispenser's fee should be augmented then in a similar fashion.—I am, etc.,

London. FRANCIS E. PRESTON.

MEDICAL WAR RELIEF FUND

THIRTY-NINTH LIST

Amount previously acknowledged £46,668 15s 1d *and* £100 3½% *Conversion Stock and* £40 3% *Defence Bonds.*

Individual Subscriptions

£20.—Dr D. T Daintree, Bengal (2nd donation).

£1 1s.—Dr. T B. Evans, Wrexham (14th donation); Dr. G M. E Olive, Southall (3rd donation).

£1.—Dr. S. Falkowicz, Wrexham

£394 5s. 9d. (£A494 16s. 8d.).—Federal Council of the B M A. in Australia (amount already sent £3,585 13s. 2d).

£111 2s.—Shropshire and Mid-Wales Branch—per Dr. Mackie (amount already sent £399 6s): Dr. J. A. Anderson, £10 10s; Drs. Geggs and Thompson, £30; Dr. H R Cross, £2 2s; Dr. A Glandon Williams, £2 2s.; Dr. T. H Gandy, £2 Dr M. Phillips, £10; Drs. Woolward and Burnett, £5 5s; Dr. S. N Browne, £3 3s (2nd donation): Dr. J A Ireland, £10 (2nd donation), Dr R C Neville, £3 3s (2nd donation); Dr T. R. Elliott, £3 3s. (2nd donation); Dr C. U Whitney, £5 5s. (2nd donation), Drs Legge and Legge, £4 4s (2nd donation); Dr G. Mackie, £5 5s. (2nd donation); Dr R. H S. Marshall, £10 (2nd donation); Mr. J. G. C Spencer, £5 (3rd donation). (Correction. The donation of £5 credited to Dr. E L. N Rhodes in the Thirty-sixth List under Shropshire and Mid-Wales should have been credited to Dr. A. J. Rhodes).

£5.—Doctors in the Isle of Man—per Dr D Pantin (amount already sent £130 16s.).

Local Medical and Panel Committees

£150.—Derbyshire (4th donation).

£52 10s.—Carmarthenshire.

£32 1s. 5d.—East Lothian (6th donation).

£5 5s.—County of Forfar (2nd donation).

Total—£47,442 1s. 3d, and £100 3½% *Conversion Stock* and £40 3% *Defence Bonds*

Cheques payable to the Medical War Relief Fund should be sent to Dr G C Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1

BRITISH MEDICAL ASSOCIATION

OPHTHALMIC GROUP COMMITTEE

The following have been elected members of the Ophthalmic Group Committee of the B.M.A. for the three years 1942-5:

REGION 1: Dr. H. R. Bickerton (Liverpool), Mr George W. Black, F.R.C.S. (Leeds), and Dr A B. Nutt (Sheffield).

REGION 2: Mr T. Harrison Butler, F.R.C.S (Birmingham), Dr. N P. R Galloway (Nottingham).

REGION 3: Dr. F. Heckford (Isle of Wight), Dr. D Wilson (Torquay).

REGION 4: Mr. N. Bishop Harman, F.R.C.S (London, W 1), Mr. O. G. Morgan, F.R.C.S (London, W.1), and Mr. Humphrey Neame, F.R.C.S (London, W 1).

REGION 5: Dr. F. Oliver Walker (Dartford)

REGION 6: Mr. C. R. Duncan Leeds, F.R.C.S (Edinburgh), Dr. John Marshall (Glasgow)

By ophthalmic medical practitioners (not eligible for membership of the Group) for the time being approved for examination of patients under the National Eye Service:

Dr. R. Gordon Simpson (Winchmore Hill, N 21)
Dr. C M. Stevenson (Cambridge).

The constitution of the committee provides for the appointment of one member by the Council and one member by the Insurance Acts Committee. These appointments have not yet been made.

Meetings of Branches and Divisions

NEW SOUTH WALES BRANCH

The annual report of the New South Wales Branch for the year to March, 1942, strikes some familiar notes. For example, the Branch Council appointed a committee to deal with the question of petrol supply for doctors; schemes for the protection of practices of doctors on active service were approved; and the shortage of doctors was the subject of a deputation to the Minister of Health. In spite of the fact that over a quarter of the members of the Branch (475 out of 1,894) were engaged in full-time military duties, 10 ordinary and 8 clinical meetings were held during the year, 7 of the former taking place in conjunction with specialty groups. The clinical meetings, which were held in different hospitals, included 21 papers and addresses, reports of cases, demonstrations, etc. Members of the legal profession and the police force attended an ordinary meeting on Oct. 30, 1941, at which the subject for discussion was "Driving under the Influence." On Dec. 11 Major-General Downes, Inspector-General of Medical Services, spoke to an ordinary meeting on "The A.A.M.C. in the Middle and Far East."

SOUTHERN BRANCH

At the 68th annual general meeting of the Southern Branch, held at Southsea, the following officers were elected: *President*, Dr. H. H. Warren. *President-Elect*, Dr. W. A. Clayton Cox. *Vice-Presidents*, Dr. T. Beaton and Mr. P. Maynard Heath. *Honorary Secretary and Treasurer*, Dr. John Clayre.

In his presidential address Dr. WARREN referred to the fact that the Southern Branch was the only United Kingdom branch which had suffered dismemberment by enemy action. He paid tribute to the outgoing president, Dr. R. Arderne Wilson of Guernsey, and expressed the sympathy of the Branch with its members in the Channel Islands. The president said that the drain on man-power had nowhere been heavier than on the medical services, and the stage had been reached when only by the general public exercising intelligent economy in their demands on doctors could an efficient service be maintained if the needs of the Forces were to be met. In adjusting his mind and attitude to the needs of the moment the doctor must remodel his consideration of personal comfort and the management of individual practice in his effort to hold the balance evenly between his duty to his patient and his duty to the State, maintaining that individuality of thought and practice which had always been the foundation of the medical profession in this country and the basis of the confidence of the general public in its integrity and skill.

UNITED PROVINCES BRANCH

At the annual general meeting of the United Provinces Branch, held at Lucknow on Jan. 30, with Dr. G. H. MARCHANT in the chair, the secretary's report for 1941 was read and adopted, and the following officers were elected for 1942: *President-Elect*, Rai Bahadur Capt. K. S. Nigam. *Vice-President*, Dr. E. A. Douglas. *Honorary Secretary and Treasurer*, Dr. V. S. Mangalik. *Auditor*, Dr. T. Prasad.

Later in the day the first clinical meeting of the year was held, and the following cases were demonstrated: by Dr. B. B. BHATIA, (1) congenital heart disease, probably either Eisenmenger's complex or patent foramen ovale, (2) intracranial tumour in the region of the midbrain in a boy of about 12, and (3) chronic abscess of the lung (right middle lobe); by Dr. B. N. SINHA, traumatic paraplegia of three years' duration and relieved considerably after laminectomy; by Dr. S. S. MISRA, "acute" pellagra in a man of 35.

At a clinical meeting of the United Provinces Branch, held on Feb. 27, with Dr. G. H. Marchant in the chair, Major MAN SINGH showed cases of amyotrophic lateral sclerosis, and mitral and aortic valvular disease of rheumatic origin. Dr. HAMID showed an interesting case of trigeminal neuralgia involving supra- and infra-orbital branches of the trigeminal nerve with flushing and lacrimation but without tic. In Dr. Bhatia's absence Dr. SHARMA demonstrated a case of subacute combined degeneration with macrocytic anaemia, without glossitis or enlargement of the spleen. Dr. H. SAHAI discussed the case and suggested the possibility of its being one of vitamin B deficiency.

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieuts. C. J. Robarts, W J. Latham, and W. S. Parker to be Surg. Lieut-Cmdrs.

ROYAL NAVAL VOLUNTEER RESERVE

Prob Temp Surg. Lieuts. R. J. T. Woodland, G. C Milner, C J Laws and D. V. V. Bowen-Jones to be Temp. Surg Lieuts

ARMY

Major B. Johnson, D.S.O. (ret Col, late R.A.M.C.), is restored to the rank of Col. on ceasing to be employed.

ROYAL ARMY MEDICAL CORPS

Capts (War Subs Majors) R T. Shipman and C B. R. Pollock to be Majors.

TERRITORIAL ARMY, R.A.M.C

Capt. T. A S Kennerley has relinquished his commission on account of ill-health and is granted the rank of Major

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs. Capt I. B. Gartside has relinquished his commission on account of ill-health and is granted the rank of Capt

Lieut H Levin has relinquished his commission on appointment to a commission in the S.A.M.C

N L. Corkill, M.M., to be Lieut.

WOMEN'S FORCES

EMPLOYED WITH THE R.A.M.C

Barbara J Greenwood, M.O., has been granted a commission in the rank of Lieut

ROYAL AIR FORCE

Beryl Bolton to be M.O. (Emergency) with the relative rank of Fl. Lieut. for employment with the R.A.F.

ROYAL AIR FORCE VOLUNTEER RESERVE

Fl.-Lieut. E. S. Brawn has resigned his commission and retains his rank

To be Fl Lieuts. (Emergency): T. R. M Bristow and E. T Owen.

Flying Officers A. E. A. Cordin, L R. Holt, J McMillan, J. M Duncan, J. L. Coleman, G. W E Studley, W H. Barbour, J. G. Eadie, S. Haythornwaite, L. H Moss, J B Brownlie, J. A. Elliott H J. Fenn, J H. B Cantley, G H. Flack, I G Williams, R. W G Sutton, and T. S Wilson to be War Subs. Fl. Lieuts.

Flying Officer G. J C. Brittain has relinquished his commission on account of ill-health and retains his rank.

Flying Officer E. G. M. Palser has relinquished his commission on account of ill-health.

To be Flying Officers (Emergency): P. J. Brice-Curtis, C L Crawford, A. R Marsh, A. R. B Mills, M. P. Nelson, A. E Tinkler, E. F. Twiss D N. Walder, A. M Jorkes, and J. McM-Mennell.

INDIAN MEDICAL SERVICE

Lieut.-Cols. J. C. De, R. V Morrison, and B. F Eminson have retired.

Capts. C. H. Brink and P. M. McSwiney to be Majors

EMERGENCY COMMISSIONS

Lieuts (on probation) L. W. Ashton-Rose, F. B McCay, A M Kerr, G. A. Ransome, C. G. Muller M Seager, B J Niall, L. Rich, G L L. Reynolds B. Rowlatt, and J. L. Roberts to be Capts. on probation.

To be Lieuts (on probation): Myra K. Beattie Georgina E Brindley, E. R. James, E. G Michelson, Coralie L M. Drummond, and Lorna James.

POSTGRADUATE NEWS

The Fellowship of Medicine announces: M.R.C.P course in neurology Tues. and Fri, 2 30 p.m at West End Hospital for Nervous Diseases, Inpatient Department, Gloucester Gate, Regent's Park, N.W., from Dec. 1 to 18.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W—*Brompton Hospital*: Tues. and Thurs, 4 30 p.m, M.R.C.P course in chest diseases *London Chest Hospital*: Mon., 10 a.m., and Fri., 2.30 p.m, M.R.C.P. course in chest diseases *National Hospital for Diseases of the Heart* Tues. and Wed, 10 a.m, Out-patient Clinics

DIARY OF SOCIETIES & LECTURES

ROYAL SOCIETY OF MEDICINE.—*Mon*, 4 30 p.m Section of Odontology. *Tues.*, 5 p.m. Section of Medicine. *Thurs.*, 4.30 p.m Joint meeting of Sections of Urology and of Neurology. *Fri.*, 2 30 p.m Section of Disease in Children; 2.30 p.m Section of Epidemiology and State Medicine

CHADWICK TRUST.—At Westminster Hospital Medical School, Horseferry Road, S.W, *Tues.*, 2 30 p.m Sir Arthur MacNalty: Prevention of Tuberculosis in Peace and War.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W—*Mon*, 4 p.m. Discussion. Surgery in the Middle East To be introduced by Lieut.-Cols E. G Muir and A E Porritt, R.A.M.C.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL Gray's Inn Road, W.C.—*Fri.*, 4 p.m. Mr. W. G Scott-Brown: Wartime Injuries.

APPOINTMENTS

BECK, DIANA J. KINLOCH, F.R.C.S., Honorary Neurosurgeon, Royal Free Hospital, London

PENTREATH, E. U. H., M.B., B.S., D.P.M., Medical Superintendent, Mickleover County Hospital Derbyshire

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

MARRIAGE

LAIRD—PATTISON.—On Oct 17, 1942, at All Saints Church, Ecclesall, Sheffield, Martin Laird, M.B., Ch.B., son of Mr. and Mrs. Laird, 4, Brentwood Road, Sheffield, to Joan Pattison M.B., Ch.B., daughter of Dr. and Mrs Creswell Lee Pattison, The Bungalow, King Edward VII Hospital, Rivelin Valley Road, Sheffield

DEATHS

RICE.—On Nov. 8, 1942, at 7, Castle Road, Bitterne Park, Southampton, Edward Rice, M.D., formerly of Coventry and Oxford, aged 84 years.

WALKER.—On Nov. 3, 1942, at Trenabie House, Westray, Orkney, Ernest Walker, M.B., Ch.B.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY NOVEMBER 28 1942

ANNUAL PANEL CONFERENCE

(continued)

CLAIM FOR WARTIME INCREASE IN REMUNERATION

The earlier proceedings of the Annual Panel Conference were reported in the last *Supplement*. Following upon a motion in the name of the Insurance Acts Committee that the committee be instructed to request the Minister of Health to submit to arbitration the claim for a wartime increase in the capitation fee a long discussion took place.

Dr. A. S. Winstanley (Lancashire) moved as an amendment to instruct the committee to apply for a wartime capitation fee of 14s., and, failing satisfaction, to call upon practitioners to give the requisite notices withdrawing from panel lists. This action did not imply a "strike," because the insured population would obtain their attendance in another way—namely, by the universal application of the "own arrangements" clause, drawing their medical benefit by a kind of grant in aid.

The amendment was opposed by Dr. C. M. Stevenson (Cambridgeshire), who said that it meant a strike even if it was not so called, and he did not believe that such action would enlist any adequate support; he disagreed with a statement that the profession had suffered a 33⅓% reduction in income. Dr. H. M. Golding (Bristol) held that resignations should be handed in only if arbitration failed. Dr. Fraser (Cumberland) said that while no one wanted to go the length of resigning in wartime that step might be necessary to convince the Minister that they did not intend to take his refusal as the last word. The Minister must be made to realize that they were not merely passing pious resolutions or practising bluff, and that "appeasement" was a thing of the past. His committee had little faith in arbitration.

The amendment was supported by two other Lancashire representatives. Dr. A. Campbell said that to go direct to arbitration was "sheer lunacy," and Dr. T. J. Costello said that the result of all approaches to the Ministry had been deplorable. The time had come either to withdraw from the fight or to take the gloves off and go into it properly.

Dr. A. Beauchamp (Birmingham) considered that arbitration should not be the first step. The Minister had said that there was no more money available. Practitioners therefore should ask for a new contract in which certain services now included, such as late and night visits, anaesthetics, and attendance at miscarriages, should no longer be obtainable as part of insurance benefit. Refusal of service did not mean withdrawal of clinical work, but only that certain services would be outside the contract. Dr. F. E. Gould (Birmingham) spoke to the same effect. In the Birmingham Public Medical Service a fee was charged for late calls. It did not disadvantage patients and by discouraging trivial calls it added a great deal to the doctor's convenience. Never were insured patients better able than now to pay a small sum for extra services.

The Lancashire amendment was rejected by a very large majority.

Dr. W. D. Steel (Worcester) moved to instruct the committee to formulate a scheme for presentation to the Ministry to provide a war subsidy for practitioners suffering serious hardship from war conditions. This was supported by Dr. F. Gray (London), who said that such action would not prevent other lines of procedure from being followed. Dr. C. M. Stevenson (Cambridgeshire), also in supporting, said that he had in mind East Coast practitioners who had been hard hit by the depopulation of their areas. A general war bonus would most advantage practitioners in reception and munitions areas who needed it less. Dr. J. Beck (Glasgow) opposed the motion on the ground that negotiations had always been on a national basis, and to substitute a sectional or areal one would damage the unity of the profession. The National Insurance Defence Fund might be used to help practitioners who were suffering in the way described.

The motion was lost.

Are Funds Available?

Dr. J. A. Brown (Birmingham) said that whatever was done about arbitration the Ministry might contend, as it had often done, that no money was available. The I.A.C. in the early days staked a claim for practitioners to a share in the funds accruing after all statutory benefits were met and adequate reserves built up. It would have saved a great deal of trouble if part of the surpluses credited to or in the hands of approved societies had been set aside as a contingency fund. The exhaustion of the medical pool would have been avoided. A laboratory service might in that event long ago have been provided. It was true, as the Ministry said, that there was not sufficient money in the medical benefit pool as fixed by statute, but there was a considerable amount in what should be a general pool, though the Minister would have to go to Parliament for legislation if the distribution of the total contributions was to be made more equitable. Money had been accumulated by the approved societies as surpluses, not entirely through the financial genius of those societies, but partly as a result of the work of the profession in reducing the incidence of sickness, and partly through the generosity of the Government actuary in calculating the amount required by the approved societies for their various activities. At every valuation there had been a substantial surplus, and the amount not disposed of had been carried forward to meet certain contingencies which had not in fact arisen. The last valuation showed a surplus of nearly £38 000 000 in the hands of approved societies and a disposable surplus of £20.000.000. That was a surplus which might be disbursed on additional benefits. The approved societies did not need to draw on surplus funds. They should have what was necessary as reserves, but the piling up of surpluses had gone on long enough. The medical benefit pool might be a first charge on the funds, but it had, so to speak, been arrived at backwards, or else on the assumption that it was a fixed sum about which there was no need to worry. If it was agreed to go to arbitration he suggested that these considerations might be urged upon the Minister as a means of finding the money for the increased remuneration.

Carte Blanche for the I.A.C.

The following amendment by Cumberland was next taken:

> That this Conference instructs the Insurance Acts Committee to press for reconsideration by the Minister, failing which the Insurance Acts Committee reserves the right to take any action which it considers necessary, even to the extent of recommending practitioners to withdraw from the National Health Insurance service.

Dr. S. Wand (Birmingham), after pointing out the importance of this amendment, suggested certain arguments which might be used if it was decided again to approach the Minister. It might be pointed out to him that production depended upon health, and that the health of the insured person depended upon the skill and zeal of the insurance doctor. The Government should think again and take heed before refusing to grant their very just demands, for never had those demands been more just. It should be pointed out to the Minister that by his refusal he was creating a serious situation for the health of the community. Tied up with this was a later amendment by Cheshire, which suggested an increase in the capitation fee payable by bonds, redeemable after the war. He asked the Conference to pass the Cumberland resolution and make a last appeal to the Minister.

Dr. F. Gray (London) hoped the Conference would not pass the Cumberland resolution. In effect it told the Minister that he had made a false statement, that the money was available, and that if practitioners were not given it they would strike. The strike question had been settled by the rejection of the Lancashire amendment, but to make threats would harm the position of practitioners both now and in the future. The Minister had said that it was not the policy of the Government to grant such increases. Why press him again? Why not take the alternative course suggested in an amendment next to be moved by Birmingham, for which there were sound arguments?

The Cumberland amendment was carried by 85 to 67.

Dr. Gregg, chairman of the committee, confessed that he found some difficulty in knowing where they stood. The committee had been criticized for its policy of appeasement and on other grounds, and now it was given *carte blanche* to take any action it liked.

Proposed Variations of Terms of Service

Dr. H. G. DAIN (Birmingham) moved to request the Minister to agree to a variation of the terms of service to provide that insured persons should pay for certificates, for late and night visits, for anaesthetics, and for attendance at miscarriages, or to agree to a wartime increase in remuneration in the form of a post-war credit. He suggested that these should be taken as first alternatives, and if refused the case should go to arbitration. One point to bear in mind was that greatly increased amounts of money were now coming into the insurance fund because the average number of weeks worked, taken by the actuary on a peacetime basis, was being considerably exceeded in the war effort, so that the number of stamps surrendered must be largely increased. Dr. Gray had said that it was not the policy of the Government to grant these increases. Whether policy or not, it was their practice. Certain types of people were receiving more money, via commercial undertakings, if not from a Government Department direct. As for arbitration, should that be the final course, there were two unanswerable arguments to lay before an arbitrator: the increased amount of work and the alteration in the character of insurance lists, whereby the healthy lives were removed and their places taken by the older and less fit, and also the abandonment of the known rule as to optimum hours of work in industry, so that many people were now working over-long hours, with a resulting higher incidence of minor ailments which had maintained their summer surgeries at winter levels.

The motion was opposed by Dr. H. S. HOWIE WOOD (Isle of Wight), who thought that despite its superficial attractions it would prejudice their case in the post-war inquiry; by Dr. J. N. HUDSON (Croydon), who said that this introduced a new and regrettable factor into insurance practice—the acceptance of money for service to insured patients; and by Dr. D. L. S. JOHNSTON (Halifax), who thought that the first part of the motion was likely to alienate the sympathy of their patients, and to throw patients into the arms of the public health services, against whose encroachments the profession had often protested. As for post-war credits, the money was wanted now, and this suggestion would provoke the reply that the money was required, not to meet a present need, but for investment.

Dr. A. T. ROGERS (Kent) suggested that the alternatives were put in the wrong order. If partial withdrawal of service were put first, and it failed, the case for arbitration might be weakened. Dr. F. GRAY (London) also opposed the first part of Birmingham's proposals. For years the profession had built up a good and complete service, and it was now proposed to cut down its content. What proportion of the capitation fee, after all, did these services represent? Threepence? He doubted it. It was all very well to say that insured persons were now able to pay. Would they be able to pay after the war? Dr. DAIN replied that there was no suggestion that this was anything more than a war measure. It put national health insurance patients in the same position as Public Medical Service patients. There would be no limitation of clinical services.

The Birmingham amendment was in two parts, one calling for a variation of terms of service and the other for an increase of remuneration by way of post-war credit. These were put separately to the Conference and both were negatived.

An amendment by Ayrshire proposing certain procedure as to arbitration was withdrawn after Dr. GREGG's request that this matter be left open. An amendment by the Isle of Wight to request the Minister to provide a wartime bonus by increasing the weekly contributions of employers and insured persons was lost. Dr. G. DE SWIET (London) moved to instruct the committee to pursue vigorously the claim for a wartime increase and to propagate it with all publicity in the Press and by approach to members of Parliament. He urged the method of paid advertisements, posters, and leaflets, as a means of informing the public.

The First Step

The bringing forward of these amendments was the subject of protest by some representatives, who pointed out that the Conference, by passing the Cumberland amendment earlier, had given the Insurance Acts Committee complete discretion to take any action which it considered necessary.

Dr. G. C. ANDERSON (Secretary) suggested that it would shorten the proceedings if, having passed the Cumberland amendment, the Conference signified whether in its opinion the first step should be arbitration. Then all the other resolutions on procedure could be referred to the committee.

The motion by the committee to request the Minister to submit the claim for a wartime increase to arbitration was put to the meeting and the show of hands was largely in its favour, but on the CHAIRMAN asking whether it was understood that they had decided that the first step should be arbitration there were cries of "No." Dr. GREGG pointed out that the Cumberland proposal, reserving the right to the I.A.C. to take any action it considered necessary, had been already carried as an amendment to his motion for arbitration, and should be regarded as the substantive motion before the Conference.

Dr. ANDERSON said that the Cumberland motion had been carried, and the Conference had now to consider in the light of that motion what first step it should recommend the committee to take. Should it be arbitration? Again there were cries of "No." The CHAIRMAN now ruled that the Cumberland motion, which had been carried as an amendment to the committee's motion for arbitration, was the substantive motion before the meeting.

Dr. A. BEAUCHAMP (Birmingham) then moved that a large number of amendments on the agenda proposing various courses of action in different circumstances, including matters such as post-war credits, reduction of required services, increased weekly contributions, and so forth, on which the Conference had already expressed a divided opinion, be referred *en bloc* to the Insurance Acts Committee for consideration as possible methods of implementing the Cumberland motion.

Dr. GREGG said that he hoped the Conference realized what it was doing. His own motion for arbitration had been met by an amendment by Cumberland in effect instructing the I.A.C. to do anything it liked (which would, of course, include arbitration among other alternatives) and this had been carried. Now it was proposed to refer a number of alternative and elaborating proposals which the Conference had not yet approved. His committee wanted only to make sense out of a very confused position.

Dr. N. B. S. STEWART (Edinburgh) said that his Panel Committee had met twice and on both occasions had opposed any reduction of services. Dr. D. L. S. JOHNSTON (Halifax) said that the Conference had got into a muddle through a confusion of ideas. The motion by Cumberland gave a free hand to the committee to pursue the matter as vigorously as it could, not excluding the possibility of arbitration. But his committee also was against any reduction of services. Dr. L. J. PICTON (Cheshire) said that he also was opposed to reduction of services, but he thought that the possibility of obtaining an increase in the capitation fee payable by bonds redeemable after the war should be in the forefront of the committee's consideration. It was true that this method would not ease the situation of very poor practitioners, whose case should receive special consideration. With regard to arbitration, if the arbitration decision were, in the Government's opinion, contrary to the public interest it could not be accepted. When the whole question was sifted from the bottom and the capitation fee basis considered, it would be a very different matter, but at the present juncture he thought it a doubtful expedient. Dr. F. GRAY said that whatever else the Conference was agreed on, it was agreed on this—that the I.A.C. was at liberty to take any means likely to effect its purpose. It seemed to him, therefore, that there was no need to go in for detailed discussion

The Cumberland amendment:

> That this Conference instructs the I.A.C. to press for reconsideration by the Minister, failing which the I.A.C. reserves the right to take any action which it considers necessary, even to the extent of recommending practitioners to withdraw from the National Health Insurance service—

which had been carried as an amendment by 85 to 67, was thus the decision of the Conference, and, the Birmingham rider having been carried, the other motions and amendments on this subject were referred to the committee in the light of this decision.

A motion by Southport that in view of the vital importance of united action by the profession at the present time the I.A.C. be instructed to endeavour to arrange a meeting with the committee of the Medical Practitioners Union in order to arrive at a joint plan of action was negatived. One other motion bearing on these negotiations was from Stoke-on-Trent, which asked that in future verbatim reports of all interviews with the Ministry on the matter of the capitation fee be made available for members of panel committees. Dr. GREGG said that he was sympathetic, but he felt that if this were done in all cases and at every stage of the negotiations it might hinder to some extent the freedom and frankness of discussion with Ministry officials. The motion was not pressed.

This concluded the work of the Conference on the capitation fee issue. The remaining business was largely concerned with the interim report of the Medical Planning Commission; there was also an important motion by Birmingham on the increase in minor illness. These will be summarized in the conclusion of the report of the Conference in a later issue.

THE LIBERAL PARTY'S HEALTH POLICY

Almost coincident with the publication of the draft interim report of the Medical Planning Commission, a subcommittee appointed by the Liberal Party has put forward proposals for "a positive and active health policy for the nation."[1] The chairman of the subcommittee was Sir John Stewart-Wallace, vice-president of Charing Cross Hospital, and one of the members was Lady Rhys Williams, whose name is associated with the organization of maternity services, but no member of the medical profession was on the subcommittee, though acknowledgment is made to Mr. Aleck Bourne for some assistance. The report proceeds very much on the lines of the draft interim report of the Commission, though it is stated that the proposals were formulated before that report was seen. One error into which the subcommittee falls—like other commentators on the interim report—is to assume that the report consists of definite proposals and recommendations rather than of questions the answers to which by the profession will guide the Commission in its further deliberations.

The Liberal Party, as was only to be expected, is opposed to a complete State Medical Service in which all doctors would be included on a salaried basis; but it is equally against the maintenance of an artificial independence of State control. Although it was the Liberal Party which brought in national health insurance 30 years ago, it is now opposed to the extension of it as the basis of an improved medical service. It suggests that even if the worker were willing to afford the increased deductions from his pay which would follow the bringing in of his dependants (who might include his great-aunts!), the employer might not be willing to make his increased contributions, and, if he were, there would still be discrimination against a man with a number of dependants when applying for employment. Insurance is a limitation of benefits to known premiums and known risks; an adequate medical service, on the other hand, means unlimited care of an incalculable number over incalculable periods. Therefore any scheme must depend upon direct State assistance through local authorities.

Traditionally Liberal Provisions

True to its traditions, the Liberal Party stresses the need for preserving individual liberty. The practitioner must have maximum freedom from lay control, the opportunity of private practice must not be withdrawn, free choice must be preserved, at least so far as it operates at present, and voluntary hospitals must remain independent and to some extent charitably financed. The party sees no dissonance between the maintenance of free choice and the widespread establishment of health centres, provided, equipped, and staffed by the local authority, and offering a service for all without any means test. Indeed, it makes much of the health centre as a place where consultants will also attend, and from which ophthalmic and dental services, maternity services, health visiting, and district nursing will operate. As for general administration, the Minister of Health, to whom the medical functions of the Board of Education and the Ministry of Labour would be transferred, would be advised by a statutory medical advisory committee of five members, all with medical qualifications, three appointed by the Minister, and the other two nominated by the Royal Colleges and the British Medical Association respectively. Statutory medical advisory committees would also be appointed in all autonomous areas to advise the local authority; half the membership would consist of doctors elected by their colleagues, the other half of councillors or persons appointed by councils.

Liberal Finance

The financing of the scheme would be by funds provided by Parliament on the request of the Minister. In addition to the amount allocated for medical, hospital, and auxiliary services, adequate sums would be voted for medical research and for the support of teaching hospitals, and a proportion of grant would be retained by the Minister for distribution at his discretion. The remuneration of practitioners would be partly by salary and partly by a capitation fee, and the same arrangement is proposed for consultants, who, in addition to an honorarium for attendance at the health centres, would receive a capitation fee for persons referred to them. Although it is assumed that only one million of the population will elect to remain on a fee-paying basis, private practice is to be permitted to both general practitioners and consultants, and the policy also includes provision for payment of pensions to practitioners on retirement at 65.

The cost of the service, in addition to existing public health expenditure, but allowing for a saving of £9,000,000 on the present National Health Insurance grant, would be £57,000,000 a year. This includes £22,500,000 for medical capitation fees at 10s. a head (merely a token figure, for it is admitted by the subcommittee that it has not enough evidence to suggest a satisfactory remuneration for doctors) for a population of 45,000,000. A further £11,000,000 is allocated to dental capitation fees at 5s. (again it is not clear on what basis dental service is ranked at half the cost of medical); medicines and appliances are supposed to cost £15,000,000; administration and pensions, £5,000,000; and £12,000,000 is allocated as maintenance grants to voluntary hospitals on the supposition that one-quarter of voluntary-hospital expenditure will still be met by charitable subscriptions.

The Liberal Party proposals are an interesting and challenging contribution to the discussion. It is to be hoped that their underlying assumption has some warrant—namely, a Government generous in its payment of the piper and modest in not calling for all the tunes.

In spite of prevailing conditions the year 1941-2 was one of the most successful the Gibraltar Branch of the B.M.A. has had. There was a considerable increase in membership due to the arrival of Service personnel, mostly attached to the R.A.M.C. Nine meetings were held, a record for the Branch: the annual general meeting, five clinical demonstrations, and three medico-political discussions, the Medical Planning Commission's report being one of the subjects debated.

"ANTI-FREEZE" FOR DOCTORS' CARS

Doctors are reminded that, as was announced in the *Supplement* last year, application for permission to acquire supplies of "anti-freeze" must be made to the Regional Transport Commissioners. Supplies are available only to persons engaged in essential work who, because of the nature of their work, cannot adopt alternative methods of protecting their cars against frost. The following are the addresses of the Regional Transport Commissioners:

Northern: 41-45, Gray Street, Newcastle-upon-Tyne, 1.
North-Eastern: 44, The Headrow, Leeds, 1
North Midland: Grosvenor House, Friar Lane, Nottingham.
Eastern: Sussex House, Robson Street, Cambridge
Metropolitan. Romney House, Tufton Street, London, S.W.1.
Southern: Chiltern Court, St. Peter's Avenue, Caversham, Reading.
South-Western: Beacon House, Queen's Road, Bristol, 8.
Wales: Graham Buildings, Newport Road, Cardiff
North Wales: "Holmleigh," St David's Road, Caernarvon.
Midland: York House, Gt Charles Street, Birmingham.
North-Western: Arkwright House, Parsonage Green, Manchester, 3.
Scotland 44-46, Palmerston Place, Edinburgh, 12.
Eastern Scotland: 14, Crown Terrace, Aberdeen
South-Eastern: Mount Ephraim House, Mount Ephraim, Tunbridge Wells.

DISCUSSIONS ON MEDICAL PLANNING BY THE FORCES

The B.M.A. has requested the Admiralty, War Office, and Air Ministry to allow free discussions among Service medical officers of the Medical Planning Commission's draft interim report, in view of the fact that the medical men and women temporarily in the Forces are the practitioners who will be most affected by plans now being made for the future of medical practice. The respective Service departments have now stated that there is no objection to medical officers attending meetings for discussions on medical planning and expressing their opinions thereon, provided their Service duties are not thereby affected, and that no contravention of King's Regulations or departmental instructions is involved.

The Medical Planning Commission accordingly hopes that as many medical officers as possible will take part in discussions on the draft interim report, which was published in the *Journal* of June 20 last, and that they will submit their criticisms and observations to the Secretary at B.M.A. House. The opinions they express will receive full consideration by the Commission.

B1 HOSPITAL APPOINTMENTS

The restrictions placed on the transfer to another hospital of holders of B1 appointments (*Supplement*, Aug. 20, p. 20) are to continue until the end of January, 1943. The Ministry of Health states (Circular 2730) that the question of reverting to the normal procedure under which class B2 and A officers are available respectively for filling B1 and B2 posts is under consideration, and pending a decision there is no alternative but to continue the restrictions on the holders of B1 posts. In any event, when the supply of class A and class B2 officers for the higher posts is resumed it will take a little time for the change to have full effect. It is hoped that it will be possible to issue a further circular on this subject before the end of January next.

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[1] *Health for the People. Proposals for a Positive and Active Health Policy for the Nation.* Liberal Publications Department, London. (1s.)

SURGICAL CORSETS

Because of the limited quantity of rubber and steel available and the depletion of labour in the corset industry, it is necessary both to restrict the amount of rubber and metal permitted in ordinary corsets and to keep down the number of specially made surgical corsets. The quality of ordinary corsets is not good when compared with pre-war standards, but it is the best that is possible in present circumstances, and no woman ought to be able to get a surgical corset if she could wear an ordinary utility corset, with some discomfort perhaps but no harm to her health. It is hoped to provide for a small quantity of made-to-measure corsets for women of difficult figures. Certain firms are well known to have abused the concessions originally given for surgical belts ordered on a medical prescription. The Board of Trade is concerned to see that this shall not happen again, and that the manufacture of surgical corsets shall not increase at the expense of ordinary utility corsets. New regulations came into force on Nov. 9, in which a surgical corset is defined as " one cut and made specially for the person to whom it is supplied in accordance with a prescription in writing given by a registered medical practitioner, to which prescription is appended a statement that the practitioner has examined that person and that the corset is necessary for that person by reason of a disability, deformity, or disease specified in the prescription, being a corset in relation to which the practitioner has given a certificate in writing stating that he has examined that person while wearing it and that it is satisfactory for the condition from which the person is suffering." In short, a doctor in future must furnish two certificates for any patient requiring a surgical corset: one after examination of the patient, stating that the corset is necessary because of a specified condition, and a second after a further examination of the patient wearing the corset, stating that it is satisfactory for the condition in question.

Correspondence

Medical Organization

SIR,—Recent letters in the *Journal* from Dr. G. G. Airey (Nov. 7) and Mr. H. J. McCurrich (Oct. 24) show that at last it is being realized that one of the primary preconsiderations of any medical planning is to take into account the political aspect. The Lincoln Division considers that no organization working centrally as does the B.M.A. will ever have any chance of tackling the political side involved in this planning, nor ever be able to make its opinion carry the weight that its membership entitles it to throughout the country.

This Division's Planning Committee concluded that there should be regional secretaries for the B.M.A., each region corresponding to those proposed under the Nuffield hospital scheme, with each secretary drawn exclusively from G.P.s of at least 15 years' experience of practice, and not over 50 years of age on appointment. By adopting such a scheme the whole of the country would be well covered and members well represented. The B.M.A. is often wrongly called a trade union, but at least there might be some imitation of trade union organization, as there is great doubt that the trade union movement would have gained so much political strength had its organization remained entirely in the hands of the shop stewards, corresponding to our divisional hon. secretaries, with a central headquarters only. The unions opened branch offices all over the country, and the B.M.A. should do likewise to a limited extent.

It is realized that something on these lines was started just before the war, but there seemed small promise of this being extended to the extent here visualized. It is also realized that there is not the man-power to do it now, but the planning of the organization could be put in hand now, ready to start as soon as possible. Cost is also admittedly a difficulty perhaps, but it must be remembered that with regional offices a great deal of central expense could be eliminated, and it is reasonable to expect that with more intimate contact more members might be obtained.—I am, etc.,

Lincoln S. WRAY.

GENERAL MEDICAL COUNCIL

WINTER SESSION

The 156th session of the General Medical Council opened on November 24. The President, Mr. H. L. Eason, who was in the chair, spoke first of all in his address of the deep regret with which the Council had learned of the death of its late President, Sir Norman Walker. After referring to the many committees on which Sir Norman had served during his 34 years' membership of the Council, Mr. Eason said that his knowledge of the history of the Council and of its minutes was unique. There was no problem that came before it which he could not simplify by his familiarity with precedent and tradition, and with all this long service and vast experience he used his wisdom and judgment unceasingly for the benefit and the assistance of the Council. Mr. Eason referred to the deaths of Prof. David Waterston, Prof. Edward Fawcett (a member of the Council from 1925-35), and Dr. Leonard Kidd, " Father of the Council." Since the Council last met Mr. Harold Collinson, representative of the University of Leeds, had retired, but the Council had secured his services as inspector of qualifying examinations in surgery. In Mr. Collinson's place on the Council they welcomed Prof. Matthew Stewart, Dean of the Medical Faculty, University of Leeds. Dr. T. S. Hele had also retired from representation of Cambridge University, his place being taken by Prof. H. R. Dean of that university. Prof. Frank Kane of University College, Cork, replaced Dr. Leonard Kidd. Mr. Eason said the Council would have before it reports from the Education and Examination Committees on memoranda of evidence to be presented to the Committee on Curriculum and Examinations in Schools and the Interdepartmental Committee on Medical Schools. The profession was warned against accepting the unverified statements of other persons that they were qualified or registered. Recently an alien by false pretences obtained a recommendation and testimonials from doctors for professional purposes. Aliens who were on the *Medical Register* possessed not only a certificate of registration issued by the Council but a police registration certificate stating the conditions under which they are entitled to take up professional work. The President could not give any indication of how long the session would last; the penal business before the Council was likely to be difficult and possibly protracted.

H.M. Forces Appointments

ROYAL NAVY

Surg. Lieut. W. V. Owen has been transferred to the Emergency List. (Substituted for the notification in the *London Gazette* dated July 7, 1942.)

ROYAL NAVAL VOLUNTEER RESERVE

Prob Temp Surg. Lieuts P B Crone, R. P M Miles, J. G. C Murray, R. A. White, W McC. Scott, T. P. Storey, and A. J. Hird to be Temp Surg. Lieuts.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs. Capt J. Stirling-Gilchrist has relinquished his commission on account of ill-health and is granted the rank of Major

Lieut A. B. Cooper has relinquished his commission on account of ill-health and retains his rank.

To be Lieuts: I H. Evans, A. E. Claireaux, T. H J. Williams, I. Anrep, R M. Archer, I W Barclay, J. B. Bennett, D McB Brodie, E A. J Byrne, J. D Carroll, D R. Cargill, P. N. Cunningham, H. J Elverson, F. E. Falconer, R. C. Forrester, R. Fuller, J. P. Galloway, E. M Gamble, J. W. Gammie, J. P. Gannon, R. E Glen, D. F. P. Gordan, E. Haigh, A. Hargreaves, R S Holtan, F. H. Howarth, P E Hughesdon, J Hutton, I. Joels, I L. Jones, D. H. King, R Leigh, W H. McAleenan, A. McCracken, J Macdonald, J. B Macdonald, D. McLean, H Macpherson, H. N Mansfield, J. Marks, C. E Mathieson, G. F Metcalf, J A. R. Miles, J. H G Morris, W. Morton, N. B Munn, M. Niven, I. M. Orr, G H Parkinson, A. Pearlman, M. F Pilcher, J. Pinching, F W. J. Platts, J P. C Purdon, A. Rees, H I. Rees, K B Rooke, F. R Russell, J R. S. Shields, C C. Smith, K. F Strachan, J. H. Stranger, K. A. Swales, N Swallow, M. G. B Thompson, G. W. Thurlow J P. Turney, I. D. C Veitch, G. N Weber, P H Wood.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a m to 4 p m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations. *Daily*, 1 30 p m., Post-mortems *Mon*, 2 p m, Ear, Nose, and Throat Clinics. *Tues.*, 10 a.m, Paediatric Clinic; 11 a.m., Gynaecological Clinic; 2 p m, Genito-urinary Clinic *Wed*, 11 30 a m, Medical Conference; 2 p m., Some Aspects of Acute Respiratory Infections, by Dr. H Joules. *Thurs.*, 2 p m, Dermatological Clinic; 2.15 p m., *X*-ray Demonstration on Diseases of Joints, by Dr. E J. E. Topham. *Fri.*, 12 15 p m., Surgical Conference; 2 p m, Gynaecological Conference; 2 p m., Sterility Clinic.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*Brompton Hospital*: Tues. and Thurs., 4 30 p m, M R C P. course in chest diseases *London Chest Hospital*: Mon., 10 a.m., and Fri., 2 30 p.m, M R.C.P. course in chest diseases *National Hospital for Diseases of the Heart*: Tues. and Wed, 10 a.m., Out-patient clinics *West End Hospital for Nervous Diseases*: Tues and Fri., 2 30 p m, M.R C.P. course in neurology. *London Homoeopathic Hospital*: Wed afternoon, clinical surgery instruction. (Limited to six)

DIARY OF SOCIETIES & LECTURES

ROYAL SOCIETY OF MEDICINE.—*Tues.*, 2.30 p.m Section of Orthopaedics *Wed*, 2.30 p.m. Section of History of Medicine; 2.30 p m Section of Surgery *Fri*, 10.30 a.m. Section of Otology; 2 15 p m. Section of Laryngology. 2 30 p m. Section of Anaesthetics.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

DEATHS

DAGGETT.—On Nov. 7, after a short illness, at the Red House, Kirby Hill, Boroughbridge, Yorks, Henry Ingledew Daggett, M.A., M B., B.Ch Camb, M R.C.S., L.R.C P.Lond. (Camb. and St Mary's), aged 78.

MCKENDRICK.—On Nov. 2, 1942 (suddenly), William McKendrick, M B., Ch.B., aged 46 years, beloved husband of Dorothy, and father of William, Ian, and David, the Laurels, Blackwood, Mon.

WORTHINGTON.—On Nov. 14, at Lancaster Nursing Home, 1[illegible], Lancaster Drive, N.W.3, Helen Worthington, L R C P, L.R C S Ed., L.R F.P &S.Glas., physiotherapist, 121, Harley Street, W.1, aged 65.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY DECEMBER 5 1942

ANNUAL PANEL CONFERENCE

(*Concluded*)

National Insurance Defence Trust

The earlier proceedings of the Panel Conference, held on November 12, were reported in the last two issues of the *Supplement*. This concluding instalment covers the business remaining after the decisions on a wartime increase in the capitation fee had been taken.

Dr. J. W. BONE, treasurer of the National Insurance Defence Trust, reported that the securities valued at purchase price stood at £248,000, but at current price levels they were worth some £40.000 more than that.

Dr. R. C. M. COLVIN-SMITH (Norfolk) moved for immediate steps to be taken to increase the fund to £1,000,000. Dr. J. C. PEARCE (Norfolk) supported the proposal, saying that it was necessary to have a fund which would be really, in the eyes of the Ministry, formidable. Dr. E. A. GREGG, as chairman of the Insurance Acts Committee, gave his support to the resolution, which was carried unanimously. Dr. Gregg also accepted a motion from Glasgow calling for a more rigid definition of the conditions under which grants are made from the fund to ease the retirement from the service of aged or infirm doctors of straitened means against whom, as a result of such age or infirmity, a complaint has arisen or is likely to arise.

Increased Incidence of Minor Illness

Dr. J. A. BROWN (Birmingham) moved:

> That this Conference views with grave concern the great increase in the amount of minor illness among the insured population, and urges the Minister of Health to undertake an immediate investigation into the causes of the increase, with special reference to conditions, hours of work, overtime, and night work.

He said that surgeries had become increasingly crowded, and more and more of the time of practitioners was occupied with minor illness. Yet food was adequate, and bombing, with its attendant anxieties and depressions, was less severe. The obvious cause was industrial fatigue due to excessive working hours. Reports in the last war showed conclusively that there was a working period beyond which it was not safe to go if output and the health of the worker were to be maintained. Production was dependent upon health, of which practitioners were the guardians. He drew attention to what he described as a most extraordinary passage in the report of the Chief Inspector of Factories:

> "In some cases long hours are worked against the employer's better judgment; he knows that they may be expected to prove unremunerative in the long run and to be associated with a good deal of enforced absence from work; but the fact that such long hours are ostensibly worked is in the nature of a concession to a section of outside opinion which is prone to associate reasonable hours with personal slackness or with alleged waste of man-power and to the importunities of givers of contracts."

The last eight words seemed to the speaker very significant. Doctors nowadays were fewer, and their work was immeasurably greater. It was time for the Minister of Health to make his voice heard by his colleagues in other Government Departments. The resolution was carried.

Group Organization

Dr. GREGG moved a resolution urging Group Committees so to organize their areas as to ensure that views can be conveyed to and obtained from every insurance practitioner in the group in the shortest possible time. He said that the question of publicity was specially difficult at the moment, with shortage of paper and of labour, but one excellent way of achieving it would be by personal contacts at the periphery. Dr. A. T. ROGERS, chairman of the Organization Subcommittee, said that it was hoped to report very soon. The methods recommended for securing the most effective organization of insurance practitioners would vary with different parts of the country. A method suitable for London, which had one Panel Committee, would not be suitable for Group L, which stretched from Somerset to the Scilly Isles, or for Group K, where one member represented 13 different committees straddled across East Anglia.

The resolution was carried, together with a further motion urging the Group Committees to bring into consultation not only their directly elected representatives on the Insurance Acts Committee but other members of the committee resident within the group who are not directly elected—that is to say, the six members elected by the Conference and the six by the Annual Representative Meeting.

Dr. A. M. McMASTER (Rochdale) called for the creation of a special National Health Insurance section of the central secretariat and staff at B.M.A. headquarters. He paid a tribute to the present secretariat, but said that they were overworked, having to look after many competing interests, and unable to give the requisite time to protecting the interests of insurance practitioners. Dr. GREGG said that this important matter was now under consideration by the subcommittee. Dr. J. HALLAM (Stoke-on-Trent) said that he had been one of the critics of the I.A.C. though he was a member of it, but no one must suppose that the faults were all on one side. There were great faults at the periphery, as instanced by the relatively small proportion of replies received to the questions in the interim report of the Medical Planning Commission.

The Rochdale proposal was referred to the committee.

Planning Commission Report

The remainder of the Conference was devoted to motions and amendments arising out of the interim report of the Medical Planning Commission. Dr. T. H. DARLOW (Boston) moved that until the Beveridge report is available it would be inopportune to express an opinion on the Commission's report. He said that this was not put forward obstructively. The Minister on the occasion of the recent deputation had himself suggested that he could not do anything until the Beveridge report had appeared. The Chief Medical Officer of the Ministry, in his recent Harveian Oration, had said (*Journal*, Oct. 31): "Surely we are entitled to read into this [interim] report a realization on the part of the medical profession that their continued existence as a series of isolated units is in the interests neither of themselves nor of the public they serve." That was not a statement they had agreed to. Both reports opened up so large a subject that the end of a conference which had been occupied with a more immediate matter did not seem a fitting occasion to embark upon it. Dr. J. A. MOODY (Essex) suggested that a special conference should be called following the publication of the Beveridge report.

Dr. F. GRAY (London) said that they had been accused many times of being too late. Now they had a chance of putting their views forward in time. He hoped the Conference would agree that the work done on the Commission should not be put on one side until some other body came along and took the wind out of their sails.

The motion not to proceed with the consideration of this subject was lost.

Objects of Medical Service

Dr. GREGG moved acceptance of the broad definition of the objects of medical service:

> "(*a*) To provide a system of medical service directed towards the achievement of positive health, the prevention of disease, and the relief of sickness; and (*b*) to render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional."

Dr. D. L. S. JOHNSTON (Halifax) desired to insert the words "by the method of private practice and by an insurance scheme for a limited section of the community." He recalled that the proposal to extend the provision for the whole community was carried by only two votes at the Annual Representative Meeting, and he thought that the present Conference might usefully clarify the position. His amendment to this effect, however, was lost.

Dr. A. SMITH POOL (Glasgow) moved to amend the motion in the sense that the State should make the provision. Many of them now believed, he said, that it was one of the duties of the State to provide a system of medical service, and that that service should be available to the individual as a right. Dr. GREGG said that this amendment had a political implication, and the Conference, if it passed it, should at least realize what it might mean, not to those present, but to the outside public. For his own part he was opposed completely to the State taking possession of the medical profession. (Applause.) He realized, of course, that many people were poor and many others were thriftless, and means must be found whereby such people could be assured of necessary medical services, but that was altogether different from handing over the profession, lock, stock, and barrel, to the State.

An amendment in the sense of the Glasgow representative's speech was lost by a very large majority.

Dr. GORDON WARD (Kent) moved to amend the definition of objects so that it would read: "To provide an organization directed towards the preservation of health, the prevention of disease, and the relief of sickness, and to render available to every individual all necessary medical services." The definition of objects of medical service or of health policy was a confession of their faith. Dr. GREGG said that what Dr. Ward wanted was the provision of an organization, which implied central direction. The system of medical services at present existing could hardly be called an organization in that sense. He saw no particular value in this variation of wording.

Only one or two hands were held up in favour of the Kent amendment, and the original motion of the I.A.C. was adopted.

Free Choice: Group Practice

Dr. GREGG next moved: "That free choice of doctor and patient should be an essential feature of any future service." He said that if, when a practice was transferred, no considerable body of the insured persons exercised their right of fresh choice but remained on the list of the practice, it was no valid argument that the principle of free choice was not appreciated. Many instances could be mentioned of insured persons who, having given the newcomer to the practice a chance, later transferred themselves to another doctor. He hoped that the principle of free choice to the largest possible extent would be maintained in any kind of service which was set up.

An amendment by Carmarthenshire to insert the words "as far as practicable" and to delete the word "essential" was lost, and the principal motion was carried without dissent.

Dr. GREGG further moved: "That group practice in some form is deserving of favourable consideration." This was a matter of difficulty, he said, because many people did not like certain forms of group practice and therefore opposed it altogether. The I.A.C. felt that the principle of group practice should be encouraged. Dr. JOHNSTON (Halifax) desired group practice to be on a voluntary basis. If it was compulsory the next step would be compulsory health centres provided by the Government. At the Annual Representative Meeting there was an overwhelming vote against a State Medical Service and a vote in favour of group practice and of health centres. It did not seem to be realized that if the latter were provided by the Government the payer of the piper would call the tune. Dr. C. F. T. SCOTT (Willesden) spoke also in favour of a voluntary basis for group practice.

The amendment to insert the word "voluntary" before "group practice" was carried.

Inclusion of Dependants and Others

Dr. GREGG moved: "That provision should be made by the Government only for persons compulsorily insured under the N.H.I. Acts, the dependants of such persons, and others of like economic status," whereupon came an amendment from West Suffolk to delete the word "only" and to add to the motion "and for the remainder of the population on a voluntary basis." The mover, Dr. N. STEVENS, said it was difficult to see how a policy of positive health could be carried out unless the whole community was included.

The West Suffolk amendment was lost, but another was moved by Halifax which had the effect of limiting the provision to persons with a gross income of £250 or under. Dr. JOHNSTON said that by some astute engineering the Ministry had managed to raise the income level to £420, and Halifax felt that after the war, with a slump in wages, very few people might be above that range. Dr. GREGG said that they were all in sympathy with the idea behind the amendment, but it was extremely difficult to get a practical application of it. They had to accept the position as it stood.

The Halifax amendment was lost, and an amendment by Derbyshire introducing the date Jan. 1, 1942, in order to define more clearly the status of insured persons included, was lost also, Dr. GREGG explaining that it was entirely a question of what was practicable. The motion that provision should be made for the compulsorily insured, their dependants, and others of like status was carried.

Health Centres

Dr. GREGG moved approval of the general principle of health centres. He said that this was a debatable subject, and there were many forms of health centre they would probably object to, but to the principle they ought not to be opposed. Dr. R. W. MCCONNEL (Bucks) moved an amendment to the effect that the establishment of health centres should not be by the Government, and that the Commission should be asked to explore the possibility of such centres being established by practitioners themselves. Dr. S. WAND supported the amendment. Future action of the Government, he said, might depend to a certain extent upon the ownership of the centres.

The amendment was carried. Dr. JOHNSTON (Halifax) moved: "That the compulsory establishment of health centres is undesirable as it tends to the establishment of a whole-time salaried Government medical service." Dr. J. HALLAM (Stoke-on-Trent) felt that health centres were being pushed upon an unwilling profession by a small section of the Commission. There should be no compulsion about the setting up of such centres, though no one could object to those who wanted to do so co-operating in their establishment at their own expense.

The Halifax amendment also was carried.

The Conference also agreed to the principle that all practitioners should have the right to take part in the service, that not enough information was available to enable an opinion to be expressed on the method of remunerating general practitioners under the Commission's plan, and that the goodwill of practices was a proper commodity for purchase and sale. A further amendment by Leicestershire was carried, calling for adequate compensation to existing practitioners if a sale of practice was not deemed advisable or if any service adopted precluded the possibility of such sale. Dr. A. HAMILTON, the mover, thought that the Commission should be asked to consider the financial fate of practices should a State Medical Service come into operation. He did not know on what ground many doctors based a feeling of optimism with regard to their practices in that event. A young man who had borrowed money to buy a practice which was confiscated might, if uncompensated, be left with a load of debt for the rest of his life.

This amendment also was carried.

Among other motions adopted was one in favour of the co-ordination and integration of health services on the basis of the plan broadly outlined in the interim report, and another in favour of the immediate post-war application of (1) the "two-way" extension of insurance to include dependants and others of like economic status, and to provide consultant and specialist services, (2) the establishment of experimental co-operative practice in some areas, and (3) the creation of regional hospitals councils with executive or advisory functions. Motions by Leeds and Buckinghamshire were also carried, the one urging the necessity for the removal of the control of sickness and additional benefits from approved societies should insurance be extended to dependants, and the other expressing the view that the administration of national health benefits by approved societies should be abolished in favour of some central body to ensure that the benefits were uniform. It was, further, the view of the Conference that if the scheme was extended to dependants, there should be adequate safeguards to prevent deterioration of the economic status of practitioners by an attempt to curtail the maximum numbers on lists or the capitation fee.

A motion on which the voting was somewhat dubious, but which was said to be carried, declared that no major change involving the addition of a group of new entrants should be introduced into the National Health Insurance service until after the present emergency. The final motion was by Newcastle-upon-Tyne, which urged a plebiscite of the medical profession on the form of service desired in the post-war development. Dr. G. C. ANDERSON (Secretary) pointed out that to be of any service the plebiscite should include all doctors in the Forces, very many of whom would be difficult to reach. Moreover, there was the paper shortage to consider. He hoped that this motion would not be pressed.

The motion was withdrawn on the understanding that the committee would take any step in this direction which appeared feasible.

Certain other motions remained on the agenda, but in view of the hour and the impending black-out the Conference agreed to the reference of all these to the I.A.C. for consideration and report.

The Ministry of Labour and National Service has recently given a decision on the position of part-time women doctors who are called for interview under the Registration for Employment Order. It has now been decided that when the local officers of the Ministry ascertain that a woman practitioner is following her occupation part-time only, her case shall be referred to the appropriate Local Medical War Committee. The Local Medical War Committee will then have an opportunity to explore the possibility of allocating further work to the practitioner concerned.

GENERAL MEDICAL COUNCIL

(*Continued*)

On the opening day of the winter session, briefly reported in these columns last week (Nov. 28, p. 68), the Council proceeded, under the Temporary Provisions Order by which no election of direct representatives shall be held before December 31, 1943, to fill the vacancy among the direct representatives for England caused by the death of Sir Henry Brackenbury. On the proposal of Dr. H. G. Dain, seconded by Col. H. L. Tidy, Dr. E. A. Gregg, chairman of the London Panel Committee and of the Insurance Acts Committee of the B.M.A., was appointed.

On the motion of the President, Prof. J. A. Nixon, Mr. Harold Collinson, and Sir William Fletcher Shaw were appointed, respectively, inspectors of qualifying examinations in medicine, surgery, and midwifery, under the Medical Act, 1886.

After deliberation *in camera* the Council restored the following names to the *Medical Register*: George Holman, Joseph Stenson Hooker, Andrew Thornton, John Mackay Young, and Benjamin David Ling.

DISCIPLINARY INQUIRIES

The Council then began upon an unusually large programme of disciplinary inquiries. Twenty-one practitioners were summoned to appear before the Council to answer certain charges, 7 of them on charges relating to certificates alleged to have been improperly given for the purpose of enabling certain persons to evade military or other war service.

A number of cases in which convictions of drunkenness or of being in charge of a car while under the influence of drink or of similar misdemeanours had been proved at a previous session, but in which judgment had been postponed, were first considered. In all these cases the assurances and testimonials of the respondent practitioners were accepted and the Council did not see fit to instruct the Registrar to erase the name. The cases were those of Reuben Denny, registered as care of an address in Jermyn Street, London, Hugh Boyd Gillespie, registered as of Langside, Glasgow, Joseph Owen Kelly, registered as of Strathview, Lanark, Jerome Thaddeus O'Leary, registered as of Tottenham, Daniel Joseph Purcell, registered as of Naas, Co. Kildare, and Arthur Mervyn Rhydderch, registered as of Llandudno.

Charges of False Certification

On Nov. 25 and 26 the Council considered the case of Dr. Louis Aimée Newton, registered as of Stanley Road, Teddington, against whom it was alleged that he had issued false or misleading certificates in three cases, stating that he had attended the men respectively for six months, for some months, and for seven years, and that two of them were subject to epileptiform attacks, while the third, he believed, had commencing disseminated sclerosis; whereas in fact he had not attended these persons for the period stated or for the condition mentioned.

The complainants were the Ministry of Labour and National Service, represented by Mr. Gerald Howard. The respondent was defended by Mr. G. D. Roberts, K.C., and Mr. T. K. Eadie. The names of the persons to whom the certificates were given and all of whom appeared as witnesses were not divulged.

Mr. Roberts put in a preliminary plea on behalf of Dr. Newton, that the allegations against the doctor involved a serious offence against the criminal law. There were many cases of "infamous conduct," he said, of which the courts could not take cognizance, but in the present instance the charges were such that one would imagine that, if the authorities felt that sufficient evidence was available, they would have instituted criminal proceedings, in which they would have power to subpoena witnesses, which the Council did not possess. In four out of the five cases which appeared in the charge it was alleged that Dr. Newton had "aided, abetted, counselled, or procured the said . . . to produce in himself an apparent disability." He thought it was a fair inference, therefore, that the material available was considered insufficient to justify the launching of criminal proceedings.

The President pointed out that the Director of Public Prosecutions had a discretion to act or not to act on many other grounds. The case then proceeded.

In one of the cases, the witness, who was described as "I. J.," said that he was 27 years of age, the son of a butcher of whom Dr. Newton was a customer. He had been attended by Dr. Newton for minor complaints, but had never suffered from epilepsy or fainting attacks. In 1940, when his registration was imminent, he came into touch with a Miss Bentley—though he was not sure that that was her real name—who coached him in the simulation of epileptiform convulsions, and took him to three doctors, whose names were mentioned. On one occasion while in his butcher's shop he "shammed a fit" in Dr. Newton's presence, for which he was treated. In the interviews with the doctors "Miss Bentley," to whom he paid £200, did most of the talking; he himself, under instruction, appeared to be as drowsy and stupid as possible. Dr. Newton gave him a certificate in which he stated that he had known him for the past seven years, "during which time he has suffered from epileptiform attacks. He momentarily loses consciousness and falls down. . . ."

In cross-examination a certificate by another doctor was put to him, stating that the man had been treated by him for epilepsy of idiopathic origin, and he believed him to have come of an epileptic family. This doctor had not actually seen him in a fit. But a third doctor, to whom he was taken by Miss Bentley, saw him in feigned unconsciousness. This doctor wrote that he was told that the man had been unconscious for some ten minutes before his arrival. He found that he had bitten his tongue, his pupils were fixed, and he showed other familiar signs. The witness agreed in further cross-examination that Dr. Newton, who had known him for several years as his medical attendant as well as his customer, had had no reason to suspect that there was anything "fishy" about him. He began to pretend to Dr. Newton that he was epileptic about three or four months before he was called before the medical board.

A witness from the Ministry of Labour and National Service stated that on his first medical board, on the strength of the certificates produced, this man was put in Grade IV. Afterwards, as a result of police inquiries, he was reboarded four months later and placed in Grade II. The witness, I. J., recalled, stated that on the occasion of his first medical board he never got out of the car which took him to the place of examination, but that the five doctors went into the car one by one and examined him there.

Somewhat similar evidence was given in the other two cases. In those cases the "friend" or coach was a man, and again sums of £200 or £250 were mentioned.

Defence

Dr. Newton, in evidence, stated that he was 37 years of age and had practised at Teddington for ten years. He had 3,000 insurance patients and a large private practice, and his professional earnings for the last five years had been over £3,000 a year. The first of the three persons, A. B., came to him complaining of fainting attacks, and he treated him with luminal. He agreed that according to the entries in his diaries the time which elapsed from when he first saw the man until he gave the certificate was exactly four months, whereas he had said on the certificate that he had attended him for six months, and that he had been on luminal for five months, but he had written his certificate from memory. This patient was introduced to him by a Mr. Pell, an insurance agent, whom he had met socially and who told him that he had clients whom he would like him to see. He had no idea that A. B. had paid Mr. Pell £250; all that he received was three sums of 5s. each. The second man, E. F., was also introduced to him by Mr. Pell, and he examined him in Mr. Pell's bedroom in a London hotel. He found him suffering from loss of vision due to some lack of convergence, he was very nervous, complained of tingling in his legs, and had uncoordinated movements, and he thought the case was one of early disseminated sclerosis; he sent him to a consultant, who was also of that opinion. In the third case, I. J., he had known him for some years, but it was only in the early part of the war that he told him he was suffering from fainting fits and had had them for years. He asked him why he did not tell him earlier, and the man said that he did not like to disclose it. He prescribed luminal and epanutin. He had no knowledge of Miss Bentley and had never seen her.

Dr. Newton was closely cross-examined about the entries in his diaries; he admitted that he did not keep case-books. He said that he appreciated that the giving of a certificate which was to be used for the purposes of a medical board was a serious matter, but at the time—1940—it had not assumed the importance in his mind which it had since attained.

Each of the three "patients" was recalled, and all of them stated that before entering the Army they had driving licences and had signed the form stating that they had never suffered from fits or epilepsy.

Mr. Roberts, in a closing speech, said that the testimony in each of the three cases was uncorroborated. He was sure that the Council would not draw an unfavourable conclusion because in the practice of this busy doctor his defence was not supported by entries in his diaries. Dr. Newton had been used as the unconscious agent to further the designs of wicked men. The Council might be quite sure that the man who could deceive five doctors at the medical board would not leave anything undone to impress a doctor from whom he wanted to get a certificate. Some members of the Council might say, "Well, it all seems very suspicious, and very likely Pell or Miss Bentley (if those were their names), if they got £250, gave Dr. Newton his share of the 'swag.'" It was easy to say that, but the Council could not proceed to erasure on the strength of such a suspicion without evidence upon which to base it. So far as E. F. was concerned, no great swindle was practised by anybody. He was now only in Grade III, having been originally graded IV. As for I. J., this young swindler admittedly staged a fit in front of the doctor. If the doctor was in collusion with him, what need was there to do that? He was told what to do by this mysterious woman who flitted across the scene, and clearly neither of them relied on the doctor's dishonesty. I. J. was a good actor, for when he went to the medical board his condition appeared to be so deplorable that he was not asked to get out of the car. The Council should regard Dr. Newton as having been deceived, and evidently he was not alone in that respect.

After a session *in camera*, the President announced that the Council had found the complaint to have been proved, and directed the Registrar to erase Dr. Newton's name from the *Medical Register*.

Convictions for Misdemeanour

The Council considered the case of Dr. Christopher Bastible, registered as of Wexford, against whom a conviction in 1940 for being in charge of a motor car whilst under the influence of drink had been found proved at the session of November, 1941. Dr. Bastible had then been put on probation for one year, but on the case coming up for judgment at the present session a further conviction, in August last at Guildford, was mentioned, when Dr. Bastible had pleaded guilty of being drunk and incapable, and, on a later day, of driving a motor vehicle whilst disqualified.

The Council directed the Registrar to erase Dr. Bastible's name.

Correspondence

The Night-work Rota

SIR,—At the last A.R.M. meeting it was my duty to propose, on behalf of the City of London Division of the B.M.A., a resolution recommending Divisions to take the necessary steps to arrange for rotas for night work and for emergency work among practitioners. At the suggestion of Dr. Anderson, I agreed that the L.M.W.C.s be given this task in place of the Divisions, and the meeting passed the resolution accordingly.

Rightly or wrongly, I felt that I could not then say everything I wished to say, but I was surprised that nobody else made any objection to the resolution as it stood. And at a recent meeting of my own Division, when this problem was discussed, any criticism, given when asked for, was rejected with the assertion that the scheme would be voluntary, and that those who did not like it could stay outside. That, it seemed to me, was no valid reply to valid criticism, and I now ask you, Sir, to give some publicity to at least one voice.

Presuming that a rota is formed of, say, seven practitioners, each responsible for one night in the week, the scheme is superficially just, actually unjust. It favours him who through skill, luck, inheritance, or sheer financial shrewdness has a large panel; it penalizes the man with the small panel. The retort is made that the small-panel man, doing more night work within the scheme than he would do if he stood outside, would gain financially. But that is not the point. For a few pounds a year—only half of which would be borne by himself, the rest by the Income Tax Commissioners and the small-panel practitioners—the large-panel practitioner would have practically half his day (the night half) free from all responsibility, and be paid for it several times more than the small-panel man is paid! When it was suggested that this would be rectified by equality of sacrifice—the one doing, say, two nights' duty to one of the other, or, say, three nights to two—there was no response: specious Co-operation sat still, her tongue in her cheek.

Since I have mentioned panel practice it is not altogether irrelevant to refer to the objection the Insurance Committees made—and may still make, for all I know—to the calling up of men with large panel lists. The man with a large panel was "protected" by his committee: he was free to stay at home, his practice undisturbed, nay increased by additions from the "smaller" man's panel; for the "small" man had no protection: *he* went.

Surely, the minds that devised the imposing framework of the national insurance system, with its regulations and its clauses, its array of certificates of many colours, and its pedantic arraignment of many a doctor for infringement of the letter but not the spirit, could have devised a more equitable scheme! Verily, to him that hath much, much shall be given, but from him that hath little, that little shall be taken.—I am, etc.,

London, E.8. CHARLES SCHIFF.

B.M.A. AT WORK

Fuel for Consulting Rooms

The B.M.A. has drawn the attention of the Ministry of Fuel and Power to the special needs of doctors engaged in private practice for fuel to heat consulting and waiting rooms. The Ministry has replied that the supply position is so regulated that most essential requirements are met, and that although the maximum quantities which may be supplied, in general, are specified by the Ministry, the local fuel overseers have authority to grant licences for additional quantities whenever this is justified by special circumstances. If, however, the overseer should make an unreasonable decision the applicant may appeal to the regional coal officer, who has power to vary the overseer's ruling. It is hoped that this will be an adequate safeguard, but the Secretary of the B M A. will be glad to give any assistance possible to doctors who, having had occasion to appeal, are dissatisfied with the result.

The Panel Conference on the opening day of the meeting unanimously agreed that a congratulatory message should be sent to the Director of Medical Services, 8th Army. The following is the text of the message sent and of the reply which has just been received:

Telegram to Director of Medical Services, G.H.Q., Middle East

Annual Conference of Panel Committees representing all insurance practitioners in Great Britain assembled in British Medical Association House, London, expresses profound admiration and pride at the part played by the medical services in the Battle of Egypt and wishes Director-General and officers and men serving under him good fortune and continued prosperity in the future.—ANDERSON, Secretary.

Reply from Director of Medical Services, Middle East

Grateful your wire from members of Panel Conference expressing admiration and pride at part played by medical services and for your good wishes for future. Your message will be conveyed to all ranks in forward area and in base, who shared equally in results obtained. It will be highly appreciated.—TOMLINSON, Director, Med. Services, Mideast.

B.M.A.: Meetings of Branches and Divisions

NORTH OF ENGLAND BRANCH

At a meeting of the North of England Branch, held jointly with the Newcastle-upon-Tyne and Northern Counties Medical Society at Newcastle-upon-Tyne on Nov. 5, with Dr. F. W. GRANT in the chair, Dr. CHARLOTTE AUERBACH gave an address on "The Contribution of Genetics to Medicine." After referring to the high incidence of hereditary factors in disease, Dr. Auerbach discussed in some detail the general mode of transmission of incidence of familial disease in the descendants of parents with hereditary taints. The geneticist should attempt to assess the relative importance of heredity and environment in each specific case, in order that he might be in a position to assist in preventing transmission of the diseases by suggesting environmental changes to avoid predisposing factors. The lecture was preceded by a series of demonstrations by Dr. W. H. DICKINSON, Dr. H. J. SLADE, and Mr. NORMAN HODGSON.

B.M.A.: Branch and Division Meetings to be Held

GLASGOW AND WEST OF SCOTLAND BRANCH.—At Institution of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, Wed, Dec. 9, 3 30 p m, Prof J. M. Mackintosh: Housing and Medicine.

PERTH BRANCH.—At Perth Royal Infirmary, Fri., Dec. 11, 3 20 p.m, Dr W T Munro. The Spread of the Tubercle Bacillus on Infection, and Its Relation to Disease in the Adult All members of H M Forces in area are invited to attend.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m to 4 p.m, Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations *Daily*, 1.30 p.m, Post-mortems *Mon*, 10 a m, Course on War Surgery of the Chest begins; 10 a m., Ear, Nose, and Throat Clinic. *Tues.*, 10 a m, Paediatric Clinic; 11 a m, Gynaecological Clinic; 2 p m, Genito-urinary Clinic *Wed.*, 11 30 a m, Medical Conference; 2 p m., Water Balance, by Dr J Avery-Jones. *Thurs*, 2 p.m, Dermatological Clinic; 2 15 p m., *X*-ray Demonstration on the Urinary Tract by Dr. E J. E. Topham *Fri.*, 12 15 p m., Surgical Conference; 2 p m, Gynaecological Conference, 2 p m., Sterility Clinic

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—*London Chest Hospital:* Mon, 10 a m, and Fri, 2 30 p m, M R C.P course in chest diseases. *West End Hospital for Nervous Diseases* Tues. and Fri, 2.30 p.m, M.R C.P course in neurology *London Homoeopathic Hospital:* Wed afternoon, clinical surgery instruction (limited to six) *National Hospital for Diseases of the Heart*. Tues and Wed., 10 a m., Out-patient Clinics

DIARY OF SOCIETIES & LECTURES

ROYAL SOCIETY OF MEDICINE.—*Tues.*, 2 30 p m. Section of Therapeutics and Pharmacology. *Wed.*, 2 30 p m Section of Proctology. *Fri*, 2 15 p m. Clinical Section

CHADWICK TRUST.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W, *Tues*, 2 30 p m Dr W N East The Differentiation, Prevention, and Treatment of Anti-social Behaviour Disorders

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W—*Mon*, 4 p m Lloyd Roberts Lecture on "Human Progress and Biological Theory" by Prof F. Wood Jones, F R.S.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn Road, W C—*Fri.*, 4 p m. Mr C. Gill-Carey: Emergencies in Nose, Throat, and Ear Surgery.

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s. 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

MARRIAGE

EGLIN—HOLDEN—On Nov. 14, 1942, at St. George's Parish Church, Stockport, Douglas Eglin, B Sc, M B, Ch B, of Leeds, to Betty Holden, L.R C.P., M.R.C.S., of Westhoughton.

DEATH

CHISHOLM—Missing, believed killed, as a result of enemy action at sea, William Chisholm, M.B, Ch.B, beloved husband of Fanny B. Chisholm (*née* Mackintosh), M D, D.P H., County Health Dept., Perth, and son of Mr. A. Chisholm, Caledon, Findhorn, Scotland Deeply regretted.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY DECEMBER 12 1942

GENERAL MEDICAL COUNCIL

DISCIPLINARY INQUIRIES

(Continued)

Alleged Improper Certification: A Charge Withdrawn

The Council considered the case of John Dwyer, registered as of Mitchelstown, Co. Cork, against whom it was alleged that he had given two certificates for use for administrative purposes under the National Service (Armed Forces) Acts in the case of a serving soldier stating that the man had been under his care for gastric trouble for about a month and was unfit to travel, whereas in fact he had not seen or examined the man until nearly the end of the period mentioned. Mr. Oswald Hempson, solicitor, who appeared for Dr. Dwyer, successfully submitted that there was no case to answer, for the simple reason that the man to whom the certificates had been given had never been identified. The President said that the legal assessor agreed with Mr. Hempson's contention, and the Council decided that the charge should be withdrawn.

Alleged Aid in Evasion of Service: Case Dismissed

The Council on Nov. 24 and 25 considered the case of Ali Ahmed Hoda, registered as of Walthamstow, M.B., B.S., 1920, University of Bombay, against whom the Ministry of Labour and National Service brought the complaint that in five cases he had given to men liable for Army service certificates stating that they were suffering from epilepsy, which were untrue, misleading, or improper, that he had conspired with them and other persons to enable them to evade their liabilities under the National Service (Armed Forces) Act, and that in four of the cases he had aided, abetted, counselled, or procured the man to produce in himself an apparent disability. Mr. Gerald Howard appeared for the complainants and Mr. Sandlands, K.C., for the respondent. The names of the men to whom the certificates were given were not mentioned. They were described as A. B., C. D., E. F., G. H., and I. J. When the case came for hearing, the charge relating to A. B. was dropped in the absence of the witness.

Mr. Howard, in opening the case with regard to C. D., said that this man had never in his life suffered from epilepsy or had any fits. Dr. Hoda was his family doctor and therefore ought to have known his state of health. Just before he was due to be registered under the National Service Act he went to Dr. Hoda and asked him to give him a certificate. Dr. Hoda certified that "he is in my opinion suffering from epilepsy. He has been under my care for the same for the last about ten years. . . ." Armed with that certificate C. D. went before the medical board and was put in Grade IV. Two months later he was re-boarded and put in Grade I. These occurrences took place in the middle of 1940, and Dr. Hoda had stated that all his records up to 1941 had been sent to salvage before any question was raised as to these cases.

C. D., in evidence, said that he was 28, and that Dr. Hoda had attended him since he was 14. He had never had epilepsy, but he had had occasional fainting attacks to which he paid no great attention. When he mentioned this to Dr. Hoda the latter told him he should see a consultant, and he went with Dr. Hoda to see Dr. L. R. Yealland, after which Dr. Hoda gave him the certificate. He was now in the Army, but graded II on account of scoliosis.

Dr. Hoda, in the witness box, said that he had 2,550 insurance patients and 600 or 800 private patients He first saw C. D. for these fainting fits ten years ago, and gave him phenobarbitone tablets and a bromide mixture. In his opinion he was suffering from epilepsy, and Dr. Yealland supported that view.

The following passage occurred in Dr. Hoda's cross-examination:

Do you keep any case notes?—None at all.

Not about anybody?—Not about anybody.

Do you not find yourself in a little difficulty? Supposing one of your patients developed symptoms which you thought required a specialist's advice, it is a little difficult without notes to tell the specialist about it?—The patient remembers the case to a certain extent.

Are you content for the specialist to have no professional assistance?—If you do not remember you ask the patient for his signs and symptoms over again and put it to the specialist.

Do you keep a record of medicine you have given to your patients?—No record.

Can you produce documentary evidence of the medicine you gave to C. D.?—None whatsoever.

If your diaries had been preserved they would have contained no mention of C. D.?—No.

He agreed that it would be true to say that unless a doctor actually saw a person in a fit he had to rely largely on what he was told. He had never seen C. D. in a fit, and stated that on the certificate. At the time he had 10 or 12 epileptics among his patients, about half of whom were liable to military service. Presently it came to his knowledge that some people had been questioned by the police about shamming epilepsy, and he thereupon gave no more certificates of the kind, but advised any who asked for them to go to the medical board and tell their own story. Asked for the reason why he sent these people to different consultants, he said that sometimes the patient wished for a particular consultant, though this did not apply in the case of C. D.

In addressing the Council on behalf of Dr. Hoda, Mr. Sandlands said that the charge rested on the uncorroborated evidence of a man who had desired to escape military service. It was no corroboration to say that he was afterwards graded I, for that might equally be the case on the supposition that Dr. Hoda had made an honest mistake, for which, of course, he would not have to appear before the Council. There was not a tittle of evidence of conspiracy. If there was any substance in these charges why did not the police prosecute Dr. Hoda at the time instead of, 2½ years later, asking the Council to do their work for them?

Mr. Howard said that C. D. was a man who to his own knowledge had never had epilepsy, and was never told by his doctor that he had, yet, when the time came for him to go before a medical board, he got a certificate from Dr. Hoda that he was suffering from that condition and had been treated by him for ten years.

It was here stated that the man E. F. was not available as a witness and the charge in respect to him was withdrawn.

G. H. gave evidence that he was 28 years of age, and had never had a fit. He did not mind going into the Army, but a relative was anxious that he should be exempted He asked Dr. Hoda for a certificate This was given in a sealed envelope, and he did not see it at the time, but it stated that he had been treated by him for petit mal for the last two years. He had never heard epilepsy mentioned in connexion with himself, but he thought he had heard Dr. Hoda mention petit mal on one occasion. He was put in Grade IV, but later, in consequence of a statement he made to the police, he was re-graded I, and now, owing to varicose veins, he was in Grade II.

Mr. Howard agreed that in the case of G. H. the symptoms he described might possibly be taken for petit mal, and that a *prima facie* case against the doctor had not been made out, and this charge was withdrawn.

The last witness was I. J., aged 29, to whom Dr. Hoda gave a certificate stating that he was suffering from grand mal and had been under his care for some considerable time. He said that he had a fit nine or ten years ago and was attended by Dr Hoda, who had been his family doctor for 18 years. Since then he had fainted "on and off," but had had no recurrence of that type of fit. In February or March, 1940, he met a man named Lipschitz, whom he introduced to Dr. Hoda as his uncle, and under Lipschitz's coaching he exaggerated his symptoms to give Dr. Hoda the impression that he had had a recurrence of his fit. He gave money to a third party to give to Lipschitz.

At the conclusion of this witness's evidence Mr. Sandlands submitted that there was no case to answer.

The Council found that the charges relating to C. D. and I. J. had not been proved to its satisfaction, and as the charges relating to A. B., E. F., and G. H. had been withdrawn, the case against Dr. Hoda was dismissed.

Charges of Misleading Certification

The General Medical Council devoted more than two days to the hearing of a complaint against Arthur Carr, registered as of Brick Lane, London, E.1, against whom it was alleged that in eight cases he had given untrue, misleading, or improper certificates in order to enable men to evade military service. Dr. Carr was defended by Mr. A Pereira, counsel, instructed by Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society.

Mr. Gerald Howard, counsel for the complainants, the Ministry of Labour and National Service, said that the eight cases covered the period October, 1939, to May, 1940. In three cases the men who received the certificates were put in touch with Dr. Carr by a woman known to them as Miss Brown, who was accompanied by an older woman passing as her mother. In four others they were put in touch by a man called Pomeroy, who was said to hold some position in premises in the same street as that in which Dr. Carr practised, and in the other case the intermediary was a man unknown. He was instructed that in Miss Brown's cases sums of £300, £350, and 300 guineas were paid to Miss Brown; in three of Pomeroy's cases £150 was paid, and in the fourth £130, and in the case of the man unknown £50. In every case the recipient of the certificate was said to have shammed symptoms of epilepsy before Dr. Carr, and the basis of the case against him was this, that whereas it might be possible for a doctor with the best intentions to be deceived once or even twice, these cases showed such a systematic course of conduct that it was impossible to believe that Dr Carr could have been deceived in them all. This was reinforced by certain significant circumstances. A number of these persons came from districts remote from Dr. Carr's practice—from North and North-West and Central London. There were converging upon Dr. Carr's surgery through devious channels during this period people from widely separated districts and people who, he thought without exception, were coming to see Dr. Carr for the first time. Another significant point was that in the majority of these cases the men were sent to specialists, most of them to different specialists What might be called a trade was carried on in the provision of certificates to enable people to evade their obligations. If Dr. Carr had exercised the most elementary caution, if he had made the most perfunctory inquiries, he must have come to the conclusion that something was being done which was patently wrong. In no case of the eight had the person concerned ever suffered from epilepsy in any form.

The evidence of the eight witnesses was then taken. They testified that they had attempted to evade military service by simulating epilepsy, with the result that they had been put in Grade IV by the Army medical board, and on re-examination had been put in Grade I or II.

In defence of Dr. Carr, who gave evidence on his own behalf, it was stated that he gave the certificates only after a very careful examination of the various persons and of their histories. In most or all of the cases he sent the persons to a specialist, and it was only after he received the specialist's report that his certificate was given. Asked why he chose so many different specialists, he replied that it was to the interest of the general practitioner to cultivate a number of specialists because this facilitated the admission of his patients to hospitals. His certificates were supported by the reports of the specialists The statements which he set out were statements of fact, and if the persons concerned, being liable for service, showed the certificate to a medical board, it was no responsibility of his. His certificates were given bona fide, and he had no idea that the persons had not been suffering from the complaints described.

The President pointed out that in this series of certificates Dr. Carr in every case had given the family history as a matter of fact.

Mr. Pereira on behalf of Dr Carr called three of the specialists to each of whom one of the cases had been referred by Dr. Carr. Dr. Bellingham Smith testified that he had seen one of these patients and was told his story by the relatives who accompanied him. They gave him a clear history of epilepsy, and the picture was a very complete one. On examination one could get very little from the "patient," who paid no attention to anything said to him. His deduction was that he was mentally deficient. If it was acting, it was very good acting. He came to the conclusion that the case must be labelled idiopathic epilepsy in a mentally deficient youth. He agreed that it was easy for a doctor to be deceived because the diagnosis of epilepsy was usually based on the patient's statements. He had no idea that the bringing of the case to him had anything to do with an application with regard to military service, and he would certainly have declined to give any form of certificate for anyone claiming epilepsy if he thought it was to be used to escape service.

Dr. Purdon Martin described his examination of another patient and the history of the case given to him by the man accompanying him, and said that as a result he came to the conclusion that it was a case of long-standing epilepsy with a good deal of mental deterioration. It did not cross his mind, considering the patient's apparent mental state, that special care was necessary in view of the fact that the man was going before a medical board. It would be incorrect to describe the patient, as Dr. Carr had done in his certificate, as being under his (Dr. Martin's) care.

Dr. Pearse Williams, the consultant who saw another of the patients, said that he had received a letter from Dr. Carr about him and obtained a history of the case from the man accompanying him, who was stated to be his brother. As a result, he had no doubt at the time about the condition of the patient. He would not consider it proper for his name and part of the letter he had written to Dr. Carr to be used by Dr. Carr in a certificate for the medical board, and as a consultant he would not consider that the patient was under his care.

Mr. Howard, in his speech on behalf of the complainants, submitted that the striking difference between the position of Dr. Carr and that of the consultants mentioned in the case was that whereas Dr. Carr knew that he was required to give a certificate for the purpose of a medical board, the consultants were not in that position at all, and they were fortified by the information which Dr. Carr had given them

The Council found that the facts had been proved and ordered the erasure of Dr. Carr's name from the *Register*.

The Council considered the case of William Lyle Paterson, registered as of W. Granton Road, Edinburgh, who was alleged to have improperly certified to the military authorities that a soldier's wife was in such a state of health that the soldier ought to be kept near home On a second charge Dr Paterson was alleged to have attended a patient when so far under the influence of drink as to be incapable of properly carrying out his duties. Dr. Paterson was not present nor was he represented. A statement was read from the soldier's wife in question to the effect that Dr. Paterson used to be her doctor but had not attended her for over a year Dr. Paterson's statement was that he visited the woman last May at the request of her husband, when he found her in a highly nervous condition. On the second charge a statutory declaration was made by a neighbour of the patient concerned to the effect that Dr. Paterson was drunk when he attended the case. Evidence was given by a member of the Edinburgh City Police as to the condition of Dr. Paterson when he found him in a public house after his attendance on the case in question; he formed the opinion that he was very much under the influence of drink. Dr. Paterson denied this completely, and he alleged antagonism on the part of a certain clique towards him.

The Council found the facts proved and directed Dr. Paterson's name to be erased.

The last of the certificate cases was that of Michael Murphy, registered as of Undercliffe Lane, Bradford, who, while in practice at St. Mary Cray, was alleged to have given a certificate stating that a police constable in the City of London Police War Reserve was suffering from gastro-enteritis and unable to follow his occupation, when in fact he did not make any proper professional inquiries before certifying. It was stated that the police constable was away from his duties under this certificate for a fortnight, but that on certain days during that time (Christmas) he was acting as a chorister at St. Paul's Cathedral. Mr. Oswald Hempson, who appeared for Dr. Murphy, said that he signed the certificate in good faith. If a patient, despite the orders of his doctor and the conditions attached to the certificate, disregarded those conditions the doctor was surely not responsible for this breach of conduct. He put in a statement from the patient to the effect that although ill he managed to go to the cathedral and attend evensong and then returned home.

The Council found the facts alleged against Dr. Murphy not proved to its satisfaction.

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W—*Daily*, 10 a m to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetric and Gynaecological Clinics and Operations *Daily*, 1.30 p.m, Post-mortems. *Mon.*, 2 p m., Ear, Nose, and Throat Clinic *Tues.*, 10 a m, Paediatric Clinic; 11 a m., Gynaecological Clinic; 2 p m., Genito-urinary Clinic. *Wed.*, 11.30 a.m, Medical Conference; 2 p m, Meningococcal Infection, by Lieut-Col. Dickson. *Thurs*, 2 p.m, Dermatological Clinic; 2.15 p.m, X-ray Demonstration, The Biliary Tract, by Dr E J E Topham *Fri.*, 12 15 p.m, Surgical Conference; 2 p.m, Gynaecological Conference; 2 p m. Sterility Clinic.

Fellowship of Medicine, 1, Wimpole Street, W—*London Chest Hospital*: Mon., 10 a.m, and Fri, 2 30 p m., M R.C P course in chest diseases *West End Hospital for Nervous Diseases* · Tues and Fri, 2 30 p m., M R C P. course in neurology *London Homoeopathic Hospital* · Wed. afternoon, Clinical surgery instruction (limited to six) *National Hospital for Diseases of the Heart*: Tues and Wed, 10 a m., Out-patient clinics.

DIARY OF SOCIETIES & LECTURES

Royal Society of Medicine—*Wed*, 2 15 p.m Section of Comparative Medicine. *Thurs*, 3 30 p m Section of Neurology.

Biochemical Society—At King's College, Strand, W C., *Sat.* (Dec. 19), 2 p m. Communications and Demonstrations

Paddington Medical Society.—At St Mary's Hospital, W. Tues, 2.30 p.m. Dr J Whitby · Neurosis in General Practice during the Second and Third Years of the Present War

BIRTHS, MARRIAGES, & DEATHS

BIRTHS

Galley—On Nov 28, 1942, in London, the wife of Archibald H. Galley, M.B., B S., D A., a son

Jones—On Thursday, Nov 26, 1942, at Adlington Hall, Cheshire, to Jean, wife of A. Norman Jones, F R C.S., a son

Sutton.—Nov 3, 1942, at Ripley, Surrey, to Catherine, wife of Phillip Sutton, M B., B S, R A F.V R., of Great Yarmouth and Sidcup, a daughter (Anne Frances)

MARRIAGES

Brown—Howell—On Dec 1, 1942, at Gnoll Road Congregational Chapel, Neath, Surgeon Lieut Donald C. Brown, R.N V.R., only son of the late Mr and Mrs C. A Brown of Caerleon, to Dr Gweneth Howell, eldest daughter of Mr. and Mrs D. J. Howell, Bryn-y-Wawr, Seven Sisters

Martin—Muspratt.—On Oct 23, 1942, at St. Mary the Virgin's Church, Davyhulme, Manchester, Captain Robert Anthony Martin, R A.M C., son of Mr. and Mrs Robert Hall Martin of Irlam, to Joan Emerald, daughter of Mr. and Mrs Henry Muspratt of Davyhulme

Warren—Barnes.—On Nov 28, 1942, Harold Brian Seymour Warren, Lieut., R.A M.C, to Josephine Barnes, D M., F.R.C S, M.R.C O.G.

DEATH

Farncombe.—On Dec. 1, 1942, at the Royal Portsmouth Hospital, Harry Farncombe, M B., B S, aged 65 years, after a short illness.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY DECEMBER 19 1942

INSURANCE PRACTITIONERS' REMUNERATION

CASE FOR WARTIME INCREASE TO BE PRESSED

A meeting of the Insurance Acts Committee, which now consists of only 3 short of 50 members, was held at B.M.A. House on December 3. Dr. E. A. Gregg was re-elected chairman for the session. The principal business was the consideration of the many resolutions of the recent Panel Conference following the refusal of the Minister of Health to grant a wartime increase in remuneration to insurance practitioners. It will be recalled that the Conference passed a resolution instructing the committee to press for the reconsideration of the case by the Minister, and authorized it, in the event of further refusal, to take any action which it considered necessary, even to the extent of recommending practitioners to withdraw from the service. Following this decision a large number of motions and amendments were referred to the committee as offering possible methods of carrying out the instruction, and one of the tasks of the committee was to go carefully through these resolutions and decide which of them were for immediate adoption and which might be adopted in certain contingencies or not at all.

The Beveridge Report

A question which also arose in the course of the committee's discussions was the Beveridge report, which is likely to make the pace in the discussions concerning medical services for some months to come. The secretary of the committee (Dr. Hill) stated that Sir William was not concerned in his report with the detailed organization of medical services, despite the inclusion within his comprehensive social security proposals of medical services covering the entire community. But the question of the organization of medical services would now arise. In view of this, and also of the fact that the Minister, when receiving a deputation from the committee, mentioned that he was awaiting the Beveridge report and gave that as a reason for deferring any immediate action, the report was referred to the Executive Committee with a view to some recommendations being brought up at the next meeting of the full committee. There was also remitted to the Executive for consideration the body of resolutions adopted by the recent Conference which concerned the interim report of the Medical Planning Commission.

An End to Sectionalism

In considering the new approach to the Minister the chairman of the committee said that he had felt for some time that there was a weakness in the presentation of their case inasmuch as it was presented on behalf of a section of the profession. They would go with greater force to the Ministry if they spoke—as indeed they could—for the whole profession, which was concerned to see that proper conditions were ensured to every section of it. He suggested that the next approach be made not by the Insurance Acts Committee as such, but by the Council of the British Medical Association, and that any outstanding people in medicine who were not members of the Association should be invited. It was the whole profession who should speak on such a matter as this. He wanted to get rid of the adjective "panel" or "insurance" as qualifying the term "practitioner."

This view met with the approval of the committee, and Dr. Gregg was authorized to bring it before the Council of the Association.

Post-war Bonds

After a long discussion of various alternatives, the committee agreed on a course of action which may be set out generally as follows: to go again to the Minister with the weight behind them of the vote of the Panel Conference as indicative of the temper of the men carrying out the service and ask for a reconsideration of the case for a wartime increase on the main ground of the shift of insurance risk which operated greatly to the disadvantage of the doctor. On this question and related questions regarding the increased work and obligations and harassment of the practitioner now as compared with the pre-war period the committee would be prepared to accept arbitration should the Minister offer it. In view, however, of the attitude taken by the Minister on the former approach, that it was against the policy of the Government in wartime to grant such increases, the committee agreed that they should urge that if recognition of extra services and responsibilities could not be granted in the form of an immediate addition to the fee, it should be granted in the form of bonds redeemable after the war. The Government had adopted the principle of deferred pay and post-war credits in other spheres, and this seemed to be a proper field for its application.

The committee also considered other matters which might be brought to the attention of the Minister, including the case of practitioners who were exceptionally hardly hit because they practised in coastal or evacuation areas, where they had to remain to afford necessary medical service for the residue of the population. A further point to be brought to the attention of the Minister was the great increase in the amount of minor illness among the insured population, due to the stress of war conditions and particularly to the disregard of the optimum number of working hours and to night work.

The committee dealt with a large volume of other business arising from the Annual Conference.

NATIONAL INSURANCE DEFENCE TRUST

As Trustees of the Fund the committee considered the expression of opinion on the part of the Conference that the Defence Fund, now standing at about a quarter of a million, should have its "ceiling" raised to one million pounds. It was also urged in some quarters of the committee that in addition to providing for the eventualities which were in mind when the Fund was originated, its income might be used to promote the return of a medical Member of Parliament who would devote himself particularly to questions in connexion with the insurance medical service. Some discussion took place as to whether the new target should be half a million or a million, but the Trustees decided on the larger figure. They agreed not to recommend an increased rate of deduction, the new contributions to be made at the rate hitherto obtaining. Panel Committees will be circularized concerning their enlarged quota.

The Trustees also considered the question of the grants which are made from the Fund to facilitate the retirement of practitioners against whom, owing to age or infirmity, some complaint has arisen or is likely to arise. There has been a tendency for these grants to have a charitable purpose instead of the purpose which the Trustees had originally in mind, and there are, of course, medical benevolent funds from which necessitous cases can be helped. It was agreed by the Trustees to make no further awards of this kind and to recommend to the Conference to rescind the resolution of 1938 approving allocations from the Fund for the financial assistance of such practitioners, but it was expressly laid down that this will affect only new applications, not cases in which grants are already being paid.

The British Medical Students Association—at one time a faculty subcommittee of the National Union of Students and representative of only two London medical schools besides provincial ones, but now an independent organization which speaks for medical students throughout the country—held its inaugural meeting at B.M.A. House, London. Amendments to the constitution and the forms of agreement with B.M.A. and N.U.S., through which the association hopes to keep in touch with the medical profession and the general body of students, occupied the first session. At the second a committee was elected to complete the memoranda on reform of the medical curriculum, which had been requested by the Medical Planning Commission, and on certain specific aspects of the curriculum, which had been asked for by the Minister of Health. Discussion followed on the proposed shortening of the curriculum, and then the meeting turned to the subject of student health, a subcommittee being appointed to discuss this problem with the N.U.S. Among other matters was the position of women in medicine.

THE B.M.A. AND PUBLIC HEALTH

Compensation for Medical Officers on Civil Defence

The Public Health Committee of the B.M.A. met on November 18, when a number of new members were introduced. The committee consists of 20 members, including 2 nominated by the Society of Medical Officers of Health. Professor R. M. F. Picken was again unanimously re-elected to the chair. The agenda comprised 26 closely typed pages of foolscap.

A matter which was considered at length was the compensation of public health medical officers for injuries sustained while on A.R.P. duties. The Association has for some time been concerned over the position of officers who are whole-time members of the local authority staffs and are injured in the course of their civil defence duties in circumstances which are not the direct result of enemy action or other warlike operations. These officers technically are not persons who become members of a civil defence organization maintained by the local authority and whose civil defence duties arise solely out of such membership; they are regular local authority employees who are regarded as not generally eligible for compensation on the higher scale because any injury arising out of the performance of their duties is liable to be dealt with from the point of view of their permanent employment under the local authority.

On the other hand, it has been represented to the Ministry of Home Security that medical officers of local authorities have in many cases been nominated to carry out civil defence duties by virtue of their position. At first the supervisory officers were not expected to go out on dangerous occasions, but in practice it was found impossible in many cases for them not to do so. The medical officer of health who suffers injury other than a "war injury" in his civil defence duties might have to suffer a total or permanent loss of income, for he is excluded from the scope of the Workmen's Compensation Act, and he receives no pension if his service is of less than 10 years' duration, nor is there provision for compensating his widow or dependants should he be killed in the performance of civil defence duties.

The Association, in its correspondence with the Ministry, has maintained the obvious principle that there is a distinction between a medical officer of health employed on his normal peacetime duties and the same officer holding a key position in civil defence in wartime. It seems impossible, however, to bring this home to Whitehall, and these men who have to take unusual risks in connexion with their new duties are left to the mercies of their councils should injury be incurred. No doubt in many cases those mercies would be tender, but not all councils can be depended on to take a generous view.

The Public Health Committee agreed that the Ministry should be asked for a specific reply to the question whether, if a local authority expected its officers and administrators in supervisory positions—for the same thing applies to town clerks and borough engineers and county surveyors—to go out and take special risks, they could be included in the enrolment for the civil defence services, which would entitle them to compensation on the higher scale. It was also agreed to get in touch with the National Association of Local Government Officers.

Wartime Increases in Remuneration

The question of asking for a wartime increase on behalf of members of the public health service was discussed. It was mentioned that the Society of Medical Officers of Health had collected resolutions and observations from its branches and groups, and that its council after considering these reports had decided that no demand for the revision of salaries should be made at the present time, but that any war bonus awarded to the staffs of local authorities should be extended to all medical officers, whole-time or part-time. The Public Health Committee concurred in this view so far as whole-time medical officers were concerned, but with regard to part-time officers it had before it a question from the Medical Women's Federation whether the sessional fee of one and a half guineas was now adequate for work in public health clinics, and a resolution of the Annual Representative Meeting asking Council to consider whether a new scale of minimum fees should be laid down for all part-time work for public authorities, Government Departments, and societies. About a year ago local authorities were circularized on the subject of increases of salary for part-time officers, with moderate success in the case of part-time D.M.O.s, but less success in the case of others.

The committee's recommendation was that appropriate quarters be approached with a view to an increase of 20% on fees for public health medical work paid on a sessional or case basis.

Supplementary Pensioners and Public Assistance Medical Service

The honorary secretary of one of the Divisions of the B.M.A. wrote that he was receiving complaints from doctors about a new procedure whereby officials of the Assistance Board visited people to investigate their need for supplementary pensions, and if the pension was granted, told them that they were entitled to the free service of a doctor, and this was followed by a card from the public assistance committee giving them the name of the doctor of the district. The Ministry of Health had been asked whether a local authority was acting properly in allowing a relieving officer automatically to place the names of supplementary pensioners on the medical relief list, to which it replied that it was for the county council to decide what investigation, if any, was necessary into each individual application for inclusion in the list, but the council might properly decide that no further investigation than that already made by the officers of the Assistance Board was necessary.

It was stated in the committee that it was clear that these people were entitled to this service if they did not come within the medical benefit of the Insurance Acts. The legal issue had been raised as to whether it was proper for an authority to allow relieving officers to enter names on the list without specific sanction, and counsel's opinion was that in each case the application must be considered by the appropriate committee of the council. But this obviously would not preclude the relieving officer from placing the name on the list for immediate attention and afterwards getting his action approved by his committee. To undermine the Act or attempt in any way to conceal its provisions was quite out of the question. But if there was a substantial increase in the amount of work falling on public assistance medical officers the Association should by all means support an application for a corresponding increase of remuneration. These views were endorsed by the committee.

GENERAL MEDICAL COUNCIL

(*Conclusion*)

Education Inquiries

The recent session of the General Medical Council was almost entirely occupied with disciplinary business, but Dr. H. L. Tidy stated that at the previous session two subcommittees were appointed, one, under the chairmanship of Dr. Brocklehurst, to consider an inquiry from the Departmental Committee on Curriculum and Examinations, and the other, under the chairmanship of Sir Farquhar Buzzard, to consider an inquiry from the Interdepartmental Committee on Medical Schools, generally known as the Goodenough Committee. Both Dr. Brocklehurst and Sir Farquhar Buzzard had prepared memorandums on these subjects which, after consultation with their subcommittees, were placed before the Education and Examination Committees of the Council. They had now been redrafted as evidence to be submitted. On the suggestion of the President, the consideration of the memorandum for the Goodenough Committee was postponed until the next meeting of the Council.

DISCIPLINARY INQUIRIES (*concluded*)

Alleged Professional Relationship in Adultery

The Council considered the case of William Faulkner Valentine Simpson, registered care of an address in Parliament Street, London, who had been summoned on the charge that he had committed adultery with one Mary Purvis, of which adultery he had been found guilty by decree of the Divorce Court in a case in which he was the respondent, and that he was in professional relationship with Miss Purvis at all material times. Dr. Simpson did not attend nor was he represented.

The Council's solicitor, Mr. Winterbotham, put in certain documents, including the death certificate of the father of Miss Purvis, which showed that Dr. Simpson was medical attendant (that was in 1926), and a certificate relating to treatment, dated 1927, which was said to refer to Miss Purvis, but which Dr. Simpson in a letter stated to refer to her mother. Four pocket diaries for the years 1934 onwards were also put in, containing entries of the name of Purvis. Mrs. Dorothy Simpson, in evidence, declared that Miss Purvis, who was co-respondent in the divorce action against her husband, was always her husband's patient Dr. Simpson wrote denying that he ever had relations with Miss Purvis while he was her medical attendant He had not attended her professionally for over seven years previous to the matters alleged in his wife's petition.

The Council found that the facts alleged against Dr. Simpson had not been proved to its satisfaction.

Misdemeanours

Hugh McNicholl, registered as of High Road, Mottingham, S.E., was summoned on the charge of having been convicted in 1939 at Woolwich of driving a motor car whilst under the influence of drink, and in 1942 at the London Sessions of a similar offence. The convictions were proved, but judgment was postponed for twelve months.

The Council also considered the case of John Gerard Cunningham, registered as of Crossmaglen, Co. Armagh, who was summoned on the charge that he had been convicted in 1938 of being in charge of a motor vehicle whilst under the influence of drink, and in 1941, when he was a lieutenant in the R.A.M.C., had been found guilty by a court martial of being drunk on active service and sentenced to be dismissed from H.M. Service. Mr. Oswald Hempson, defending on behalf of the Medical Defence Union, urged the youth of his client—he was under thirty years of age—and the fact that when the Army offence was committed he was stationed at a detached post several miles away from the mess, and, unwisely, on going to a dance he had a number of drinks. Testimonials to the excellence of his work were put in.

The Council did not see fit to direct the Registrar to erase Dr. Cunningham's name.

The sitting of the Council lasted for five full days. Three cases were postponed to a subsequent session, which it is understood will be held in the early part of next year.

MEDICAL WAR RELIEF FUND

FORTIETH LIST

Amount previously acknowledged—£47,442 1s. 3d. *and* £100 3½% *Conversion Stock and* £40 3% *Defence Bonds*

Individual Subscriptions

£18 18s. 6d.—Dr B F Boyce, British Columbia.

£10.—Dr G R Rickett, Sherborne; Dr D. M. Wilkinson, Tewkesbury (2nd donation).

£5 5s.—Lt.-Col A. H. D. Smith, R.A.M.C. (3rd donation).

£5.—Dr A G. J Harris, Sherborne; Dr. H. G. Harvey, Dorchester (3rd donation); Dr. B. S. Hollick, Sturminster; Dr. G. T. Willan, Hove.

£2 2s.—Capt N Bickford, R.A M C (6th donation); Dr B. Kettle, Luton; Mr A Martin Leake, Ware; Dr. M L Saul, Beckenham (2nd donation); Dr S Wigoder, Leeds (2nd donation)

£2.—Dr. D. S. Ogilvie, Sherborne

£1 1s.—Major W. Happer, I.M S, and Mrs. Happer (14th donation); Dr. J D. McKellar, Yetminster; Mr. J S Whittingdale, Sherborne.

£1.—Surg Lt P. D. MacLellan, R.N.V.R.

£75 13s. 6d.—Lincoln Division—per Mr. G A. Bagot Walters (amount already sent £213 1s. 6d.): Dr. H C Barlow, £5 (2nd donation); Dr. M Chatterton, 10s 6d.; Dr. H Wilks, £5 5s; Dr. T. H Cresswell, £2 (2nd donation); Dr. W. F. Stiell, £1 1s (2nd donation); Dr. L H H Boys, £1 1s (2nd donation); Dr. S. C Wright, £2; Dr. J. L. Taylor, £2 2s (2nd donation); Dr. E J. Bilcliffe, £2 2s. (2nd donation); Dr. J W. McFeeters, £2 2s.; Dr S. Wray, £5 5s (2nd donation); Dr. C. E. Droop, £10 10s (2nd donation); Dr. G. D. Summers, £1 1s. (2nd donation); Dr. G J. R Lowe, £2 2s. (2nd donation); Dr. A. H Hogg, £1 1s (2nd donation); Dr R. N. Kinnison, £1 1s.; Dr. D. F. Torrens, £5 5s. (2nd donation); Dr. D. Lynch, £2 2s. (2nd donation); Dr. T. O'Brien, £3 3s (2nd donation); Mr G. A Bagot Walters, £21 (3rd donation)

£50.—Hon. Staff of Royal Hants County Hospital, Winchester—per Dr. K. Robertson (amount already sent £512 0s. 1d).

£43 12s. 6d. ($195.00).—Canadian Medical Association (amount already sent £1,362 11s. 7d.): British Columbia and Saskatchewan Divisions

£21.—Hereford Division—per Dr S. N. Corry (amount already sent £117 8s.): Dr M Malcomson.

£10 13s.—Members of Llanelly Medical Board—per Dr Rhys Paton (amount already sent £26 13s).

£5 5s.—Members of Windsor and District Medical Society—per Mr R Vaughan Payne.

£2 2s.—Per Col Dunne (East Herts Division) (amount already sent £204 8s. 1d): Dr. M. G. Murray (2nd donation).

Local Medical and Panel Committees

£15 15s.—Birkenhead (2nd donation).

£10.—Devon County.

Total—£47,756 18s. 9d *and* £100 3½% *Conversion Stock and* £40 3% *Defence Bonds*

Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G. [illegible] Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1.

Correspondence

Milk Distribution

SIR,—At a meeting of the executive committee of the Croydon Division of the B.M.A. the question of milk supplies was fully discussed. Concern was felt at the extraordinarily large quantities of milk that are obtainable for nursing mothers and children under 1 year in the form of fresh milk, dried milk, and proprietary foods purchased at chemists, the total quantity obtained in a large number of cases being far in excess of peacetime purchases. It is not desired to curtail the official allowance for such persons, but it should not be possible to obtain the full official allowance in fresh milk, dried milk, and proprietary milk foods.

If the excessive amount of milk consumed in many of the homes of persons with young children were officially controlled, it would afford a sufficient saving of milk to help meet the great hardship to persons over the age of 70. Although consideration should be shown to those on whom will fall the task of maintaining the country in the future, such consideration should not entail hardship on those who have performed the same task in the past.—We are, etc.,

DOROTHY DAY,
Chairman.
S. ALEC FORBES,
Hon. Secretary.

Croydon.

Planning and Action

SIR,—I am writing to ask whether you know how fast—or how slowly—the B.M.A. is making its plans for the medical service of the future. It is, of course, obvious that the fully planned State service that is to come cannot immediately be put into operation, since buildings for health centres and the like have to give way for the present to war factories; man- and woman-power is not now available for the administrative staffing. That we realize. But the Beveridge report has poured oil on to a fire that has so far only glowed, and it seems to me that events will move very fast. Does the B.M.A. realize the need for acting quickly? Has it made any plans which can be put into operation soon, and which can be used as a basis for the complete post-war reconstruction? Does the B.M.A. realize—and doctors generally—the urgent need that *we*, the medical profession, must run any new scheme if it is to be a success? Do they realize that unless we pull together we shall be in the nature of a burnt offering to other more organized interests?

I have read many articles and letters in the *Journal*, which is supposed to represent us, but I have never yet read anything that has been in the nature of a trumpet call to the profession as a whole: a call to wake us up, to rouse us from our apathy and self-interest: a call to arms. It is still a peaceful rather sleepy paper in times when things are beginning to move fast, when great principles are at stake. Is there no one among us who will come up to the measure of these times and quicken the spirit that I am sure is in us?

We cannot, I am sure, compromise this time. We are being driven by the war against a wall from which we can either fight our way out to something great or else we go under and become panel doctors, run by Civil servants. Could anything be worse?—I am, etc.,

Ledbury. GEOFFREY G. AIREY.

BRITISH MEDICAL ASSOCIATION

Radiologists Group Committee

The following have been elected members of the Radiologists Group Committee of the B.M.A. for the three years 1942-5: Dr M. H. Jupe (London, W.1), Dr. R. Boulton Myles (Worthing), Dr. Ralston Paterson (Manchester), Dr. R. E. Roberts (Liverpool), Dr. S. Cochrane Shanks (London, W.1), and Dr. C. G. Teall (Birmingham)

Meetings of Branches and Divisions

NORTH OF ENGLAND BRANCH

Meetings of the North of England Branch were held jointly with the Newcastle and Northern Counties Medical Society at Newcastle-upon-Tyne on Oct. 15, 22, and 29. At the first, at which Dr. MONA MACNAUGHTON took the chair, Prof. J. R. LEARMONTH gave an address on "The Diagnosis and Treatment of Peripheral Vascular Disease." At the second, when Dr. T. S. BLAIKLOCK presided, Prof. E. FARQUHAR MURRAY spoke on "The Present-day Attitude towards Certain Gynaecological Problems." Discussing treatment of carcinoma of the uterine cervix, Prof. Murray said that while in the majority of cases radium therapy was more satisfactory for general use he had performed a Wertheim hysterectomy after radium application in a few early cases, and, in his considered opinion, this materially improved the prognosis. On Oct. 29, with Dr. P. V. ANDERSON in the chair, Dr. J. A. CHARLES gave an address on "New Fields in Preventive Medicine." Dr. Charles described pulmonary tuberculosis, diabetes, and prematurity as three fields in which preventive medicine sought to establish new interests and to foster new endeavours. The common purpose was the same in each case—namely, to prolong human life and combine increased length of days with happy and useful occupation. Sweeping changes were necessary to ensure that early diagnosis and prompt and effective treatment of the tuberculous person became the rule, and that, in the quiescent stage, a diminished strength was employed to good purpose without detriment to the patient. Efforts should be made to extend the days of the diabetic to their full normal expectation of usefulness and activity; and for premature babies, for whom a whole lifetime depended upon the doctor's efforts, the free services of consulting paediatricians supported by specially trained nursing teams with proper hospital facilities should be made available.

Before each lecture there were demonstrations of clinical cases by Mr. JOHN GILMOUR, Mr. G. F. ROWBOTHAM, Dr. GEORGE DAVIDSON, Dr. A. G. OGILVIE, Mr. W GRANT WAUGH, Mr. STEWART FAGGETTER, Mr. J. S. ARKLE, Mr. A. MACRAE, Dr. E. F DAWSON-WALKER, Dr. G. HURRELL, and Dr. IAN E. MCCRACKEN.

The North of England Branch held meetings jointly with the Newcastle-upon-Tyne and Northern Counties Medical Society on Nov 12 and 19. Dr. B. B. NOBLE presided at the former, when Prof. J. LE F. BURROW gave an address on "Problems of Minor Medical Illness: Diagnosis and Treatment." He defined fibrositis as a non-suppurative inflammatory condition of connective tissue, which might be either general or local in distribution. Discussing treatment he emphasized that, while massage and movement were beneficial in certain cases, complete rest, enforced when necessary by splinting, was essential in acute cases. He referred to the efficacy of local injections of glucose-saline–novocain solution into areas containing nodules.

The lecture was preceded by demonstrations by Dr. C. N. ARMSTRONG, Dr. A. A. McINTOSH NICOL, and Mr JOHN BRUMWELL.

At the second meeting Dr. MONA MACNAUGHTON took the chair, and Prof F. C. PYBUS spoke on "Recent Advances in Cancer Research." Before the lecture there were demonstrations by Prof. F. J. NATTRASS and Dr. WILLIAM HUNTER.

SOUTHERN BRANCH: ISLE OF WIGHT DIVISION

At the annual general meeting of the Isle of Wight Division the following officers were elected for the ensuing year: *Chairman, Representative in Representative Body, and Honorary Treasurer,* Dr. H. S. Howie Wood. *Vice-Chairman,* Dr. J Dockray. *Honorary Secretary,* Dr. Balfour.

Mr. O'DONOGHUE paid a tribute to the work done for the Division as honorary secretary and for the Association by Dr HOWIE WOOD, and the latter, in occupying the chair, thanked Mr. O'Donoghue for his good work during his year of office.

A meeting of the division, to which all practitioners and the island nursing profession had been invited, was held at Newport, with Dr. HOWIE WOOD in the chair. Surgeon Rear-Admiral CECIL P. G. WAKELEY gave an interesting lecture, illustrated by lantern slides, on "Head Injuries, with Special Reference to War Conditions."

H.M. Forces Appointments

ROYAL NAVY

Surg Cmdr A J. Tozer has been placed on the retired list with the rank of Surg Capt

Surg. Lieut (Emergency) N. S. Hepburn to be Surg. Lieut-Cmdr (Emergency)

Surg Lieut D Martyn has been transferred to the Emergency List

ROYAL NAVAL VOLUNTEER RESERVE

E E Henderson has been re-entered as Surg Lieut-Cmdr.

Acting Surg Lieut-Cmdrs P. de B Turtle and J L Holgate to be Surg Lieut-Cmdrs

Prob Temp Surg Lieuts. M Wickham, L. P Davies, W. M. Wilson, J Alexander, G Krafft, P. Greenstreet, M Watkins, J R Tiller, and A H Staples to be Temp. Surg Lieuts

ARMY

The following Consultants, War Subs Lieut-Cols (Temp Cols.), have been granted the local rank of Brig: G Masne, H L Marriott

Lieut-Col A Hendry, R.A M C (ret.), has reverted to the rank of Major at his own request whilst employed during the present emergency

ROYAL ARMY MEDICAL CORPS

Lieut-Col W. E. Adam, M C, has retired on retired pay on account of ill-health

Temporary Commissions—War Subs Capts E. R D Eastman-Nagle and A Cathcart have relinquished their commissions and are granted the rank of Major.

Short Service Commissions—To be Lieuts (on probation) P. J C. Burton and J F N C Ward-McQuaid

REGULAR ARMY RESERVE OF OFFICERS

The following Cols, having attained the age limit of liability to recall, have ceased to belong to the Reserve of Officers P. J Hanafin, D S.O., late R A M C, and R. P. Lewis, D S O., late R.A.M C

ROYAL ARMY MEDICAL CORPS

Capt H Mitchell to be Brevet Major under the provisions of Article 168, Royal Warrant for Pay and Promotion, 1940

TERRITORIAL ARMY, R A M C.

Capt J W Keighley has relinquished his commission on account of ill-health and retains his rank

TERRITORIAL ARMY RESERVE OF OFFICERS, R A M C

Major F D Marsh, M C, has ceased to belong to the T A R O. on account of ill-health

LAND FORCES. EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

War Subs Capts [illegible] J Spira, A S Torrance, and P T Northover have relinquished their commissions on account of ill-health and are granted the rank of Capt

Capt. A. Thomson has resigned his commission.

Lieut. I. Robins has relinquished his commission on appointment to a commission in the S A M.C.

Lieuts. I. T. F. Wiley, B. W. Smith, R. K. Nandlal, C Seager, and H Barron have relinquished their commissions on account of ill-health and retain their rank.

A C F Section.—2nd Lieut B G T. Elmes, from General List, to be Lieut

To be Lieuts: C. B. Dansie, C H. Lee, E G. L Mark, S Anderson, G F. Barnes, J. R Beal, F. B. Beaver, J R J Beddard, P Bruce-Lockhart, W. G. Cheyne, T. W. Conlin, J. W. Crichton, W. G. Dangerfield, M Dean, K C. S. Edwards, D T. R. Evans, D M Forster, W D Frew, F. R Glover, T C. Gray, W. Hone, J. L. S James, J H. Jones, A B Kettle, D Lenihan, J. Lewis, S. Ludkin, J A Mantle, R G Mathers, J W Miller, L. A. Murray, J. J. Mackenzie, A. O. McClay, J. M H McMurray, D. H Nelson, C. W O'Donoghue, W D. Oliver, F H. Packer, R. B. Parker, V P. Poonoosahy, D. Pottinger, N Prasad, R V. Read, J Reid, S. R. Reynolds, W Richmond, W A. Royds, E J Rubra, O Sookias, R. G. Sprenger, G. G Taylor, E. G. Thomas, W R. Thrower, B E. Tompson, R H Walker, A. W. Wilkinson, J C. F. L. Williamson, C Wilson, M H Wright, J J Sumner, S Canter, H Gruneberg, J J. McEnery, B H Price, C. I. Tuckett, T. Williamson, M.C, R. F. Antonio, H. Bentley, D. E Bottrill, V R. Bruce, M. P. Chakko-George, J P Childs, N Clarey, J D. Dillon, W. Dodd, P. G Duff, H. Gavurin, W. W Gerrard, A R Graham, M. G Green, H Gremson, D. H. C Harland, S Harman, H [illegible] Hellewell, N Hext, M S Howe, D. R Hughes, R S Hynd, R. H. Kipping, B. N. Klukvin, P. H N Matthews, J. V Morris, L G Morrison, J. M. Munden, J. Murphy, H. MacNeill, M C. Macqueen, A P. Nicolle, L G. Norman, T. E Parry, F W. Pote, G. F. Purves, T. R F Raw, T. B. L Roberts, I. C Robertson, G. A. Robinson, J. Schorstein, J. A. Seymour-Jones, G. L Shatwell, J Silver, C. F Stott, J. Tait, J Travers, E. A. Turner, P. R. Walsh, A R Williams, H. F. Wilson, P M Wood, R D B Wright, J. H. Acton, A A Allison, G J Ambrose, R M H Anning, J R. Ballantyne, J C. Ballantyne A. S G. Binnie R S E. Brewerton, H J. Brooks, E. A. Broomhead, D. L. C Burden, L E. Burkeman, T E Cleghorn, R B. Crail, F K. Crittenden, B Dansie, J. A L. Davies, P T. Davies, T. Dean, P J R Deller, J K. A Dorman, D. Douglas, J. F B. Edeson, F. F Edmonds, E Emanuel, D W Evans, E G. Evans, P. Farr, W F Felton, H. A. W. Forbes, J U Forbes, E. L Fothergill, J T Furnival, H J Glanville, C. A. Glass, T E. W Goodier, W W Gooddy, R G Graham, E Greenwood, R. M. Griffiths, G N Grose, P L. M Hartley, N H Harwood-Yarred, H N Hearle, F. Heber, A. C M. Hobson, T. D S. Holliday, R A. B Jaffray, G T James, H James, B S Jarvis, J S Johnson, F. W H Kent, S C Lewsen, K T Lockhart, G. M Lunn, J. S McGregor, D. J. MacLeod, W. Mallinson, P. de R Mason, J G. Matheson, E. J Mitchell, M. J Mitchell, J. F Monk, A T Moorhouse, M F. Moses, F W Nash, R. T. Nicholas, D J. O'Callaghan, P O'Connell, A E O'Donnell, R Ogley, M. J. O'Toole, P G L. Parry, H C. Pierce, J. M Quinlan, B. C. E Richardson, J T Robinson, F. W Æ. Rutter, T Skelch, M. Slade, D Slovick, C. J. C. Smith, F. G. Stoddart, W. S. Suffern, W. G Taaffe, P. W. Tait, A E. Thomas, J P M Tizard, K. R Todd, H. J. Towle, C. Verity, W. H S Wallace, R Warnecke, H. B. S Warren, J K. G. Webb, R H. Welch, K. G. Westcombe, P Weyman, J H S. Whyte, J. W. Wilson, G. A Wright, W E Yeates, F. B Zwink, T. C. R. Archer, A. F. Beaton, H. V. Cockburn, J M. Cribb, J A Dowds, M. Evnine, H. Edwards, S L Freeman, J. A. Irwin, P. G S. Johnson, A. R. Kagan, W M. Kirkby, J M. Ledingham, J McCallum, P. D A Macdonald, J G McGill, W H H Merivale, W. H. Myers, C A. B. Murphy, J M Newton, J H Peacock, H. P. Player, J K. Pugh, M Shoham, T L. H Shore, J W. Stephens, D. I. Stirk, R. Taylor, A. Venner, J. A. Ward, R. S Abraham, S Allison, F Appleton, R Aspinwall, J H. Bentley, B. A. S Bhalla, J S Cason, F J. Cockersole, K S. Crawford, H W F. Croft, F R. Dennison, A. B Fieldsend, A. B. Gilston H Gray, W. G. Harrington, R. K Hay, J. Hothersall, S Howard, H. E Hutchison, E. W Jones, C Kelly, J Kelly, E P. Kempsey, G C. Kennedy, E O Lawton, M A. Lecutier, H Lee, J Lees, A F. Maguire, K. J. Mann, R H. Martin, J E Masterson, T S Maw, D C Miln, P McCauley, A A. McKirdy, J. G. McMenemy, S C MacMillan, J H. Redding, C MacD. Ross, D A. Saunders, S Sharman, F. B. Shevlin, J. W. Smith, W M. Smith, J B Stewart, J. R Stuart, H D Thompson, R. V. Tracy-Forster, H H. Watts, H. Q. O. Wheeler

WOMEN'S FORCES

EMPLOYED WITH THE R A.M C.

War Subs Sen Cmdr J K S Ince from A T S, to be M O. with the rank of Lieut.

The following M.O s have been granted commissions in the rank of Lieut: Alice D. Findlay, Doris Ascough, Joyce E Brooks, Lilian M Chant, Eleanor Davies-Jones, Esther T. Ewing, Isobel L. Glasgow, Marion Harrison, Inez Hewitt, Joan D K. Hilditch, Margaret W. Hughes, Irene M. V. King, Margaret P Rhodes, Patricia M Simpson, Margaret S Smith, J. Wagstaff, Helen M D. Fox, Kathleen M Horton-Williams, Sheila Latta, Irene E. Howorth, Eileen M D. Knox, Jean M. T. Lawrie, Ruth Lockie, Maud P. Menzies, Moira Murray, Pearl Penrith, Rachel E. W Spencer, Margaret C Tait, Mona M. McF. Thomson, Elizabeth A. B. White, Gladys L Young.

ROYAL AIR FORCE

Squad. Ldrs (temp) H Bannerman and R. H Winfield, A F.C., to be War Subs. Squad. Ldrs

Squad. Ldr. R V. Wright has relinquished his commission on account of ill-health and retains his rank.

Wing Cmdr. P M. Keane retains the rank of Group Capt. on reverting to the retired list.

The following M.O s (relative rank of Flying Officer) to be War Subs Fl. Lieuts.: S M C Murray, E. R. M Wilson, J. MacL. Mackay, M. Robertson, B S. Gordon, C. Hughes, M E G. Sherwell, R M. Taylor, and D. Smith

T J. G Price to be Flying Officer (short service) and seconded to St Mary's Hospital, London

Miss W N. K. Jagger (relative rank of Flying Officer) has resigned her commission on account of ill-health

RESERVE OF AIR FORCE OFFICERS

Squad. Ldr (temp) E A Rice to be War Subs Squad Ldr

AUXILIARY AIR FORCE

Fl. Lieut R. H Vartan has resigned his commission and retains his rank.

ROYAL AIR FORCE VOLUNTEER RESERVE

Fl Lieut. R W B-Ellis has been granted the rank of War Subs Squad Ldr.

Flying Officers P A Maughan, F S Jackson, M. J. O'Donnell, G. Hale, J G Burgess, N. W Horne, A M Foxe, P. C S Unwin, A M Mair, H D. White, W. A. Johnson, J D Anderson, D. L Henderson, O. T. Brown, H E W. Hardenberg, D J. Howell, N J. Burnand, J. F. Martin, W T. Ross, A G. Forbes, C. M Squire, J. McA McArthur, D Perkins, J A. Bailey, D W Bracey, A McM Graham, A Manch, J. N. N Robinson, H Avery, H. V. M Elwell, G C Rae, W. D Arthur, I Tarlo, I. B. Millar, W. N. Maclay, J. A B. Thomas, D S Foster, and P S Norris to be War Subs. Fl-Lieuts.

Flying Officer H. Avery has relinquished his commission on account of ill-health and retains his rank

Flying Officer T. K Haran has resigned his commission.

R A F.V R. DENTAL BRANCH

J. C Smith, M B, Ch B, to be Flying Officer (Emergency)

INDIAN MEDICAL SERVICE

EMERGENCY COMMISSIONS

To be Lieuts (on probation): Helen M Herbert, Jean M. R. M Johnson, Eugene N Pearlman, Nora K Woll, Gwendolen M. Higgins, and Edith H Smith

APPOINTMENTS

JAIDKA, K. C., F R C S Ed, full-time Surgeon, Peterborough and District Memorial Hospital

BIRTHS, MARRIAGES, & DEATHS

The charge for inserting announcements under this head is 10s 6d. This amount should be forwarded with the notice, authenticated with the name and address of the sender, and should reach the Advertisement Manager not later than first post Monday morning to ensure insertion in the current issue

BIRTH

BAIN.—At Johnstone House, Belfast, on Nov. 30, to Major A J. Bain, R A M C, and Mrs Bain, a son

MARRIAGE

BIRNIE—VALENTINE.—At the Church of Scotland, Crown Court, London, on Dec 12, 1942, by the Rev J Moffett, B A, Flying Officer William Birnie, M B, Ch B, R A F.V.R, second son of the late Mr William Birnie and Mrs. Birnie, Peterhead, Aberdeenshire, to Assistant Section Officer Emma Irene Valentine, W.A A F., second daughter of Mr and Mrs. A S Valentine, 18, Queen's Road, Barnet, Herts.

DEATH

CRAWFORD.—On Dec 9, 1942, at 45, Mount Park Road. Lt-Col D. G Crawford, I.M S. (ret.), aged 85.

The Home Secretary announces that Dr R. M. Geldart of Worthing and Dr. B. J. Barnett of Birmingham are no longer authorized persons for the purposes of the Dangerous Drugs Regulations.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 26 1942

FREE CHOICE OF DOCTOR AND CERTIFICATION

BY

B. BUCKLEY SHARP, M.D., M.R.C.P., D.P.M.

War accelerates social evolution, and proposals for a national health service are being freely circulated. The various proposers seem to be up against the problem of evolving a workable scheme in which there shall be no direct money contract between patient and doctor but yet some degree of free choice of doctor by patient and of patient by doctor. Whatever lip service is paid to this principle, it cannot be achieved in practice. Whenever a service is taken over, organized, and paid for by society as a whole (the State) the individuals lose their power to choose. The report of the Medical Planning Commission envisages a group of doctors based on a health centre, each doctor accepting direct applications from patients up to a certain number, and then closing his list. He may refuse to accept any person he does not desire to attend. The "also-rans" on both sides will have to take what they are given.

To the majority of the public to-day free choice of doctor seems to mean little. Most panel patients from whom I inquire the name of their panel doctor do not know it, or, if they know it, as often as not when seeking attention are seen by some other doctor with whom they are unacquainted who is "sitting" at the surgery that day (presumably an assistant or partner), and they make no bones about it. Well over 90% of sick persons in whom there is, or is thought to be, something seriously wrong attend a hospital or clinic, and "accept with complacency, if not with gratitude, the services of any doctor who chances to turn up." The tendency of doctors to form partnerships, often with several members, makes it often impossible even for private patients to be sure who will arrive when they send for help urgently or in the night.

Analogy of the Education Service

There can be free choice in full measure only when a direct contract is made between doctor and patient without the intervention of a "middle man" such as a Government Department. By all means let this option continue with or without the special facilities of a provident scheme. Let there also be a national health service, including consultant and hospital provision, to which all shall contribute, of which all may avail themselves if they wish, and in which there is *no* freedom of choice of individual doctor by patient and of individual patient by doctor. The doctor should be permitted to elect from time to time to what extent he will participate, whether he is prepared to accept a full quota on his list, only a proportion of the maximum allocation, or none at all. and should be remunerated *pro rata*. Everyone, for example, contributes to education, but not all are bound to accept State education for their children.

The next question is whether free choice of doctor is desirable and in the best interests of the public. The answer would seem to be "*no*" without certain safeguards. A strong argument can be adduced on the psychological side that the favourable outcome of illness depends much on faith and on the rapport between doctor and patient, and that a negative transference stultifies treatment. One must admit the truth of this in varying degrees. But on the other side it must be recognized that the question of gain may play an important part in choice of doctor, and that society should be protected against being taken advantage of and against waste by unjustified prolongation of invalidism. A letter signed "A.B." in the *Lancet* of June 27, 1942 (p. 777) says "it is arguable that free choice of medical attendant and liberty to change him cannot possibly continue when, sooner or later, more generous sick pay becomes obtainable," and the conflict of loyalties would impose too great a strain on the doctor in certification unless he were either a State official or released from the task of certification. But this problem is not new and does not depend on possible increase in sick pay in the future; it has been with us for years.

Gain Motif in Certification

A correspondent in the *Lancet* of November 22, 1941 (p. 649) outlined a hypothetical day in the life of a general practitioner in which he signed 35 different kinds of certificate (he did not pretend that this was an exhaustive list). Of these a number enabled the applicant to obtain something in cash or in kind from his fellows or to escape a distasteful duty to society—e.g., (1) panel certificates, including certain special benefits; (2) certificates of total or partial incapacity under the Workmen's Compensation Act; (3) certificates for convalescent treatment wholly or partly at the public expense; (4) certificates to obtain extra rationed food; (5) certificates of unfitness for fire-watching or factory work. The last two are a product of the war, and it is noteworthy that the Government have thought fit to lay down in specific terms the circumstances in which certificates under (4) may be issued by medical practitioners. This is a great relief to the doctors, and the reason is obvious. But for these rules the milk and egg rationing schemes would be wrecked by a flood of documents certifying that nearly everyone required additional rations of these foodstuffs. It is also of interest that where loss of civil rights is concerned the Law of Lunacy stipulates that an independent certificate shall be given by a practitioner unconnected in business with the regular medical attendant and deriving no benefit by certification.

Doctors are but human and, in the main, have their actions determined and modified by motive as have others. Motive is complex, and acts at various levels of consciousness from full consciousness to complete unawareness. When awareness is dim or absent a person is prone to attribute his actions to motives that satisfy his conscience and save his face, and not to the prime underlying motive that may be less respectable. So long as the financial rewards of medicine are on the *à la carte* basis a doctor has to satisfy his "clients" in order to prosper or even to enjoy a reasonable standard of existence. This applies to both private and panel practice in any area where there is competition, and there must be few, if any, where there is not. The professional attributes most likely to lead to wide patronage and thus prosperity are an air of omniscience combined with a certain dogmatism, a sympathetic attitude to the patient and his complaints, and last, but not least, an uncritical readiness to issue certificates for the patient's material benefit.

When issuing certificates of the kind referred to a doctor is acting as custodian on behalf of the society in which he lives, but is, at the same time, in the improper position of affecting his own interests by certifying or refusing to certify at the request of the patient. He is like a judge who has an interest in the result of a case which he is called upon to try. He will react to this situation in one of two ways. Most commonly his professional judgment will be subject to a conscious, partially conscious, or unconscious bias in favour of issuing the certificate; or, if he has an obsessional over-conscientious personality, his professional judgment will be subject to a bias in the opposite direction. The former reaction is the more frequent. This mechanism is often observable in questions of conflict over personal injury, the contestants being an individual on the one hand, and society on the other as represented by another individual or group of individuals. Here doctors of more or less and often of approximately equal knowledge and ability will be found on opposite sides giving widely divergent opinions on aetiology and prognosis, whereas if they were in consultation over the same case in non-controversial circumstances the odds are that their views would vary very little, if at all. All this is very bad for the patient's attitude towards himself and may create, aggravate, or perpetuate invalidism.

Failure of a Social Experiment

Although the present panel system is not blameless, the most outstanding examples of certification influenced by motive are seen in the application of the Workmen's Compensation Act. Here incapacity, total or partial, for earning wages results, while it lasts, in maintenance of the workman by society as represented by his employers, and may result, if persistent, in the receipt of a lump sum in settlement by way of commutation of weekly payments. Certification influenced by motive is prone to appear on both sides—optimism on the side of society as represented by the employer, whose appointed referee is impelled to satisfy, so far as possible, the employer, and pessimism on the side of the workman, whose doctor is impelled to "do his best for his patient," thereby at the same time enhancing his local reputation as the right kind of doctor to go to. Hence the Workmen's Compensation Act has gained its title as a failed social experiment. Evidence in support of its failure is frequently forthcoming. McAusland (*Journal*, May 2, p. 566) blames many panel doctors for factory absenteeism on the ground that they discourage workers from resuming work, after they have been discharged from hospitals as fit, by weekly certificates of incapacity to the effect that they are "still suffering from the effects of injury." The responsibility that rests on the workman's doctor and the regrettable results of his frequent faulty handling of the situation (no doubt with what he consciously regards as the best intentions) were well brought out in the "Discussion on the Workmen's Compensation Act as a Factor in Prolonging Invalidism" held at the Royal Society of Medicine on May 5 last.

If free choice of doctor in whole or in part is preserved, the solution to the problem of this kind of certification appears to be that certificates upon which gain or loss depends shall only be issued by doctors who are entirely disinterested and independent, and who possess a high standard of knowledge and experience. Such doctors should be appointed by the State for this purpose on the lines adopted for dealing with scheduled industrial diseases. It will be contended, no doubt, that this proposal is the negation of freedom, and that a person having the right to select his own medical attendant shall also have the right to obtain certificates from the doctor "who knows his case." The term "freedom," however, while often adduced to make a case, is not precise enough to support an argument. It is axiomatic that in no social system can complete freedom exist; there can only be degrees of freedom. The freedom which we cherish is a limited right to do the work we select where we like, to enjoy ourselves in any innocuous way we like, and, above all, to think as we like and speak as we like provided that what we say is not treasonable, blasphemous, obscene, or likely to produce a breach of the peace. But where we have to depend on the help and support of society as a whole, and reciprocate in our turn in helping and supporting society, there cannot be individual freedom.

CERTIFICATES FOR PROPRIETARY PRODUCTS

It has been brought to the notice of the B.M.A. that certain manufacturers of proprietary articles, including food products, are issuing prescription forms for doctors to sign with a view to facilitating the purchase of these articles by patients. It should be appreciated that a doctor is under no obligation to make use of any such form and is not expected to do so.

NATIONAL EYE SERVICE: OPHTHALMIC MEDICAL EXAMINATIONS

At the first meeting of the newly constituted Ophthalmic Group Committee of the B.M.A. on December 3 Dr. O. G. Morgan of London was elected chairman and Mr. George Black of Leeds vice-chairman. The committee, which now consists of 17 members and 4 observers, received a report on the work of the National Ophthalmic Treatment Board for the past year.

It carefully considered the analysis of the results of the recent questionary with regard to the fee for ophthalmic medical examination in the National Eye Service and the observations which a number of ophthalmic medical practitioners had included with their replies. The general feeling appeared to be that a good and strengthened National Eye Service should by all means be secured, but at the same time there was no desire to get higher fees from the poorer section of the community. The general principle at stake was regarded as of more importance than the addition of a few shillings to the half-guinea fee. One member of the committee drew attention to what had been done in Eire, which, he suggested, might be a model here. There a National Health Insurance Society covered all insured persons. The opticians entered into an agreement not to publish any notice or advertisement to the effect that they had entered into an agreement with the society, and applicants for optical benefit were told that it was necessary for them to have their eyes examined by an ophthalmic surgeon and to obtain a prescription from him before going to the optician.

After further discussion members of the committee were reminded of the extreme probability that within a comparatively short time the Beveridge or some other far-reaching proposals might bring about a large reorganization of the medical services of the country. This opened the question whether it was desirable at the present stage to propose a change in the conditions attaching to the National Eye Service. In the shaping of things to come the ophthalmic surgeon would probably be in no different position from any other specialist in an all-embracing set of provisions. In view of these changes it might be sufficient to agree to such a modest increase on the existing fee as the 20% so generally taken in other connexions. So far as insured persons of the higher income range were concerned, few of these—excluding manual workers entitled to ophthalmic benefit notwithstanding their higher incomes—would come in during the next two years, by which time the general reorganization might be well on its way. Non-insured persons with an income below £250 might continue to be treated at the existing fee, plus 20% if thought desirable, and non-insured over £250 might be treated as private patients.

It was agreed to postpone further consideration of this matter until the next meeting of the committee, members meanwhile to consult their constituents, and also to watch the intentions of Parliament with regard to the Beveridge report.

A subcommittee was appointed to consider and collate schemes for the improvement of the National Eye Service with a view to the presentation of a set of proposals to the Medical Planning Commission.

Eye Examination in Factories

Some time ago a subcommittee was appointed jointly by the Group Committee and the N.O.T.B. on eyesight testing of employees in factories. This subcommittee now brought forward a series of recommendations with a view to obtaining the names of eye specialists who might be willing to undertake this industrial work. It was fully realized that not every doctor doing refraction work would be willing, or indeed could make it convenient, to do this work, which, in the subcommittee's view, should include not only individual examinations but also advice on all matters connected with vision problems at the factory. Nevertheless, it was thought that a sufficient number might be interested. One suggested way of proceeding was to approach medical officers of health for the names of doctors doing eye work in schools who might be willing to extend their activities to the factory. Other ways were also suggested, and, although some doubt was expressed in the Group Committee as to whether sufficient ophthalmic surgeons could be found for the work, it was agreed to proceed on the general lines of the recommendations, and the National Ophthalmic Treatment Board was requested to take such steps as are possible to institute this service.

H.M. Forces Appointments

ROYAL NAVY

H. F. Osmond to be Surg. Lieut.

ROYAL NAVAL VOLUNTEER RESERVE

Prob. Temp Surg Lieuts H T. Calvert, R J. L. MacBean, K. G. Marshall J. M. Taylor, M. H W. Holloway, T. M. C Roberts, and J. P H. Ogilvie to be Temp. Surg Lieuts

ROYAL ARMY MEDICAL CORPS

Major T. H. Twiss to be Lieut.-Col.

REGULAR ARMY RESERVE OF OFFICERS

Col. G. H Richard, late R.A M C, having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

INDIAN MEDICAL SERVICE

EMERGENCY COMMISSIONS

Lieuts. (on probation) H M Herbert, M. K. Beattie, and G. E Brindley to be Capts (on probation)

To be Lieut.: N. N Iovetz-Tereshchenko.

COLONIAL MEDICAL SERVICE

The following appointments are announced: E. P K. Rushton, M B, Ch B, Medical Officer, Sierra Leone; A. McK. Fleming, M C, M.B, B S., Medical Officer, Kenya, C R C Rainsford, M D., Senior Medical Officer Seychelles; R L. Cheverton, M R C S, Director of Medical Services, Cyprus; H. D Cronyn, F.R C S Ed., Specialist Surgeon, Cyprus; T P Eddy, M.R C S., Medical Officer, Gambia; H S Evans, M R.C S., Medical Officer, Grade I, Fiji; H B Hetherington, O.B E, M.B, Director of Medical Services, British Guiana.

B.M.A.: Diary of Central Meetings

JANUARY

7.	Thurs.	**Journal Board, 1.45 p m**
27.	Wed	**Council, 10 a.m.**

BIRTHS, MARRIAGES, & DEATHS

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DEATH

MACINTOSH.—On Nov. 23, 1942, at his residence, 36, Duncairn Gardens, Belfast, Dr John Macintosh, O.B E., beloved husband of Janet Macintosh.